

# ENVIRONMENTAL ASSESSMENT



## US 60 Improvement Project

KYTC Items #1-115.00, 1-115.10, and 1-118.00



The proposed highway project involves the improvement of roughly six miles of US 60 near the Ballard/McCracken County line, from east of LaCenter to the existing four-lane section east of Kevil. A range of build alternatives were analyzed to improve mobility and provide a safe connection for the traveling public. US 60 provides the only east-west designated truck route west of Paducah, connecting to the Ohio River Bridge at Wickliffe.

Submitted pursuant to 42 U.S.C. 4332(2)(c) by the Federal Highway Administration (FHWA) and Kentucky Transportation Cabinet (KYTC) Division of Environmental Analysis (DEA).



January 2020

**ADMINISTRATIVE ACTION:  
ENVIRONMENTAL ASSESSMENT (EA)**

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**Approved for Public Availability**

  
\_\_\_\_\_  
Todd Jeter  
FHWA Division Administrator

  
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Recommended By

  
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Danny Peake  
KYTC DEA Director

  
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Date

# Executive Summary

The proposed project creates an improved US 60 connection through eastern McCracken and western Ballard counties. The rural project area stretches along six miles of US 60 in far Western Kentucky, from Humphrey Creek, east of LaCenter, to the existing four-lane section just east of the Ballard/McCracken County line.

The purpose of the project is to improve mobility and safety for the corridor. US 60 is the only east-west principal arterial link in Kentucky west of Paducah, leading to the only Ohio River highway crossing for an 80-mile stretch. Its narrow lanes, limited passing opportunities, closely spaced access points through Kevil, and substandard curves make the route challenging for freight carriers. The corridor carries 5,000 to 7,200 vehicles per day based on 2017 traffic counts, with truck traffic representing 10% to 17% of this volume. Traffic volumes have been trending downward over the past decades. Further, five years of data illustrate a history of crashes: 176 crashes during 2013-2017, including 5 fatalities and 39 injury collisions. Predominant crash types are single vehicle collisions (47%) and rear ends (32%). Two high crash spots have been identified: “Dead Man’s Curve” at the Clarkline Road intersection with a 1.4 Critical Crash Rate Factor (CCRF) and the offset KY 473 intersection in Kevil with a 1.1 CCRF.

A wide range of solutions has been studied over the past decades, culminating in three Detailed Study Alternatives evaluated under NEPA (**Figure ES-1**). Alternative 1 is recommended as the Preferred Alternative, which creates a new four-lane divided highway south of the existing US 60 alignment. It avoids/minimizes impacts to environmental resources, is preferred by the public, simplifies maintenance of traffic during construction, and reduces project costs. The rural section includes two 12-foot-wide travel lanes per direction, 12-foot-wide outside shoulders (10-foot paved), and 8-foot-wide inside shoulders (6-foot paved), separated by a depressed median. Phased construction could occur, including only two lanes initially.

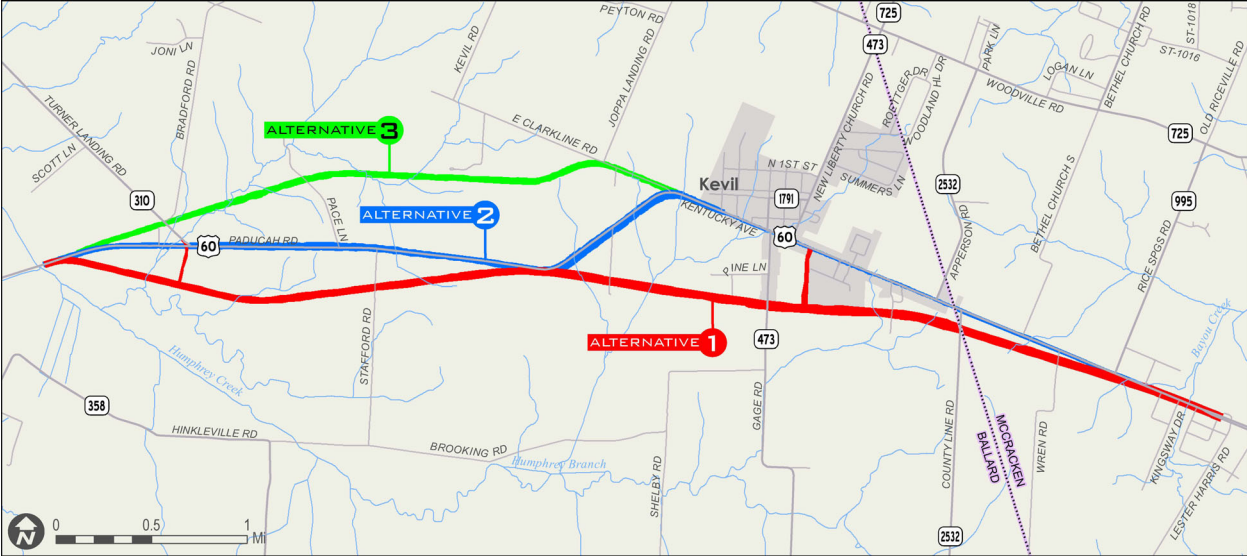


Figure ES-1: Three Detailed Study Alternatives Considered Alongside the No Build Alternative

**Table ES-1** summarizes the environmental impacts associated with preliminary designs for the Detailed Study Alternatives. Primary environmental concerns include impacts to homes/businesses—particularly associated with bypassing small-town Kevil—and impacts to farmlands. These alternatives were shared with local stakeholders and the public during June 2019; feedback indicated the vast majority of respondents preferred Alternative 1 and over 85% preferred a 4-5 lane widening option over 2-3 lanes.

**Table ES-1: Comparison of Impacts for Detailed Study Alternatives**

Impact Category	Alt 1 (Preferred)	Alt 2	Alt 3
Project Length	6.29 miles	6.51 miles	6.46 miles
Cost (2019\$)	\$62.4 million	\$84.5 million	\$69.4 million
Meets Purpose & Need	Yes	Yes	Yes
2040 Daily Traffic	5,200-7,000 new 2,000-2,100 existing	7,300-9,000	7,300-9,000
Bicycle/Pedestrian	No dedicated facilities; wider shoulders improve safety		
Right-of-Way Impacts			
Parcels	68	168	154
Residential Relocations	19-20	12-21	10-17
Commercial Relocations	2	8-14, church	8-12
New Right-of-Way	200 ac	88 ac	103 ac
Business Community	Reduced pass-by traffic on old US 60; no utility connections along new route	Minimal changes beyond relocations	Minimal changes beyond relocations
Land Use	Consistent with regional land use, transportation plans		
Farmlands			
Prime/Unique Soils	65.5 ac	88.0 ac	102.7 ac
Statewide/Local Importance	15.6 ac	6.3 ac	8.5 ac
Land in Ag Districts	26.6 ac	33.5 ac	9.8 ac
NRCS Rating Score	190	140	138
Environmental Justice	Not Disproportionately High and Adverse	N/A*	N/A*
Air Quality	Minimal changes		
Noise Impacts	18 impacts; No abatement	23 impacts; No abatement	16 impacts; No abatement
Stream Impacts	4,300 LF/15 streams	3,632 LF/12 streams	6,451 LF/24 streams
Wetland Impacts	0.14 ac	0.63 ac	2.42 ac
Pond Impacts	None	0.09 ac	0.11 ac
Floodplain Impacts	9.15 ac	3.79 ac	6.57 ac
Forested Bat Habitat	18 ac	14 ac	47 ac
Historic Effects	Not Adverse	Not Adverse	No Effect
Archaeological Sites	Undetermined	Undetermined	Undetermined
Hazardous Materials, USTs	6 potential sites	13 potential sites	11 potential sites
Construction Impacts	Typical impacts for highway construction project likely		

\* Findings based on survey responses from residential relocatees associated with the Preferred Alternative

Upon publication of this EA, a public hearing will be held, highlighting information from analyses discussed herein and soliciting feedback. Coordination with agencies will continue to refine impact analyses and identify appropriate mitigation measures for adverse impacts. Additional field surveys will be conducted to identify any previously undiscovered archaeological deposits and to quantify potential impacts to endangered species. The NEPA process is anticipated to conclude with the publication of a Finding of No Significant Impact (FONSI) in 2020.

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## Acronyms

AST	Aboveground storage tank
BMP	Best management practices
CCRF	Critical crash rate factor
CO	Carbon monoxide
dba	Decibels
DEA	Division of Environmental Analysis
DES	Design Executive Summary
EA	Environmental Assessment
EJ	Environmental justice
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
KTC	Kentucky Transportation Center
KYTC	Kentucky Transportation Cabinet
LOS	Level of Service
MP	Milepoint
MPO	Metropolitan Planning Organization
MSAT	Mobile source air toxics
NAC	Noise Abatement Criteria
NEPA	National Environmental Policy Act
NHS	National Highway System
NO <sub>2</sub>	Nitrogen Dioxide
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
PADD	Paducah Area Development District
PCB	Polychlorinated biphenyls
PM	Particulate Matter
REC	Recognized Environmental Condition
SHIFT	Strategic Highway Investment Formula for Tomorrow
SHPO	State Historic Preservation Office
SSA	Socioeconomic Study Area
TWLTL	Two-way left-turn lane
US EPA	US Environmental Protection Agency
USDA	US Department of Agriculture
USFWS	US Fish and Wildlife Service
UST	Underground storage tank
VMT	Vehicle miles traveled
vpd	Vehicles per day
WMA	Wildlife management area

# I. US 60 Improvement Project

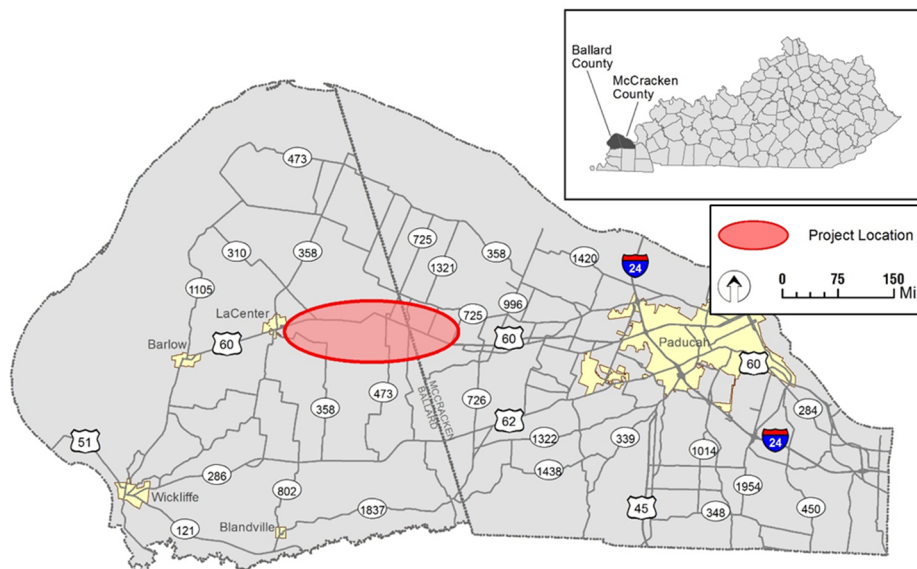
The proposed US 60 project is located near the Ballard/McCracken County line, from east of LaCenter to the existing four-lane section east of Kevil. A range of build alternatives to improve mobility and provide a safe connection for the traveling public is being evaluated, building on findings of a 2001 planning study and subsequent preliminary design efforts.

Following this introductory chapter, **Section II** discusses the project purpose, **Section III** describes the alternatives development process, **Section IV** summarizes the environmental setting and likely project impacts, and **Section V** outlines public and agency involvement to date. **Section VI** contains a brief summary of the rest of the Environmental Assessment (EA), along with conclusions and identified commitments to mitigate adverse impacts. In accordance with National Environmental Policy Act (NEPA) and KYTC policy, this document will be distributed for review and a public hearing held to solicit comments. As long as no significant environmental impacts are identified, the NEPA process will conclude with a Finding of No Significant Impact (FONSI), anticipated to occur in early 2020.

## A. Project Area

The rural project area stretches along 6 miles of US 60 in far Western Kentucky, from Humphrey Creek, east of LaCenter, to the existing four-lane section just east of the Ballard/McCracken County line. US 60 provides the only east-west principal arterial connection west of Paducah, connecting to the Ohio River Bridge at Wickliffe.

**Figure 1** shows the project location in relation to the county and region; **Figure 2** shows typical scenes in the project area. The project addressed by this analysis includes three separate KYTC Item Numbers: 1-118.0 covers the western section, 1-115.0 covers the central section, and 1-115.1 covers the eastern section in McCracken County.



**Figure 1: Project Location Map**



**Figure 2: Representative Views of Project Area**

1. Major Roadways & Transportation Facilities in the Vicinity

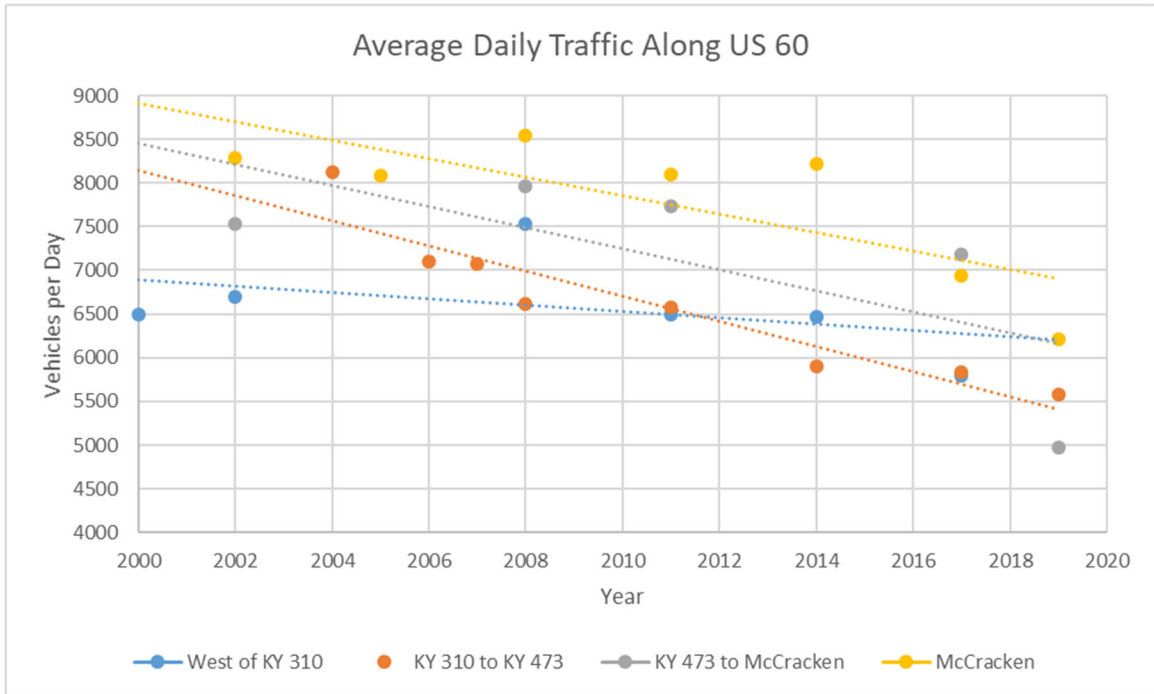
US 60—locally named Hinkleville Road, Kentucky Avenue, and Paducah Road moving east to west—is a two-lane rural highway with 11-foot lanes and 2-foot paved shoulders. The speed limit is 55 mph, dropping to 35–45 mph within Kevil. The route is listed on the National Highway System (NHS) and rated for AAA trucks (up to 80,000 pounds gross weight). The project corridor carries 5,000 to 7,200 vpd based on recent counts, with truck traffic representing 10% to 17% of this volume. Illustrated in **Figure 3**, traffic volumes have been trending downward over the past decades.

There are three culverts along the route, all rated in Fair condition as of their 2017 inspections:

- 004B00011N for Frazier Creek, mile point (MP) 12.475
- 004B00012N for Branch of Frazier Creek, MP 12.515
- 004B00013N for Page Branch, MP 15.866

Other state-maintained highways in the area are KY 310 (Turner Landing Road) near the western project terminus, KY 473 (Gage and New Liberty Church roads) in Kevil, and KY 2532 (County Line

Road)—all rural minor collector routes. A few dozen local routes and private driveways also intersect US 60 along the project length.



**Figure 3: Historic US 60 Daily Traffic Volumes**

Other transportation facilities in the area include a railroad spur two miles east of Kevil that connects the Paducah Gaseous Diffusion Plant to western Paducah. The Barkley Regional Airport is located south of US 60, roughly six miles east of Kevil. There are no fixed route transit lines through the area although Paducah Area Transit Service does offer scheduled, non-emergency medical, and intercity services in both Ballard and McCracken counties.

## 2. Project History

A planning study for the proposed project was completed in 2001, associated with a statewide initiative to widen US 60 to four lanes in its entirety. The effort involved an existing conditions inventory, input from local officials and the public, an environmental overview, a list of project goals, and conceptual alternatives with costs.

Goals identified in the 2001 planning study were:

- Relieving congestion through Kevil
- Encouraging the use of US 60 for freight movements between Paducah and Missouri
- Improving substandard alignment elements to improve safety
- Providing corridor/system connectivity along US 60
- Reducing travel times
- Supporting economic development

The study identified two alternatives for consideration: a bypass south of Kevil and reconstructing the existing route. Either option used a divided four-lane or five-lane cross section. While the bypass would reduce relocation impacts within Kevil, there was concern regarding the effects that a bypass would have on businesses within the small community.

Following the planning study, preliminary design efforts commenced, culminating in a 2007 design executive summary (DES) for the central portion (Item #1-115) of the project. Four alignments were developed and shared with the public, each with a rural, four-lane divided cross section and a 60 mph design speed. A southern bypass was preferred as it reduced impacts and provided for good constructability/maintenance of traffic. The DES cites the project’s purpose as “providing the public with a safe travel route, enhanced capacity, and improved traffic operation for the continued widening of the US 60 corridor.”

More recently, the project was evaluated alongside other projects throughout the state and region as part of the Strategic Highway Investment Formula for Tomorrow (SHIFT) process intended to provide a data-driven evaluation process to feed into the *FY 2018-2024 Highway Plan*. All three component pieces of this project were “double boosted” by both the Purchase Area Development District (PADD) and KYTC District 1, elevating their priority within the region.

As noted in **Table 1**, the project was included in the state’s *FY 2018–2024 Enacted Highway Plan* with the following funding identified:

**Table 1: Funding Source per current KYTC Highway Plan**

<i>Phase</i>	<i>Item No.</i>	<i>Fiscal Year</i>	<i>Dollars</i>
<i>Design</i>			<i>\$0</i>
<i>Right-of-Way</i>	<i>1-115.0</i>	<i>2020</i>	<i>\$2.50 M</i>
	<i>1-115.0</i>	<i>2021</i>	<i>\$2.50 M</i>
	<i>1-115.1</i>	<i>2019</i>	<i>\$1.32 M</i>
	<i>1-115.11*</i>	<i>2019</i>	<i>\$1.32 M</i>
	<i>1-118.0</i>	<i>2024</i>	<i>\$2.37 M</i>
<i>Utilities</i>	<i>1-115.0</i>	<i>2021</i>	<i>\$3.50 M</i>
	<i>1-115.1</i>	<i>2022</i>	<i>\$2.71 M</i>
	<i>1-118.0</i>	<i>2024</i>	<i>\$1.90 M</i>
<i>Construction</i>			<i>\$0</i>
<b><i>TOTAL</i></b>			<b><i>\$18.1 M</i></b>

*\* Prefinanced conversion funds*

All three segments are considered committed projects for SHIFT 2020 and should be included in the *FY 2020-2026 Highway Plan* in early 2020.

## II. Purpose and Need

The Purpose and Need Statement establishes why the KYTC proposes to advance a transportation improvement and drives the decision-making process for alternatives' consideration, analysis, and selection.

**The purpose of the project is to improve mobility and safety for the US 60 corridor in eastern Ballard County.** US 60 is the only east-west principal arterial link in Kentucky west of Paducah, leading to the only Ohio River highway crossing for an 80-mile stretch. Listed on the NHS and a state-designated truck route, its narrow lanes, limited passing opportunities, closely spaced access points through Kevil, and substandard curves make the route challenging for freight carriers. Further, five years of data show a history of crashes, with two high crash spots and five fatality collisions.

### A. Need for the Project

**Mobility.** Connecting to the US 51 Ohio River Bridge at Wickliffe, US 60 provides the only highway crossing between I-24 at Paducah and I-155 at Dyersburg, Tennessee, a distance of over 80 miles (**Figure 4**). Two primary routes carry traffic from Paducah to Wickliffe:

US 60, a principal arterial route on the NHS, which has two 10- to 11-foot-wide lanes throughout Ballard County. Shoulder widths vary from 2 to 10 feet. The speed limit is 55 mph, dropping to 25–35 mph through Wickliffe, Barlow, LaCenter, and Kevil.

KY 286, a minor arterial route with two 10- to 12-foot-wide lanes and narrow shoulders (2 feet wide or less) and a 55 mph speed limit.

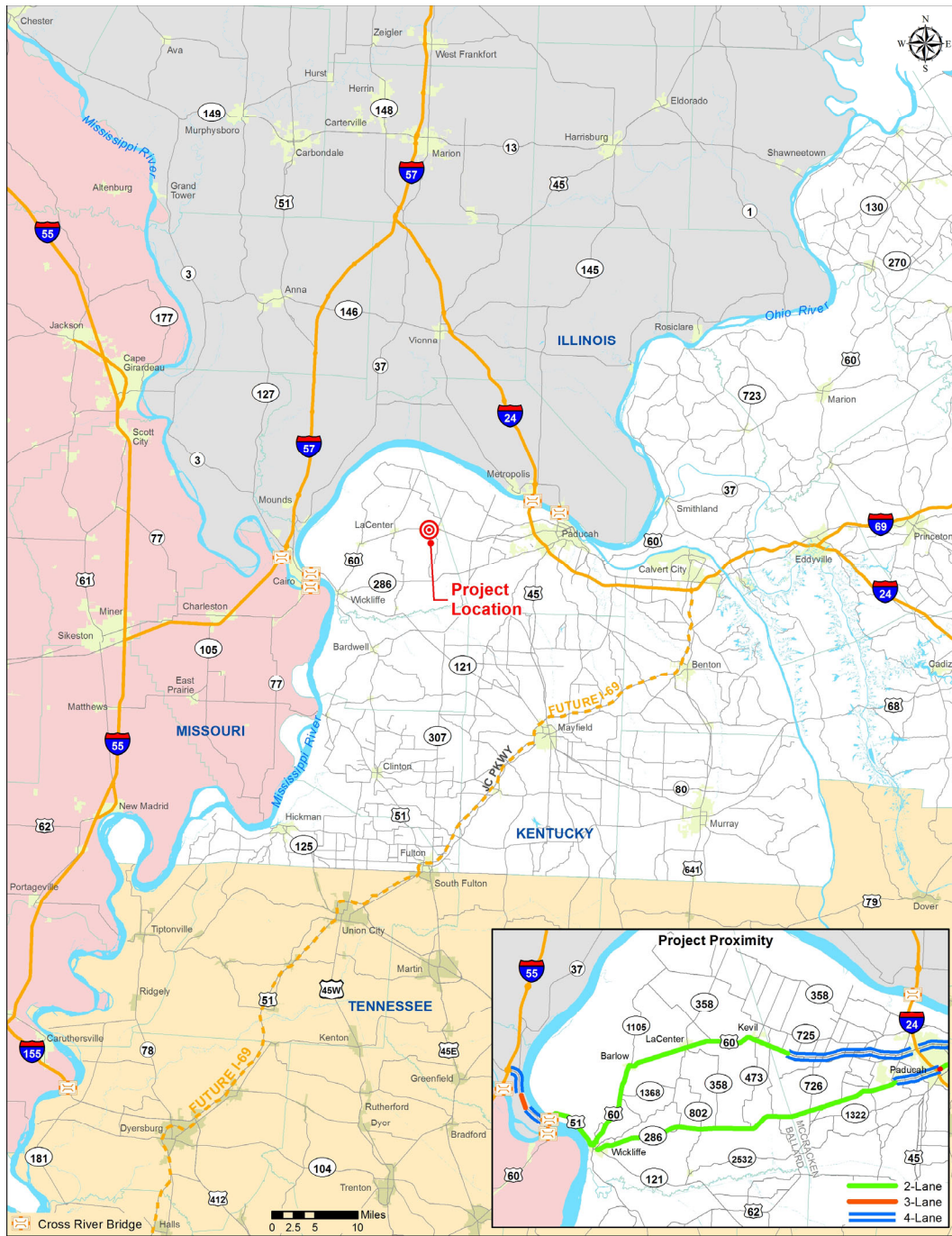
While travel distances are the same, the US 60 route has a higher travel time due to the reduced speeds through the small communities lining the highway.

**Freight Movements.** US 60 through Ballard and McCracken counties is intended to serve truck traffic. It is listed on the NHS and is a state-designated truck route, permitted to carry 102-inch STAA<sup>1</sup> commercial vehicles. The highway provides access to the West Kentucky Technology Park, Daher-TLI and other industrial sites, and other regional destinations. Narrow lanes, limited passing opportunities, closely spaced access points through Kevil, and substandard curves make the route challenging for truck traffic.

The project corridor carries 5,000 to 7,200 vpd based on recent counts, with truck traffic representing 10% to 17% of this volume. Segment-based Level of Service (LOS) analysis shows the corridor operates at LOS C–D in Ballard County and LOS D–E in McCracken County, with the performance driven by closely spaced access points and few passing opportunities.

LOS is a qualitative measure that describes traffic conditions based on measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. LOS is rated on a scale of A (best case, free-flow conditions) through F (over-capacity, standstill traffic).

<sup>1</sup> Surface Transportation Assistance Act of 1982, which allows large trucks to operate on the Interstate and certain primary routes. STAA trucks are longer than other Kentucky legal trucks and, as such, have a larger turning radius than most local roads can accommodate. Routes identified as STAA roadways can accommodate such trucks.

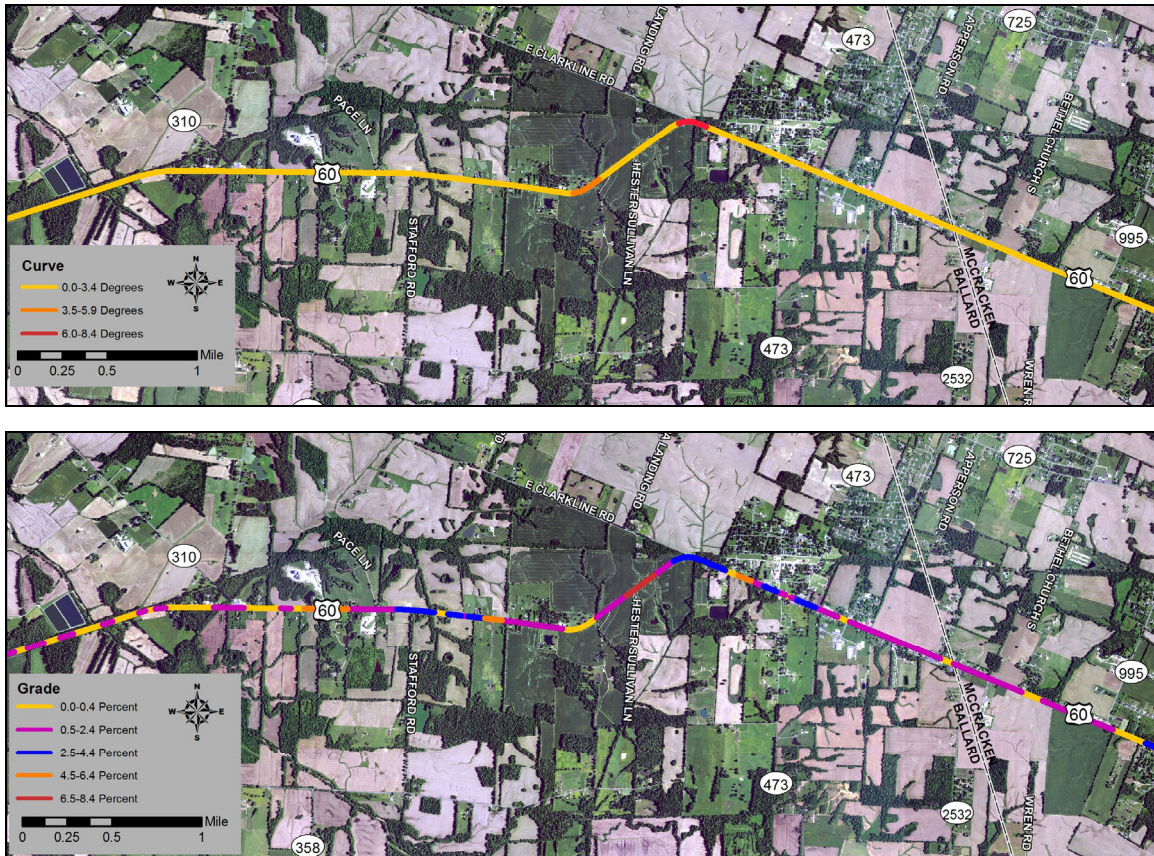


**Figure 4: Regional Highway Connections and River Crossings**

KYTC classifies horizontal curves into six classes, rated A (gentle) through F (sharp) based on the curve degree—how sharply the road curves. The recommended threshold for each highway is based on the functional classification, design speed, and traffic volume. Shown in **Figure 5**, planning-level data from

KYTC shows two class C horizontal curves: a 5.8-degree curve to the left at MP 14.6 followed by a 6.9-degree curve to the right at MP 15.3, locally known as “Dead Man’s Curve.”

Similarly, vertical grades are classified into six classes, also rated A (nearly flat) through F (steep). Two class E grades (MP 14.87-15.06) create a relatively sharp dip over an intermittent stream between the two curves.



**Figure 5: Planning-Level Horizontal (Curve) and Vertical (Grade) Data**

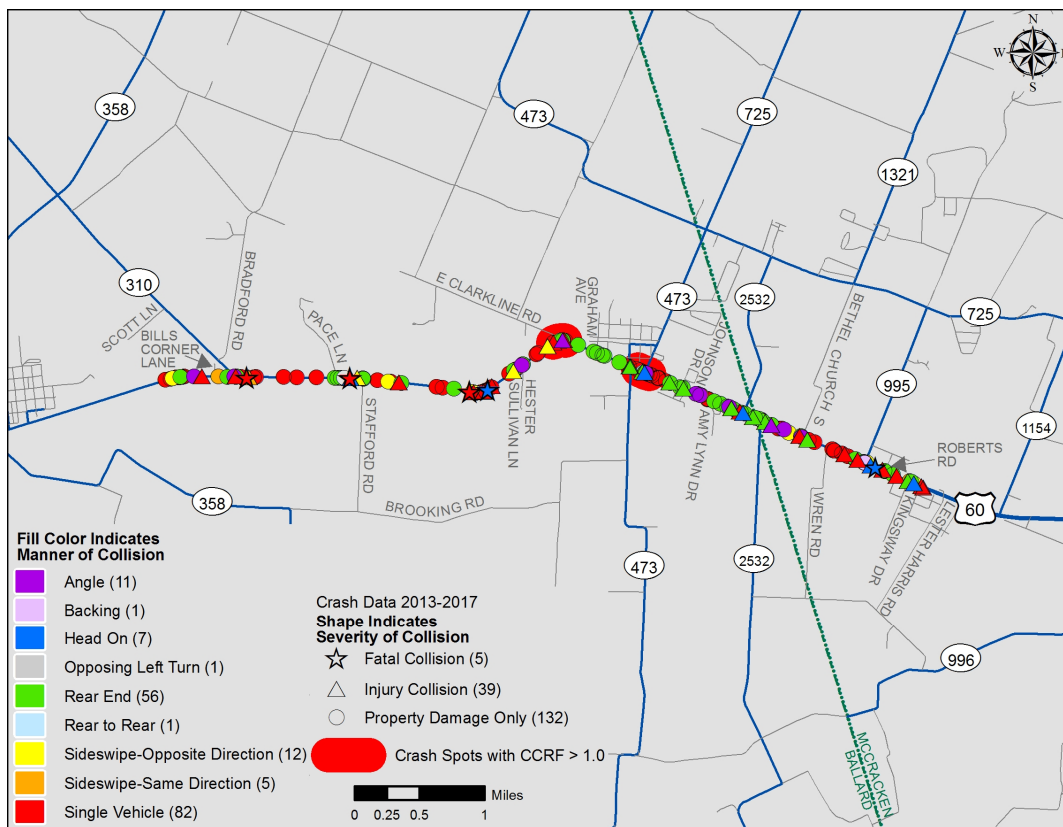
**Safety.** Crash records collected by the Kentucky State Police during January 1, 2013, through December 31, 2017, showed 176 crashes along the project corridor, including 5 fatalities and 39 injury collisions. Predominant crash types are single vehicle collisions (47%) and rear ends (32%). Locations are presented in **Figure 6**.

Fatality crashes, corresponding to stars moving left to right in **Figure 6**, included the following:

- March 31, 2016, at 7:56 AM, a single vehicle ran off the road at MP 12.702 in wet conditions. The eastbound motorist ran off the road to the right, striking several fixed objects before coming to rest on an embankment.
- November 1, 2014, at 1:42 AM, a single vehicle ran off the road at MP 13.509 in dry conditions. Drug/alcohol impairment suspected.



- January 21, 2015, at 7:07 PM, a single vehicle ran off the road at MP 14.436 in dry conditions. Factors suggest a medical event prior to the collision precipitated the event.
- October 31, 2013, at 1:34 PM, a head-on collision in wet conditions at MP 14.576, resulting in one fatality and four injuries. An eastbound car drifted off the right side of the roadway approaching a curve, over corrected, and slid into the curve as the roadway was wet, striking a westbound vehicle.
- January 20, 2015, at 12:07 PM, a three-vehicle head-on collision in dry conditions at MP 1.000, resulting in one fatality and four injuries. The eastbound car lost control, crossing into oncoming traffic.



**Figure 6: 2013–2017 Reported Crashes and Trends**

The KYTC uses a systematic procedure to identify locations having high crash rates. The actual number of crashes occurring within a roadway segment is used to calculate the Actual Crash Rate using the roadway length, daily traffic volume, and duration of the analysis period. Using an analysis procedure from the Kentucky Transportation Center (KTC) and referenced in *The Analysis of Traffic Crash Data in Kentucky (2012–2016)*, Actual Crash Rates are compared to the Critical Crash Rate for similar types of Kentucky roadways. The Critical Crash Rate is the rate which is statistically greater than the average crash rate for similar roadways and represents a rate above which crashes may be occurring in a non-random fashion. This ratio of Actual Crash Rate to the Critical Crash Rate is the Critical Crash Rate Factor (CCRF). Thus, a

CCRF greater than 1.0 indicates crashes may be occurring more often than can be attributed to random occurrence. As defined in the KTC methodology report, two analysis types were examined: “segments” and “spots.” Segments vary in length and are divided along roadways where the geometry or traffic volumes change. Spots are defined by analyzing 0.1-mile-long sections where crashes are concentrated.

While the data showed no segments with a CCRF greater than 1.0, two spots showed above average concentrations:

- “Dead Man’s Curve” at the Clarkline Road intersection (Ballard County MP 15.2–15.3) contained 11 total crashes including three injury collisions, resulting in a 1.4 CCRF. The majority of crashes (55%) involved a single vehicle.
- The offset KY 473 intersection in Kevil (Ballard County MP 15.9-16.0) contained 10 total crashes including two injury collisions, resulting in a 1.1 CCRF. Half the crashes occurred during 2016. Manner of collision was divided between rear end (40%) and single vehicle (30%).

## B. Logical Termini

The western terminus for the project is KY 310, a rural minor collector providing access to the northeast. A short segment extends beyond this terminus, necessary to transition back to the existing US 60 geometry. A separate KYTC project concept, CHAF 20060004, will eventually continue the improvement west through LaCenter.

The eastern terminus of the project is the existing four-lane section leading to Paducah, roughly 1.4 miles east of the county line. Engineers examined a variety of potential connection locations and improvement limits, considering existing geometry and safety factors.

### III. Alternatives Considered

Since the 2001 planning study, a series of potential improvements have been considered, culminating in three detailed study alternatives discussed herein, alongside the No Build Alternative.

#### A. Alternatives Development Process

**Initial Planning Effort.** The 2001 planning study identified two alternatives for consideration based on public input: a bypass south of Kevil and reconstructing the existing route. Either option used a divided four-lane or five-lane cross section. The report states:

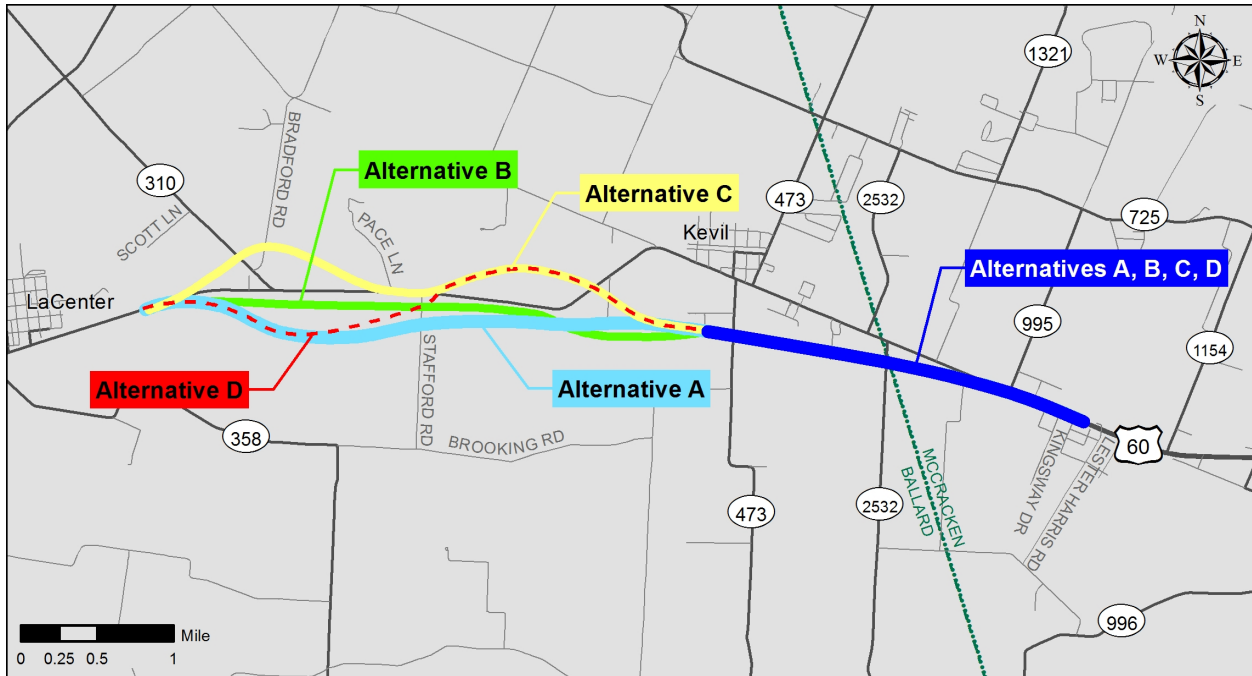
A southern bypass of Kevil appears to be the most preferred alternative. A bypass would result in fewer parcels and relocations; however, there would be loss of prime farmland. There are community concerns about the effects of a bypass on businesses that are currently located along the existing route, so a bypass should remain as close to Kevil as possible to maintain visibility of the community. A bypass would also allow continuation of a four lane, divided highway template that has been used on previously reconstructed segments of US 60.

A second alternate that should be investigated is the reconstruction of the existing route through Kevil. This would supposedly maintain visibility for the business along the existing route, but several of these businesses may need to be relocated due to the need for additional right of way. Additional right of way would also be needed to correct several vertical and horizontal curves that do not meet current standards. A five-lane section (four-lanes with a TWLTL<sup>2</sup>) should be utilized to reduce the right of way impacts. Curb and gutter with sidewalks would also need to be considered to reduce right of way requirements. Regardless of the section utilized along the existing route, it appears that significant business and residential impacts will occur. Numerous entrances occur through town, and accommodating these entrances will be difficult. There are also possible safety concerns where the roadway template would change from a four-lane roadway with depressed median to a five-lane section and vice versa. Safety problems may also result from a speed limit change that would likely be necessary if a curb and gutter section was utilized. It is necessary to fully investigate this option to demonstrate to the public the potential right of way and safety impacts of improving along the existing roadway.<sup>3</sup>

**State-Funded Design Process.** Following the planning study, preliminary design efforts commenced, including public meetings during February 2004 and December 2006. Four alignments were considered (**Figure 7**) with a rural, four-lane divided cross section and a 60 mph design speed.

<sup>2</sup> Two-way left turn lane.

<sup>3</sup> *Intermediate Planning Study: Ballard-McCracken Counties, US 60, Item No. 1-115.00* (December 2001). Prepared by KYTC Division of Planning.



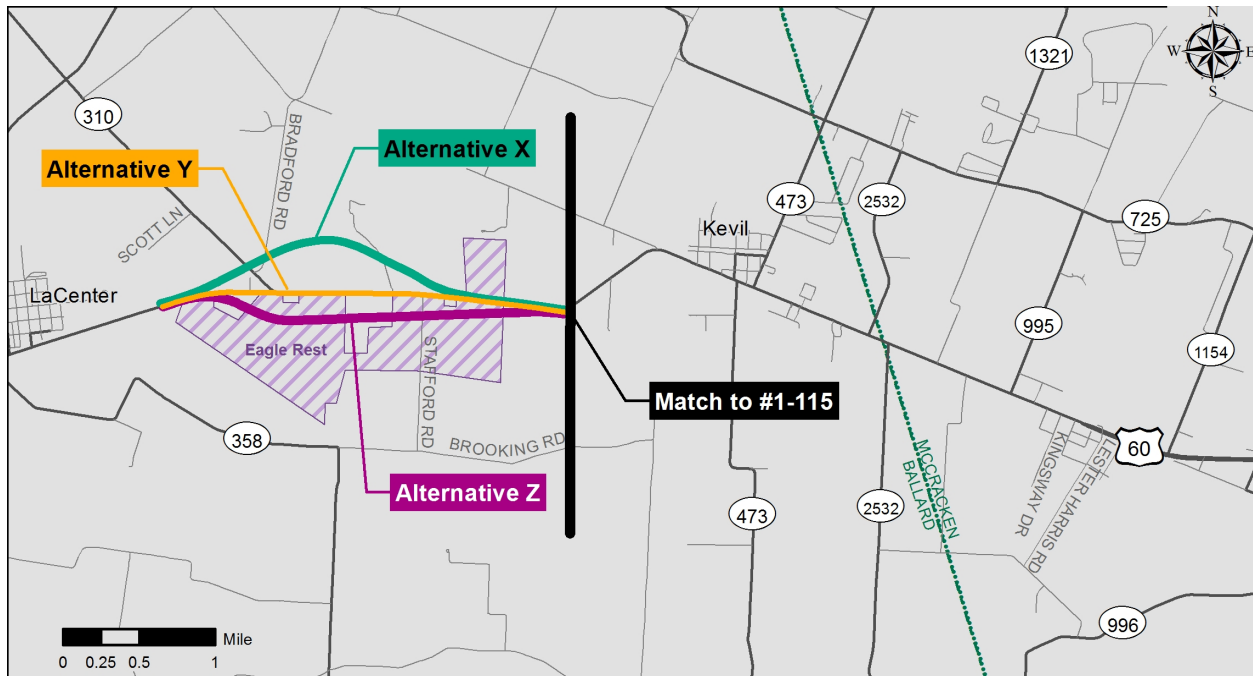
*Figure 7: Alternatives Considered c. 2007*

The 2007 DES states:

The four aforementioned alternatives were presented at the Preliminary Line and Grade meeting. During the PL&G meeting, Alternate A was ultimately chosen by the Project Team as the preferred alignment. Alternate A was chosen by the project team for several reasons, including:

- Lessened impact to existing houses and utilities along the corridor,
- Avoidance of several large ponds and improved stream crossing,
- Constructability and ease of maintenance of traffic during construction,
- Logical begin and end point between future sections of US 60 widening improvements.

Once the southern bypass concept was identified as the preferred alternative, the design process continued as a state-funded project. Some environmental investigations were conducted to resolve public concerns and address jurisdictional areas for future permitting needs. Concerns about potential historic preservation issues associated with Eagles Rest Farm led to three additional alternatives in the western section of the project (**Figure 8**): one curving to the north partially following the former railroad bed, one running adjacent to the existing alignment on the north, and one south of the existing route, similar to Alternative A from the 2007 DES.



*Figure 8: Western Alternatives Considered c. 2012*

**Federal-Funded Design Process.** Since this time, its prioritization in the 2018 SHIFT process with right-of-way funding in the FY 2018–2020 biennium led KYTC to federalize the project, adding a NEPA component to allow for future federal funding. Discussed below, three build alternatives—including a variation of the 2007 Alternative A preferred southern bypass—advanced for consideration in compliance with federal environmental regulations. The results of this assessment are presented throughout this EA.

## B. Alternatives for Detailed Study

Three build alternatives were advanced for detailed study, alongside the No Build Alternative.

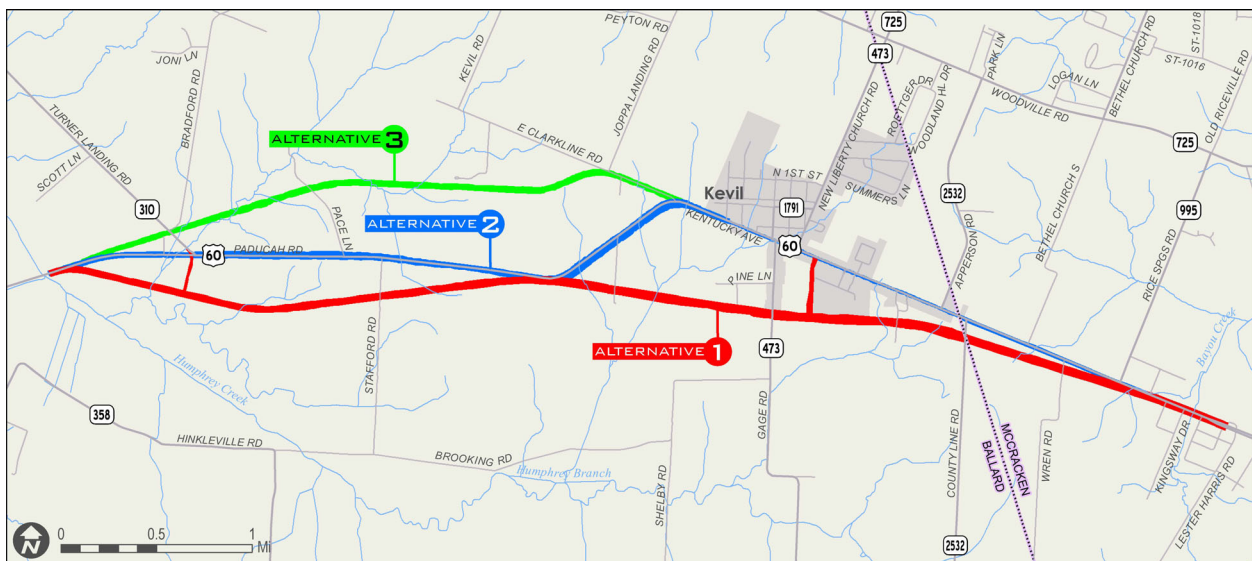
The No Build Alternative is one in which the KYTC would take no action to construct/reconstruct US 60; only routine maintenance would occur. While no new right-of-way would be acquired, the No Build Alternative does not improve east-west mobility and would not meet the stated purpose and need of the proposed project. However, it is carried forward as a baseline for comparing impacts among other alternatives.

**Build Alternatives.** Three build alternatives have been identified for detailed study, shown in **Figure 9**. A variety of typical sections was considered as part of the engineering design process: two to five travel lanes, various shoulder widths, rural or urban templates, etc. To be conservative, the largest footprint scenarios are evaluated herein; impacts may be reduced as preliminary designs are refined. Larger scale maps of the three Detailed Study Alternatives are presented in **Appendix A**.

- **Alternative 1** begins east of the bridge over Humphrey Creek, creating a new route on new alignment south of existing US 60. It ends at the improved four-lane section near Lester Harris

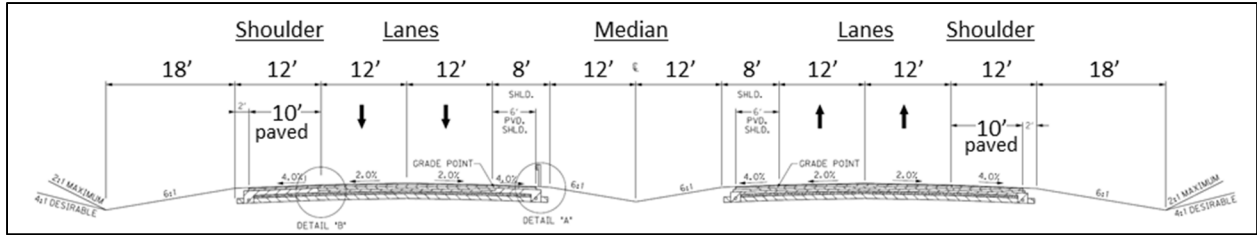
Road. The assumed cross-section is a four-lane divided rural highway. This option mimics the 2007 preferred Alternative A.

- **Alternative 2** begins east of the bridge over Humphrey Creek, generally following the existing US 60 alignment. The cross-section is a four-lane divided rural highway with five-lane urban section through Kevil. A narrower footprint with two to three lanes was also considered.
- **Alternative 3** begins east of the bridge over Humphrey Creek, creating a new route along the old railroad bed west of Kevil, then generally following the existing US 60 alignment through Kevil to the east. The cross-section is a four-lane divided rural highway with five-lane urban section through Kevil. A narrower footprint with two to three lanes was also considered. This alternative grew from a local suggestion to preserve access to Kevil businesses while minimizing property impacts.



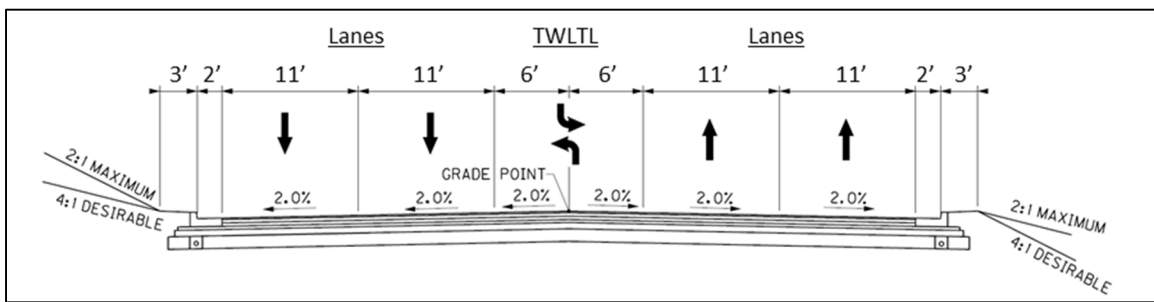
**Figure 9: Build Alternatives for Detailed Study**

For the Detailed Study Alternatives, a four-lane cross-section is assumed in rural areas with a five-lane cross-section in urban areas. To minimize relocation impacts, two to three lane cross sections were also considered initially. Per input from elected officials, other stakeholders, and the public, a wider cross section better addresses community goals for the proposed project. Shown in **Figure 10**, the rural section includes two 12-foot-wide travel lanes per direction, 12-foot-wide outside shoulders (10-foot paved), and 8-foot-wide inside shoulders (6-foot paved), separated by a depressed median.



**Figure 10: Four-Lane Rural Cross Section**

For urban sections along existing US 60 through Kevil, a five-lane cross section is assumed. Shown in **Figure 11**, the urban section includes four 11-foot-wide travel lanes, separated by a 12-foot-wide TWLTL in the center. Curb and gutter is included to minimize the width and help reduce impacts along the developed corridor.



**Figure 11: Five-Lane Urban Cross Section**

Preliminary cost estimates for each Detailed Study Alternative are summarized in **Table 2**.

**Table 2: Preliminary Cost Estimates by Phase, 2019\$**

Alternative	Right-of-Way	Utilities	Construction	Total
<b>Alt. 1 Preferred</b>	\$9.1M	\$10.3M	\$43.0M	\$62.4M
<b>Alt. 2</b>	\$19.6M	\$20.5M	\$44.4M	\$84.5M
<b>Alt. 3</b>	\$18.0M	\$13.3M	\$38.1M	\$69.4M

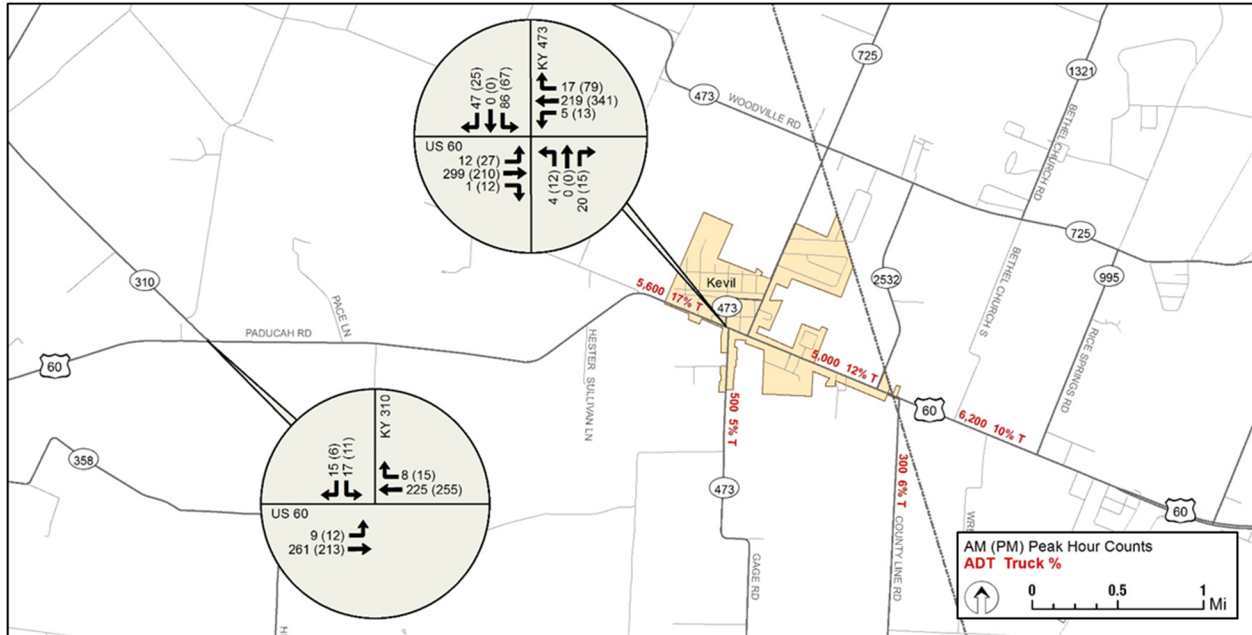
### C. Preferred Alternative

**Alternative 1**, a four-lane highway on new alignment south of existing US 60, is the Preferred Alternative.

- This alternative avoids/minimizes impacts to major red flag issues along existing US 60: homes and businesses, high pressure gas lines/pump station, the Daher-TLI facility, etc. There are no impacts to Section 4(f) resources: public parks, wildlife refuges, or historic properties.
- The vast majority of public surveys preferred it: 72–84% of over 300 respondents.
- Maintenance of traffic is less complex as the existing highway can continue to carry traffic while the new facility is built.
- Estimated costs for Alternative 1 are lower than the other Detailed Study Alternatives, with savings most notable in the right-of-way and utility phases.

## D. Traffic

Alongside historic traffic volumes, traffic data were collected during March 2019, summarized in **Figure 12**. Analysis shows stop-controlled approaches at both counted intersections operate at LOS C or better during AM and PM peak hours, which is generally considered acceptable for rural areas. Summarized in **Figure 3** (page 3), corridor traffic has experienced limited growth over the past two decades with overall volumes trending downward.



**Figure 12: 2019 Existing Traffic Volumes**

Year 2040 traffic volumes were forecast at the two counted intersections to estimate future demands on the corridor. In the future No Build scenario, US 60 volumes are projected to increase to 7,300 vpd west of KY 473 and 9,000 vpd to the east. Build Alternatives 2 and 3 mirror this traffic pattern as they generally improve the existing alignment. Build Alternative 1 moves the bulk of the traffic to the new alignment: 5,200 to 7,000 vpd would use the newly constructed southern alignment while 2,000 to 2,100 vpd remain on existing US 60.

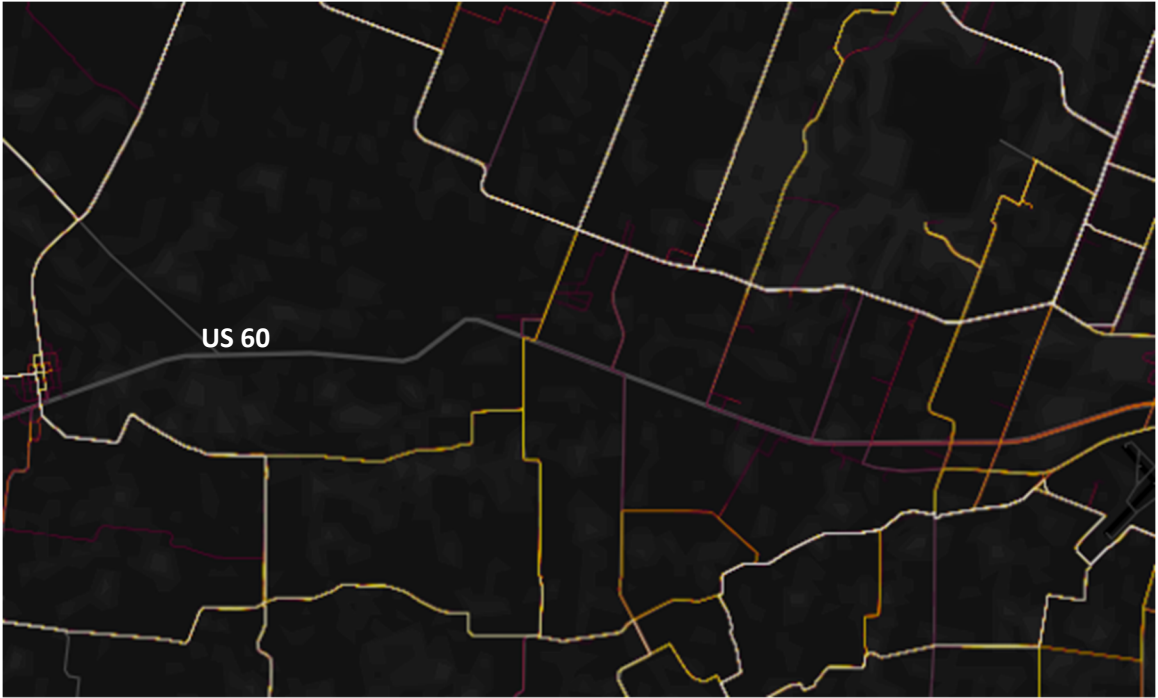
### 1. Bicycle & Pedestrian Facilities

There are no bicycle or pedestrian facilities along the US 60 project corridor. Strava heat maps<sup>4</sup> show moderate bicycle activity in the vicinity (**Figure 13**) with cyclists opting to travel adjacent rural routes rather than US 60. There is less pedestrian activity (**Figure 14**), with a small concentration within Kevil and more extensive network in LaCenter, west of the project limits. Warmer/brighter colors represent more usage.

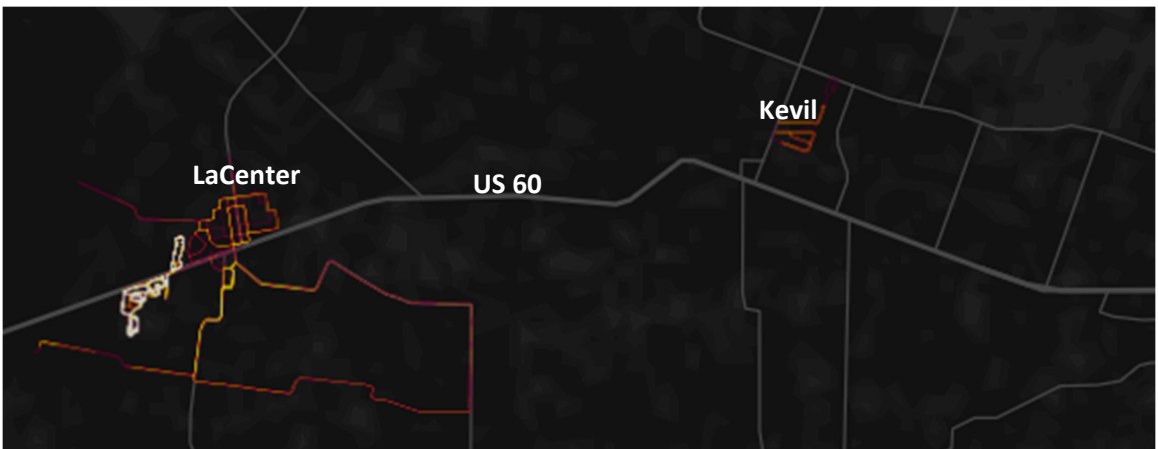
No bicycle/pedestrian improvements are planned as part of the project. However, wider shoulders associated with any Detailed Study Alternative provide a safer connection than the existing conditions.

<sup>4</sup> Online at <https://www.strava.com/heatmap#7.00/-120.90000/38.36000/hot/all>





*Figure 13: Strava Heat Map for Bicyclists in Project Vicinity*



*Figure 14: Strava Heat Map for Pedestrians in Project Vicinity*

## IV. Affected Environment and Impacts

Ballard and McCracken Counties are located in the Jackson Purchase physiographic region of western Kentucky, with the proposed project crossing the county line between the two. The Ohio River (8-10 miles north of the project) separates the area from southern Illinois; the confluence of the Ohio and Mississippi rivers at Wickliffe, KY (10 miles southwest of the project) divides the state from southeast Missouri. The New Madrid Fault Zone underlies the area, the most active earthquake zone in the eastern United States.

The only incorporated area within the project limits is Kevil, population 579, within Ballard County, population 8,152. The segment of unincorporated McCracken County containing the project more closely resembles adjacent Ballard County than Paducah to the east.

The following sections provide a description of the existing environment and present likely impacts associated with the Detailed Study Alternatives.

### A. Land Use

Land use within the area is primarily agricultural, with a mixture of rural residential, commercial, and industrial areas interspersed along the corridor. One large farm, the Eagles Rest Plantation, dominates the western section of the project area; it was donated to Murray State University as an agricultural research facility in 2016. The 16-acre West Kentucky Technology Park and Daher-TLI, a storage cylinder cleaning facility, represent the most notable industrial uses in the project area. Four large, high pressure gas lines transect the project area with an associated pumping station adjacent to the existing highway. Land use within Ballard County and the far western edge of McCracken County are relatively stable, with little development over the past decade and modest plans for the future.

#### 1. Existing Land Use

Paducah, located roughly 12 miles east of Kevil, is the nearest urban area with a formal land use plan. It shows the US 60 corridor as a densely developed commercial zone but limits future growth at the urban service boundary, which generally follows Massac Creek through the vicinity. The existing four-lane section of US 60 continues 6.5 miles west from the urban service boundary to the eastern limits of the Item #1-115.1 project. Mapping from the 2011 National Land Cover Database shows roughly 37% of the project area is farmlands—cultivated crops and hay/pasture—compared to 16% wooded and 44% developed areas. The context of major land use types within the countywide setting provides a broader understanding of the existing environment and potential impacts.

**Agricultural.** Agricultural enterprises—crops, livestock, poultry, and woodlands—exist throughout the project area. Much of the area is farmed, with large tracts protected by agricultural easements.

- According to the 2012 Census of Agriculture (the latest census available), there are 408 farms in Ballard County, comprising 107,186 acres, or approximately 61% of the county's total area. Countywide, the market value of products sold totals \$57.6 million, composed of 55% crop sales and 45% livestock sales. Cropland makes up 79% of the land in farms with soybeans and corn as the top crops by acreages. The average farm size is 263 acres.

- For McCracken County, there are 447 farms, comprising 67,192 acres or approximately 39% of the total county land area. The market value of products sold totals \$22.2 million, composed of 73% crop sales and 27% livestock sales. Cropland makes up 74% of the land in farms with soybeans and corn as the top crops by acreages. The average farm size is 150 acres.

One large farm, Eagles Rest Plantation, dominates the western section of the project area. The farm originally dates to the 1880s and was noted for its production of mules and jack stock although limited historic infrastructure remains. The property covers 500+ acres with holdings on both sides of US 60 and was surveyed for historic elements during 2009 based on input received from the property owner. Discussed further in **Section IV.G**, only one portion of the farm was identified



*Eagles Rest Plantation*

as eligible for the National Register of Historic Places (NRHP). Since that time, the bungalow associated with the historic portion was destroyed by fire (2014) and the entire property was donated to Murray State University as an agricultural research facility (2016).

**Rural Residential.** The Census tracts containing the project, shown in **Figure 15**, contain a total 4,399 housing units as of the 2016 American Community Survey (ACS) estimates. Occupied housing stock is primarily single-family detached homes (77%) and mobile homes (16%). An estimated 18.5% overall are rental units. The median home value for owner-occupied units is \$115,100 for Tract 9501 (Ballard County) and \$130,300 for Tract 315 (McCracken County), as compared to \$126,100 for the state. Median monthly rent is \$599-\$627 within the tracts, compared to \$690 statewide.

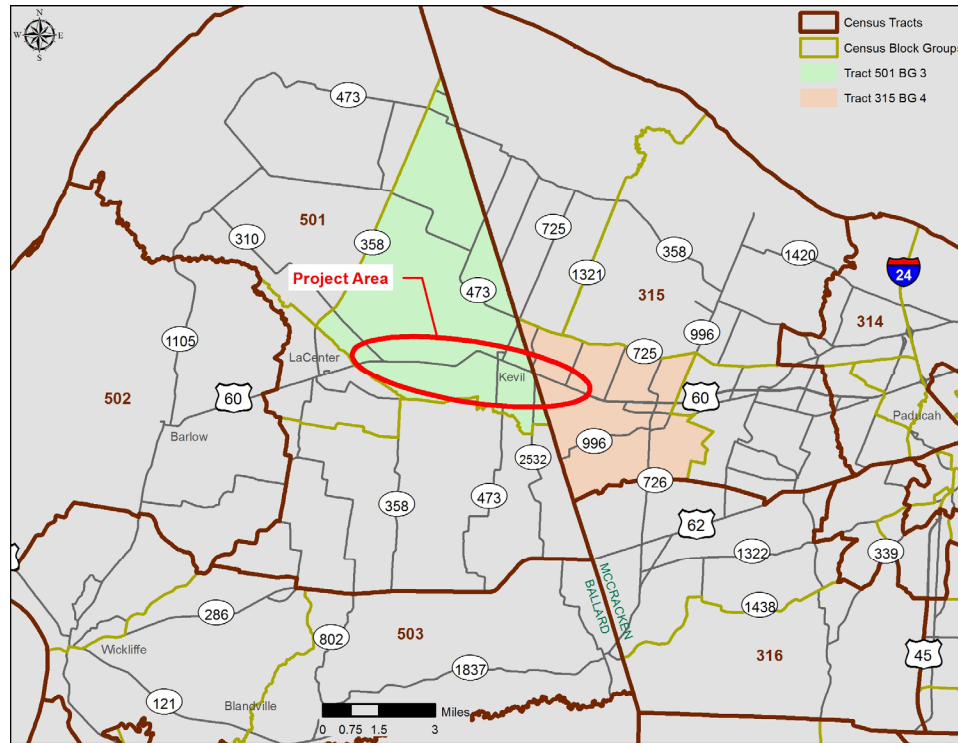
**Industrial and Commercial.** Scattered small businesses lie along the corridor, concentrated east of Kevil: various automotive parts/service/sales, home and farm supply retailers, professional offices, a gas station, restaurant, etc. The West Kentucky Technology Park covers 16 acres just east of the US 60/KY 473 intersection at Kevil, making it the largest functioning industrial park in Ballard County.

One industrial operation (Daher-TLI) and a small commercial cluster at the US 60/KY 310 intersection are located in the western portion of the project area. The largest employer in the area is Mid America Conversion Services,



*Daher-TLI Facility*

LLC (178 employees), a chemical conversion facility for cylinder surveillance and maintenance activities supporting nearby gaseous diffusion plants.



**Figure 15: Census Geographies within the Socioeconomic Study Area (SSA)**

According to the Ballard County Strategic Economic Development Action Plan, *20/20 Xtreme*,<sup>5</sup> a significant portion of the employment in this area comes from small businesses, which are very easily affected by economic downturns, booms, and economic changes. Over 55% of the businesses in Ballard County have less than five employees.

Numerous churches are located in the project vicinity; three are located within the project area. Community resources are discussed further in **Section IV.B** below.

**Utilities.** Utility companies that serve the project area include the following: Kentucky Utilities (electric), Jackson Purchase Energy Corporation (electric), New Commonwealth Natural Gas, Kevil Sewer System, Paducah McCracken Joint Sewer Authority, West McCracken County Water District, and Kevil Water Department.

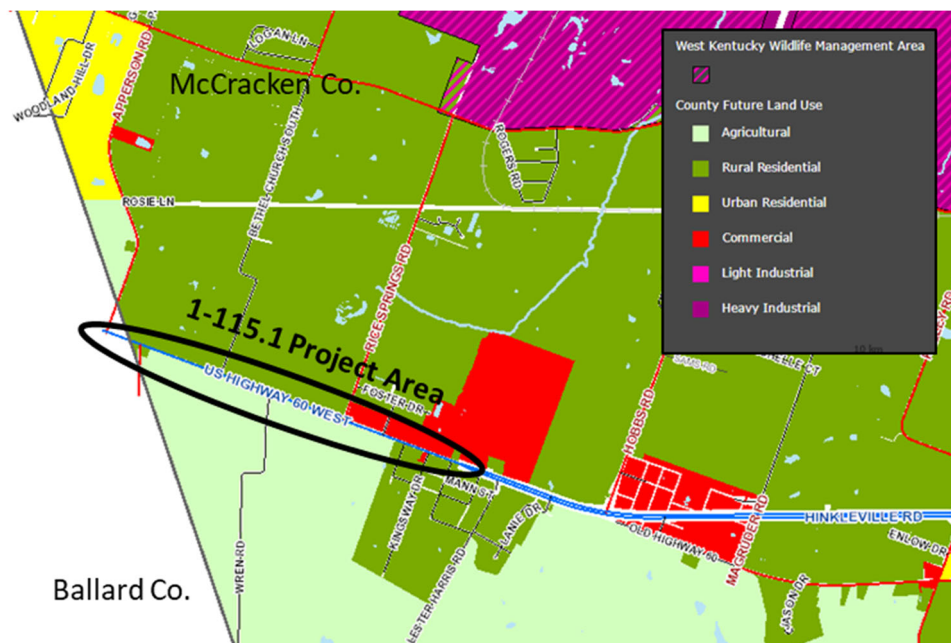
Four large, high pressure gas lines transect the project area; an associated pumping station is located on the north side of US 60 between Pace Lane and Stafford Road.

<sup>5</sup> Available online through Ballard County Economic Development & Industrial Board: <https://www.discoverballardcounty.com/wp-content/uploads/2018/08/Strategic-Plan-2018-Updated.pdf>

## 2. Regional and Community Plans

The project is located in a rural area, beyond the boundaries of a metropolitan planning organization (MPO) and subject to less stringent planning requirements. The proposed project is consistent with available regional/community planning efforts.

McCracken County's Planning and Zoning Commission prepared a *Comprehensive Plan*<sup>6</sup> for unincorporated areas of the county in 2013 to assess existing conditions and goals for future development. The plan lists the portion of the project (Item #1-115.1) as a long-term component of its transportation plan. Future land use for the McCracken County portion of the project is summarized in **Figure 16**; the area is anticipated to remain a mix of agricultural and rural residential uses.



**Figure 16: Future Land Use Map from McCracken County Planning and Zoning**

In Ballard County, *20/20 Xtreme* compiles existing community data and public comments to evaluate the county's strengths, weaknesses, opportunities, and threats to inform decisions regarding future growth. Among goals to improve eco-tourism and promote agricultural manufacturing, the strategic plan identifies a need to invest in infrastructure—including four-laning the US 60 highway from Kevil to Wickliffe. Specific to Kevil, the plan emphasizes the “short distance to Paducah 4-lane highway/I-24” to attract residents and businesses.

<sup>6</sup> Available online through McCracken County Planning and Zoning:  
<https://mccrackenky.com/departments/planning-zoning-administrator/>

### 3. Impacts to Land Use

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The improved route will provide increased mobility and safety for Ballard County and western McCracken County motorists. Residents of Kevil and LaCenter will benefit from an improved connection into Paducah. Based on 2013 Journey-to-Work Census data, 38% of Ballard County workers commute into McCracken County.

During the 2019 public meeting, attendees expressed concern about the impacts to the Kevil business community. A wider US 60 through town (Alternatives 2 or 3) would have more right-of-way and relocation impacts than a cross-county alignment. However, diverting through traffic south of town (Alternative 1, Preferred) would potentially impact the visibility of local businesses along US 60 today; the traffic forecast prepared for the project estimates a 75% reduction in daily traffic volumes on old US 60 if the new alignment is constructed. As the new southern route does not connect to existing utilities, costs to develop along relocated US 60 would be higher, potentially extending the timeline for any future development to occur along the new route.

Each of the Build Alternatives would cause the direct conversion of private taxable property to non-taxable government-owned right-of-way. Constructing any proposed Build Alternative would result in the permanent removal of a small area of land (90 to 130 acres) with up to 35 businesses and residences from the tax rolls. The taxable land loss would result in an initial minimal tax revenue loss to the city/county.

Regarding long-term socioeconomic benefits, the proposed project is expected to enhance the competitive and locational advantages for the corridor, particularly if four lanes are constructed. Although new development is not expected to locate nearby solely as a result of implementing the proposed project, the improved transportation network would be expected to complement local efforts to encourage new employment opportunities and attract business to the area.

**Utility Impacts.** The bulk of project area utilities run along existing roadways and would be disturbed by some or all the build alternatives: water, gas, electric, telephone, and fiber optic lines. There are sanitary sewer facilities in the Kevil area that would be impacted by Alternative 2 and 3 but most homes west of Kevil use septic systems. There are a few properties along the east end of the project area in Kevil served by a private sewer system along Alternative 1.

All three Detailed Study Alternatives cross over four large gas and crude oil transmission lines: Marathon's 40-inch high pressure petroleum line, Energy Transfer's 36-inch high pressure gas and 30-inch crude line, plus Marathon's 26-inch gas line. There is a high cost associated with these four large lines.

### 4. Impacts to Farmlands

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Due to the rural character of the project area, impacts to farmlands are unavoidable. Formal consultation with the U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) for compliance with the *Farmland Protection Policy Act of 1981* was completed (see **Appendix B**). In accordance with state and federal regulations concerning farmland protection, the Farmland Conversion Impact Rating for Corridor Type Projects, Form CPA-106 was used to evaluate this project's effect on farmland.

The majority of the project area soils are classified as prime or statewide important farmlands, as illustrated in **Figure 17**. Particularly west of Kevil, the majority of areas lining the US 60 corridor are used for cropland.



**Figure 17: NRCS Farmland Soils and Agricultural Districts**

According to the Kentucky Division of Conservation, much of the land lies within designated agricultural districts. The Agricultural District Program, created by KRS 262.850, is intended to protect agricultural land used for food/fiber production from non-agricultural uses. Specifically, land enrolled in the program cannot be annexed, cannot be condemned without mitigation, is taxed at the agricultural rate, is eligible for deferred water line extension costs, and receives extra points when applying for state cost share or to the Purchase of Agricultural Conservation Easements (PACE) Program.

**Table 3** summarizes the impact to farmland soils and agricultural districts for the three Detailed Study Alternatives.

**Table 3: Impacts to Farmlands**

	Alt 1 Preferred	Alt 2	Alt 3
Prime & Unique Farmland Converted	65.5 ac	88.0 ac	102.7 ac
Statewide/Local Important Farmland Converted	15.6 ac	6.3 ac	8.5 ac
Additional Right-of-Way within Agricultural District	26.6 ac	33.5 ac	9.8 ac
NRCS Farmland Rating Points	190	140	138

As USDA recommends in 7 CFR 658.4(c)(3): "...sites receiving scores totaling 160 or more be given increasingly higher levels of consideration for protection." Coordination with NRCS indicates Alternative 1 (Preferred) surpasses this threshold but no specific mitigation measures are

required. Farmland impacts associated with Alternatives 2 and 3 are below the 160-point threshold.

For any farm operations affected by a Build Alternative, a relocation assistance specialist will be assigned to help resolve problems resulting from splitting farms. Loss of farmland for right-of-way, or creation of an uneconomic remnant, will be addressed on a case-by-case basis during the right-of-way acquisition phase.

## B. Community Resources

Viewed through a more detailed lens than overall land use trends discussed above, this section describes specific community resources in the project area: civic uses, churches, medical facilities, etc. Potential relocations for each build alternative are also quantified.

Population trends are summarized in **Table 4**. According to Census data and population projections from the Kentucky State Data Center, Ballard County has seen minimal growth and is projected to slowly decrease into the future. McCracken County has seen more substantial growth but is expected to level off. The rural, far west section of McCracken County containing the project more closely resembles Ballard County than Paducah.

**Table 4: Population Trends and Projections**

Date	Kentucky		Ballard County		McCracken County	
	Total	% Change	Total	% Change	Total	% Change
1960	3,038,156	--	8,291	--	57,306	--
1970	3,218,706	5.9%	8,276	-0.2%	58,281	1.7%
1980	3,660,777	13.7%	8,798	6.3%	61,310	5.2%
1990	3,685,296	0.7%	7,902	-10.2%	62,879	2.6%
2000	4,041,769	9.7%	8,286	4.9%	65,514	4.2%
2010	4,339,367	7.4%	8,249	-0.4%	65,565	0.1%
2020	4,533,464	4.5%	8,164	-1.0%	65,317	-0.4%
2030	4,726,382	4.3%	8,005	-1.9%	65,376	0.1%
2040	4,886,381	3.4%	7,780	-2.8%	64,273	-1.7%

Sources: U.S. Census Bureau, through to 2010; Kentucky State Data Center

Discussed further in **Section IV.C**, the SSA population is predominantly white (98.5%) and generally older than the statewide average (43.3 vs 38.6 years).

The 2018 Comprehensive Economic Development Strategy<sup>7</sup> published by the PADD confirms a regional trend of moderate growth since the 1970s, peaking in the 1990s. The plan notes its population in the river counties (including Ballard) “can be partially attributed to a shrinking industry base and national trends of moving from rural to urban areas to seek employment.” The County’s Strategic Economic Development Action Plan cites the loss of jobs in Ballard County to the Wickliffe paper mill closing in 2016. The mill reopened in late 2018, with plans to invest \$150 million and create 500 jobs.

<sup>7</sup> Available online at [http://www.purchaseadd.org/files/PDF/Project\\_Development/CEDS\\_2018\\_Update.pdf](http://www.purchaseadd.org/files/PDF/Project_Development/CEDS_2018_Update.pdf)



## 1. Location of Existing Community Resources

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The locations of key community resource buildings are listed below:

- There are limited **government offices** in the project area. The Ballard County Economic & Industrial Board is located along US 60 just west of the county line. Kevil's city hall, fire department, and post office are located less than a block north of the project area. The Ballard County Conservation District office, under the US Department of Agriculture, lies along US 60 west of the KY 473 intersections.
- The West Kentucky **Technology Park** covers 16 acres southeast of Kevil, with anchor tenant Kevil Tool & Machine Manufacturing, Inc. and a handful of smaller businesses.
- Numerous **churches** are located in the vicinity; three are located within the project area:
  - Grace Valley Independent Baptist Church, located in the southwest quadrant of the US 60/Amy Lynn Drive intersection at Kevil;
  - Oak Grove Church, located south of Clarkline Road off Oak Grove Church Lane;
  - House of Prayer Independent Baptist Church, located north of US 60, with buildings east and west of the Bills Corner intersection, just east of the KY 310 intersection.
- Two **cemeteries** near the project area were identified during field surveys: one at Eagle Rest Plantation and one associated with Oak Grove Church.
- The nearest **emergency medical services** lie in Paducah; the county health department is located in LaCenter.
- Ballard County public **schools** are located along US 60 east of La Center. Heath Elementary and Middle schools are 5 miles east of Kevil, serving the McCracken County portion of the project area.
- **Murray State University** recently acquired Eagles Rest Plantation, a large farm within the western limits of the project, which they intend to use for research and development hub for cover crops and industrial hemp.
- There are no **parks** or recreation areas within the project area. Kevil has a city park one block north of the project area; the county fairgrounds are located in La Center.
- The nearest **wildlife/waterfowl refuge** is the West Kentucky Wildlife Management Area (WMA), managed by the Kentucky Department of Fish and Wildlife Resources. The site covers 6,425 acres and includes areas for fishing, hunting, hiking, horseback riding, archery, skeet shooting, wildlife viewing, and primitive camping.
- **Section 4(f)** regulations protect public parks, wildlife refuges, and historic resources from conversion to a transportation use. No public parks or refuges are within the footprint of the project; historic resources are discussed in **Section IV.G**.

- **Section 6(f)** regulations protect recreation and conservation areas improved with Land and Water Conservation Fund grants. While both Ballard and McCracken Counties have employed this program, no Section 6(f) resources exist in the project vicinity.

## 2. Relocations & Displacements

Information about relocations and other displacements was gathered during field visits and by reviewing preliminary designs for the three Detailed Study Alternatives. Summarized in **Table 5**, estimates are presented for both a conceptual two-lane facility and the four-lane configurations, likely to change somewhat during the final design process. To minimize impacts, an urban cross-section with curb and gutter was applied for widening through Kevil. Counts do not include ancillary structures, e.g., garages, sheds, barns, etc.

**Table 5: Right-of-Way and Relocation Estimates**

	Residential Relocations	Commercial Relocations	Parcels Impacted
Alternative 1 Preferred (4-5 Lane)	19-20	2	68
Alternative 2 (2-3 Lane)	13-16	8-10	167
Alternative 2 (4-5 Lane)	18-25	14	168
Alternative 3 (2-3 Lane)	11-15	8-10	149
Alternative 3 (4-5 Lane)	14-22	12	154

The majority of relocations for Alternative 1 (Preferred) are clustered in two areas:

- Seven mobile homes within the mobile home community along Amy Lynn Drive
- Five homes approaching the eastern project limit, fronting US 60 or Kingsway Drive.

Relocations for Alternatives 2 and 3 are also grouped in clusters, primarily along US 60 through Kevil and continuing east.

Regarding other community resources discussed in the previous subsection, few would be impacted by the Detailed Study Alternatives:

- Of the three churches in the vicinity, the **House of Prayer Independent Baptist Church**, which has buildings on both northern quadrants of the US 60/Bills Corner Lane intersection, would be relocated by the four-lane version of Alternative 2 to accommodate a frontage road for the adjacent homes.



*House of Prayer Independent Baptist Church, western building*

- Alternative 1 (Preferred) runs along the south and west boundaries of the **West Kentucky Technology Park** and would provide a connection from Veterans Avenue to the new US 60 facility. An estimated 2.1 acres of strip taking would occur along the outer edge of the parcels but no site improvement would be affected. Alternatives 2 or 3, which run concurrent in this location, runs along the northern border of the industrial park, widening existing US 60 to the south. The development would lose an estimated half-acre of strip taking along the existing highway but no site improvement would be affected.

**KYTC Relocation Assistance Program.** To minimize the unavoidable effects of right-of-way acquisition and displacement of people, the KYTC offers a Relocation Assistance Program in accordance with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970*, as amended. Housing and relocation resources would be available to all residential and business relocatees without regard to race, creed, color, national origin, or economic status, as required by Title VI of the *Civil Rights Act* of 1964. In accordance with Environmental Justice Executive Order 12898, an analysis was conducted to identify any geographic areas containing disproportionately high concentrations of minority or low-income populations, presented in **Section IV.C.**

The KYTC provides advance notification of impending right-of-way acquisition. Before acquiring right-of-way, all properties would be appraised on the basis of their fair market value. Owners of property to be acquired would be offered and paid fair market value for their property rights. No person lawfully occupying real property would be required to relocate without written notice of the intended vacation date; and no residential property occupant would be required to relocate until decent, safe, and sanitary replacement housing is made available. "Made available" means the relocatee has either obtained (and has the right of possession of) replacement housing on his/her own or the KYTC has offered the relocatee decent, safe, and sanitary housing within his/her financial means and available for immediate occupancy. KYTC has several options available to locate replacement housing, including:

- Relocating individuals into housing for sale on the real estate market, locally, regionally, or elsewhere.
- Repositioning dwellings on their existing property so they are outside the right-of-way limits.
- New house construction by the existing landowners.
- Advertisements in local media requesting to purchase housing meeting specific requirements.

A review of the local housing market reveals an ample supply of comparable housing available at any one time. For example, on REALTOR.com, as of February 2019, there were over 300 single-family listings in McCracken County, including 95 listings for less than \$100,000 and 105 listings from \$100,000 to \$200,000. Ballard County showed 43 single-family homes listed, with 27 listed for less than \$100,000. Paducah is home to several mobile home dealerships and rental communities. It is likely the relocations for this project would be accomplished using normal relocation procedures, although the need for Last Resort Housing may arise for low-income

relocatees. This program would be used if comparable replacement housing is not available, or is unavailable within the displacee's financial means, and the replacement payment exceeds the state legal limitation.

Under the Relocation Assistance Program, when right-of-way is acquired, at least one relocation specialist is assigned to the roadway project to execute the relocation assistance and payments program. The relocation specialist contacts each household to be relocated to ascertain individual needs and desires. The specialist also provides information, answers questions, and provides assistance in finding replacement property. Relocation services and payments are provided without regard to race, color, religion, sex, national origin, or economic status. All tenants and owner-occupant displacees receive an explanation regarding all options available to them, such as varying methods of claiming moving expenses reimbursement; replacement housing rental, either private or publicly subsidized; replacement housing purchase; or moving owner-occupied housing to another location. Financial assistance would be available to eligible relocatees for the following:

- Reimbursing the relocatee for the actual reasonable costs of moving from homes, businesses, and farm operations acquired for a highway project.
- Making up the difference, if any, between the amount paid for the acquired dwelling and the cost of a comparable decent, safe, and sanitary dwelling available on the private market.
- Providing expenses reimbursement, such as legal fees and other eligible closing costs incurred in buying a replacement dwelling.
- Making payment for eligible increased interest costs resulting from having to acquire a higher interest rate mortgage.

A displaced tenant may be eligible to receive a payment to rent a replacement dwelling or room or use as a down payment, including closing costs, on the purchase of a replacement dwelling. A brochure entitled "Your Benefits as a Highway Displacee under the Relocation Assistance Program" describes in detail the state assistance available, and would be made available to interested person(s).<sup>8</sup>

## C. Environmental Justice

Title VI of the 1964 Civil Rights Act requires each federal agency to ensure that "no person, on the ground of race, color or national origin, be excluded from participating in, denied the benefits of, or subjected to discrimination" under any program or activity receiving federal aid. Federal guidance on Environmental Justice (EJ) requires each federal agency to "identify and address disproportionately high and adverse human health or environmental effects of their policies, programs and activities on minority populations or low income populations." In September 2014, KYTC released its *Guidance for Environmental Justice*

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<sup>8</sup> Available online through the KYTC website at <https://transportation.ky.gov/RightofWay/AppraisalForms/Relocation%20Assistance%20Information%20Booklet.pdf>

*Analysis*, which was developed in association with FHWA staff to offer a streamlined approach to identifying and addressing EJ populations potentially affected by roadway projects within the state.

**Environmental Justice Impact Analysis.** In accordance with FHWA EJ policy and guidance, there are two key criteria for determining whether an action will cause a disproportionately high and adverse effect on minority populations or low-income populations:

- 1) An adverse effect that is predominantly borne by a minority or low-income population, or
- 2) An adverse effect that will be suffered by a minority or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority or non-low-income population.

Efforts were made to identify areas of low-income and minority populations within the study area, including: a review of census data, project mapping, field observations, and discussions with the McCracken County planning department

Recent Census estimates show the SSA contains an extremely small minority population (**Table 6**); 98% of area residents are white, well above the statewide or countywide averages. A summary of the ACS estimates for per capita and household income data is presented in **Table 7**. As illustrated in the table, McCracken and Ballard Counties are generally less wealthy than the statewide average. However, both tract and block groups generally exceed countywide levels in each metrics, with the one exception noted in red below. For reference, **Figure 15** (page 19) shows the geographic boundaries of Census areas discussed.

**Table 6: Population by Race**

	Population	One Race						2+ Races	Hispanic/Latino Origin
		White	Black/African American	American Indian/Alaska Native	Asian	Native Hawaiian/Other Pacific Islander	Other		
<b>Kentucky</b>	4,339,367	87.8%	7.8%	0.2%	1.1%	0.1%	1.3%	1.7%	3.1%
<b>Ballard County</b>	8,216	94.2%	3.6%	0.4%	0.5%	0.0%	0.0%	1.2%	1.2%
<b>Tract 9501</b>	4,546	94.5%	4.5%	0.3%	0.5%	0.0%	0.0%	0.2%	0.7%
<b>Block Group 3</b>	1,747	99.6%	0.3%	0.0%	0.0%	0.0%	0.0%	0.1%	0.7%
<b>McCracken County</b>	65,292	85.4%	11.1%	0.2%	0.7%	0.1%	0.3%	2.1%	2.3%
<b>Tract 315</b>	6,624	92.6%	5.7%	0.0%	0.0%	0.0%	0.2%	1.6%	0.2%
<b>Block Group 4</b>	1,987	97.6%	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	0.0%
<b>SSA</b>	3,734	98.6%	0.2%	0.0%	0.0%	0.0%	0.0%	1.3%	0.3%

Source: 2016 ACS 5-year estimates

**Table 7: Key Income Metrics**

	Median HH Income	Per Capita Income	% Below Poverty
<b>Kentucky</b>	\$44,811	\$24,802	18.8%
<b>Ballard County</b>	\$43,923	\$24,459	16.4%
<b>Tract 9501</b>	\$44,744	<b>\$24,063</b>	15.3%
<b>Block Group 3</b>	\$55,606	\$27,819	12.0%
<b>McCracken County</b>	\$42,303	\$28,926	17.8%
<b>Tract 315</b>	\$60,346	\$37,350	12.8%
<b>Block Group 4</b>	\$51,364	\$49,082	13.3%
<b>SSA</b>	\$53,485	\$38,451	12.7%

Source: 2016 ACS 5-Year estimates

Field observation indicated several clusters of likely low-income housing. The trailer park along Amy Lynn, which would be displaced under Alternative 1 (Preferred), exhibits visual evidence that tenants may satisfy federal poverty guidelines. Another section of homes fronting US 60 near Kingsway and Queensway drives approaching the eastern project limits likely also represents a cluster of low-income persons. No clusters of minority populations were identified during field visits.



*View south along Amy Lynn*

**Environmental Justice Findings: Relocation Impacts.** Per KYTC guidance, surveys were sent to the 20 potential residential relocatees for the preferred alternative during Summer/Fall 2019. One of the rental properties is currently vacant, reducing the number of households to 19 for this analysis. Eight surveys, representing 42% of residential relocatees, have been received to date.

Of the eight surveys, two indicated they are not an underserved population: disabled, elderly, limited English proficiency, zero car household, and/or minority. The other six surveys identified as belonging to one or more of these population groups.

Of the six EJ surveys received, five indicated they would be willing to relocate with financial compensation from the government; one was undecided. One of the tenants along Amy Lynn noted concerns: both residents have physical limitations and rely on their neighbors for transportation and other day-to-day assistance. Displacing this household represents an Adverse Effect under the EJ analysis.

Following KYTC guidelines, assumptions were made for the remaining eleven households:

- Making up 1.4% of the SSA population, Census data suggests zero households are likely to contain minority populations.

- Based on field inspections, five of the properties are likely low-income households. Each is assumed to represent an Adverse Effect.

As a result, 6-7 of 18 relocatees, or 32-37%, would receive an Adverse Effect determination.

In conclusion, 58% of potential household relocations are likely members of an EJ population and 32-37% would be adversely affected via **relocation impacts** by the preferred alternative.

**Environmental Justice Findings: Other Impacts.** Regarding other potential effects to EJ populations, **indirect effects** would be distributed evenly among all properties along the proposed Detailed Study Alternatives.

- No long-term, meaningful impacts on air quality are anticipated to result from construction of the proposed project.
- For the Preferred Alternative, noise impacts are clustered along Gage Road (6 impacted receptors) and the Amy Lynn trailer park (5 impacted receptors); no abatement measures are recommended for either site. Gage Road contains a collection of well-maintained single-family residences, some mobile homes, with no visual indicators to suggest low-income populations are a concern. EJ populations near the eastern limit of the project do not experience noise impacts in any build scenario.
- Short-term construction impacts—e.g., dust, noise, vibration, erosion, and/or traffic diversions—would be experienced similarly by all homes and businesses along the proposed build alternatives.

Regarding **positive effects** to EJ communities, the safer highway benefits all resident populations, including any EJ populations.

Therefore, while the project does have adverse effects to EJ populations, the impacts are not disproportionately high to the EJ population. It has been determined the project does not have a disproportionately high and adverse effect to EJ populations.

## D. Air Quality

Air quality management and protection responsibilities exist in federal, state, and local levels of government. The federal Clean Air Act is the primary statute that establishes ambient air quality standards and establishes regulatory authorities to enforce regulations designed to attain those standards. The US Environmental Protection Agency (EPA) is responsible for implementation. The Kentucky Energy and Environment Cabinet's Division for Air Quality operates the air quality monitoring program, implements the permit program, and works with MPOs, Area Development Districts, and the KYTC for transportation planning.

Due to the rural nature of the area and relatively low traffic volumes, air quality is not a major concern for the project. The project is listed in KYTC's latest Statewide Transportation Improvement Program, FY2019-2022, including the following components:

- Item #1-115.0, 3.7 miles of major widening, with 2020 right-of-way and 2021 utility funds.
- Item #1-115.1, 1.6 miles of major widening, with 2019 right-of-way and 2022 utility funds.

Ballard and McCracken Counties are in attainment for all criteria pollutants monitored by the US Environmental Protection Agency (EPA)—carbon monoxide (CO), ozone, particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>), lead, nitrogen dioxide (NO<sub>2</sub>), and sulphur dioxide.

- Based on the Kentucky CO Screening Criteria, this project does not meet the criteria requiring a project level analysis and will not produce a projected violation of the CO standard.
- The project is located in an Ozone attainment area and is not a project-level concern.
- The project is located in a PM<sub>2.5</sub> attainment area and it is not a project-level concern. Therefore, the conformity procedures of 40 CFR 93 do not apply.
- All areas in Kentucky are in attainment for PM<sub>10</sub>. Therefore, the conformity procedures of 40 CFR 93 do not apply.
- All areas in the Kentucky are in attainment for NO<sub>2</sub>.

No meaningful impacts on air quality—direct, indirect, or cumulative—are anticipated to result from construction of the proposed project.

**Mobile Source Air Toxics (MSATs).** As it creates a new link in the highway network but design year build traffic volumes are less than 140,000 vpd, the project has a low potential to lead to MSAT effects. For each build alternative, the amount of MSAT emitted would be proportional to the vehicle miles traveled (VMT) assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for each of the Build Alternatives is slightly higher than that for the No Build Alternative, because the new link attracts rerouted trips from elsewhere in the transportation network. This increase in VMT would lead to higher MSAT emissions along the new highway corridor, along with a corresponding decrease in MSAT emissions along the existing routes serving these traffic flows today. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to the MOVES2010b model maintained by the US EPA, emissions of all of priority MSATs decrease as speed increases. Because the estimated VMT under each of the build alternatives are nearly the same, it is expected there would be no appreciable difference in overall MSAT emissions among the various alternatives. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 80% between 2010 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action. Additional information is available online in FHWA's *Updated Interim Guidance Update on Mobile source Air Toxic Analysis in NEPA Documents*.<sup>9</sup>

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<sup>9</sup> Available online through FHWA website at [https://www.fhwa.dot.gov/ENVIRONMENT/air\\_quality/air\\_toxics/policy\\_and\\_guidance/msat/index.cfm#fig1](https://www.fhwa.dot.gov/ENVIRONMENT/air_quality/air_toxics/policy_and_guidance/msat/index.cfm#fig1)



## E. Noise

KYTC has developed a policy consistent with FHWA guidelines to determine the need, feasibility, and reasonableness of noise abatement measures, including barrier walls, for all major highway projects. FHWA, in 23 CFR Part 772, offers a number of measures for abating or eliminating highway noise impacts including traffic management measures, alteration of horizontal and vertical alignments, acquisition of property, construction of noise barriers, and noise insulation of public use or non-profit institutional structures.

An analysis was conducted for the proposed project to determine highway-generated noise impacts associated with the three Detailed Study Alternatives, summarized in **Appendix C**. FHWA defines noise thresholds for abatement for different property types: residential areas, parks, churches, schools, and more. Specialized software creates a model of the study area, building in highways, traffic, noise-sensitive receptors, terrain, vegetation, and other elements that influence the noise environment.

In October 2018, analysts measured existing sound levels at five representative locations throughout the study area. These measurements were used to calibrate the model, estimating noise levels for 110 homes, churches, and businesses. Existing noise levels, measured in A-weighted decibels (dBA) averaged over an hour, range from 39 to 68 dBA. **Figure 18** relates these values to common noise levels for reference.

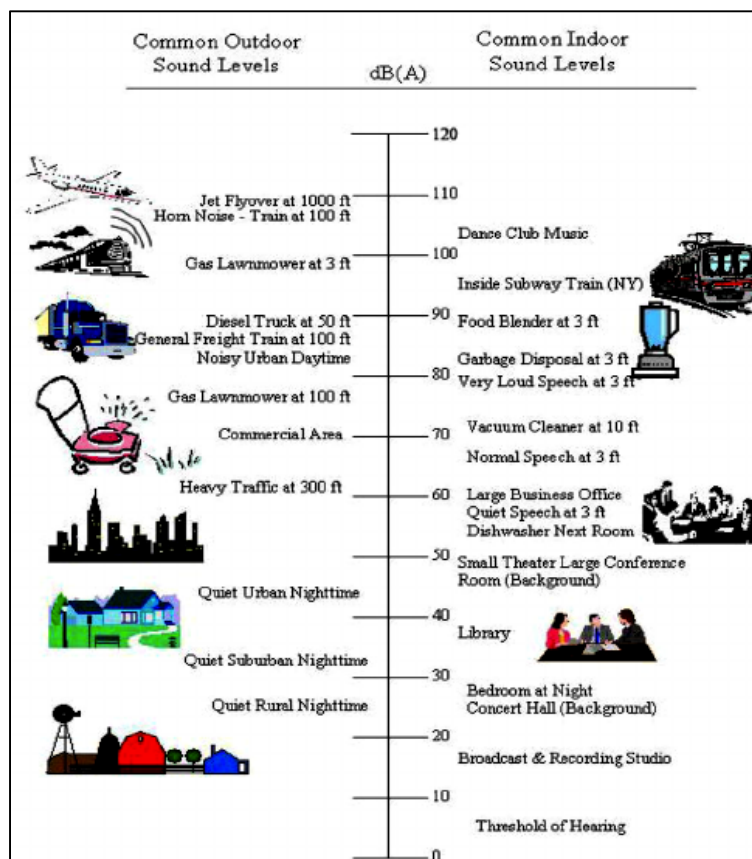


Figure 18: Reference Noise Levels

For the 2040 analysis year, existing traffic volumes were forecast to grow, increasing from 5,900-7,300 vpd using US 60 today to 7,300-9,000 vpd by 2040. These traffic volumes were applied to the existing highway network, representing the future No Build scenario. Compared to existing levels, noise increased by 0.4 to 1.0 dBA. Generally, a 3 dBA change is considered barely perceptible to the human ear.

The noise model was also run to simulate future conditions for each of the Detailed Study Alternatives. A receptor is considered impacted if it approaches/exceeds the federal noise abatement criteria (NAC) or increases by 10 or more dBA versus the existing condition.

- Alternative 1 (Preferred) would impact 18 receptors. Most of the impacts represent a substantial increase as the corridor today, removed from the existing highway, is generally very quiet.
- Alternative 2 would impact 23 receptors. Located along US 60 today, 10 of the impacted receptors exceed the NAC in the future No Build scenario as well.
- Alternative 3 would impact 16 receptors.

**Table 8** and **Figure 19** (page 36) summarize predicted noise levels at individual receptors. In the table, green highlights represent impacts; bold text denotes locations that exceed the federal NAC threshold.

**Table 8: Predicted Noise Levels**

Receptor	Existing Noise Levels	Predicted Noise Levels (dBA)			
		2040 No-Build Alternative	2040 Build Alternative 1	2040 Build Alternative 2	2040 Build Alternative 3
1	63.5	64.5	59.8	64.3	63.5
2	64.9	65.8	61.2	<b>66.1</b>	62.9
3	63.1	64.1	59.8	<b>67.9</b>	60.6
4	56.6	57.6	54.5	60.5	54.4
5	64.6	65.6	60.9	65.6	61.9
6	63.3	64.3	59.6	64.5	60.6
7	64.4	65.3	60.7	65.3	61.2
8	63.6	64.6	59.9	64.7	60.4
9	65.1	66.0	61.4	<b>72.4</b>	61.5
10	66.7	67.7	63.1	<b>67.3</b>	63.3
11	68.4	69.4	64.9	<b>68.6</b>	65.0
12	56.0	56.9	52.1	59.2	52.3
13	62.8	63.7	58.7	<b>67.9</b>	58.8
14	57.8	58.6	53.5	58.9	53.8
16	60.4	61.3	56.3	61.7	56.3
17	56.6	57.4	52.3	59.2	52.3
19	65.0	65.9	60.6	<b>71.1</b>	60.6
21	65.9	66.7	61.4	<b>74.1</b>	63.9
22	53.9	54.8	50.8	55.7	49.5
23	67.5	68.3	63.6	65.1	63.6
24	68.0	68.8	64.0	64.9	64.0
25	45.5	46.4	47.4	41.9	38.7
27	64.6	65.4	60.7	63.4	60.5
28	64.3	65.1	60.4	63.6	60.2
29	62.5	63.3	58.6	<b>66.4</b>	58.3
30	60.2	61.1	57.1	62.0	56.1
31	64.6	65.5	61.3	64.7	60.5
32	66.4	67.2	63.1	<b>75.4</b>	62.5
33	63.9	64.7	61.8	<b>69.1</b>	59.9
34	60.7	61.6	58.2	60.8	56.1
35	64.6	65.5	62.3	63.7	60.6
36	64.3	65.1	62.3	63.5	60.2

Receptor	Existing Noise Levels	Predicted Noise Levels (dBA)			
		2040 No-Build Alternative	2040 Build Alternative 1	2040 Build Alternative 2	2040 Build Alternative 3
37	64.2	65.1	63.0	63.3	60.2
38	63.1	63.9	62.5	62.4	58.9
39	62.9	63.7	60.6	62.8	58.5
40	52.0	52.9	54.6	56.4	48.1
42	45.9	46.8	57.1	48.2	43.0
43	45.3	46.1	48.4	47.6	42.6
44	43.1	44.0	45.9	45.1	40.9
45	42.6	43.4	53.3	44.7	40.6
47	42.0	42.8	48.0	43.3	42.4
48	42.2	43.0	47.8	43.3	42.4
49	41.3	42.1	51.9	42.4	41.8
50	40.8	41.5	58.2	41.8	41.0
51	40.1	40.8	66.5	41.1	40.1
52	39.8	40.5	58.6	40.7	39.8
54	62.0	62.9	56.7	73.2	63.4
55	62.1	63.1	56.8	72.8	64.0
56	66.9	67.6	61.5	66.1	67.6
57	63.0	63.8	57.7	61.7	62.8
58	53.9	54.9	49.0	57.9	55.1
60	65.7	66.5	60.4	67.7	67.6
61	60.4	61.0	54.7	60.6	60.6
62	60.4	61.0	54.4	60.7	60.6
63	62.4	62.9	55.9	62.5	62.5
64	66.3	66.8	59.4	68.5	68.5
65	65.2	65.6	58.3	67.6	67.6
66	43.5	44.2	47.6	44.4	44.1
67	43.1	43.7	49.2	43.9	43.6
68	42.7	43.4	49.5	43.6	43.3
69	42.3	43.0	51.7	43.1	42.8
70	42.0	42.7	51.9	42.8	42.5
71	41.5	42.1	55.6	40.7	39.9
72	41.8	42.4	54.7	42.5	42.2
73	41.3	41.9	59.4	42.0	41.6
74	40.9	41.6	63.2	41.7	41.3
75	40.1	40.8	59.1	40.9	40.4
77	39.7	40.4	53.7	40.4	39.8
78	38.9	39.6	47.6	39.6	38.9
79	38.7	39.4	46.3	39.4	38.7
80	38.8	39.5	47.0	39.5	38.9
82	64.8	65.2	57.2	67.1	67.1
83	65.9	66.4	58.1	68.5	68.5
84	63.4	63.9	55.8	65.5	65.5
85	65.5	66.0	57.7	68.4	68.4
86	64.8	65.3	57.0	67.4	67.4
87	64.5	64.9	56.6	66.3	66.3
88	64.7	65.1	56.8	66.8	66.8
89	64.7	65.1	56.9	66.8	66.8
91	62.9	63.3	55.4	62.0	62.1
92	64.1	64.5	56.5	63.0	63.0
93	64.6	65.1	56.8	63.0	63.0
95	63.0	63.5	56.1	63.3	63.3
96	66.6	67.1	59.4	67.3	67.2
98	43.8	44.3	74.0	45.0	44.8
100	61.8	62.2	55.9	60.2	60.2
101	55.6	56.1	53.7	56.2	56.2

Receptor	Existing Noise Levels	Predicted Noise Levels (dBA)			
		2040 No-Build Alternative	2040 Build Alternative 1	2040 Build Alternative 2	2040 Build Alternative 3
102	48.3	48.8	59.9	49.3	49.3
103	44.6	45.1	62.4	45.6	45.5
104	43.7	44.2	57.3	44.7	44.6
105	43.1	43.6	54.7	43.9	43.9
106	43.3	43.8	54.8	44.1	44.0
107	59.9	60.4	56.1	60.4	60.4
108	60.0	60.4	56.1	60.4	60.4
109	60.8	61.3	56.7	60.9	60.9
110	60.5	61.0	56.5	60.5	60.5
111	64.5	65.0	59.9	65.1	65.1
112	59.7	60.1	58.0	58.7	58.8
114	45.3	45.7	54.6	42.9	42.9
120	41.2	42.0	40.3	43.4	71.4
121	40.3	41.1	40.1	42.3	59.2
122	40.0	40.8	38.9	41.0	51.5
123	40.4	41.2	39.3	41.3	54.0
124	41.0	41.9	39.8	42.1	59.1
125	42.8	43.6	40.8	44.1	72.3
126	46.2	47.1	43.2	47.8	54.1

To abate noise impacts, KYTC policy defines feasibility and reasonableness criteria to determine when noise barriers merit consideration. A proposed barrier must provide a minimum 5 dBA reduction for at least three impacted receptors, must be feasible from an engineering perspective, and must satisfy a maximum cost per benefitted receptor requirement. For the proposed US 60 project, no noise abatement measures were identified for further consideration. Eliminating receptors likely to be displaced by each respective build alternative, the remaining receptors are generally too scattered to satisfy noise reduction goals. One area along US 60 does have receptors closely spaced along existing US 60 but individual driveways to access these properties make a barrier infeasible. Additional abatement measures were determined not to be effective; none are proposed for future consideration.

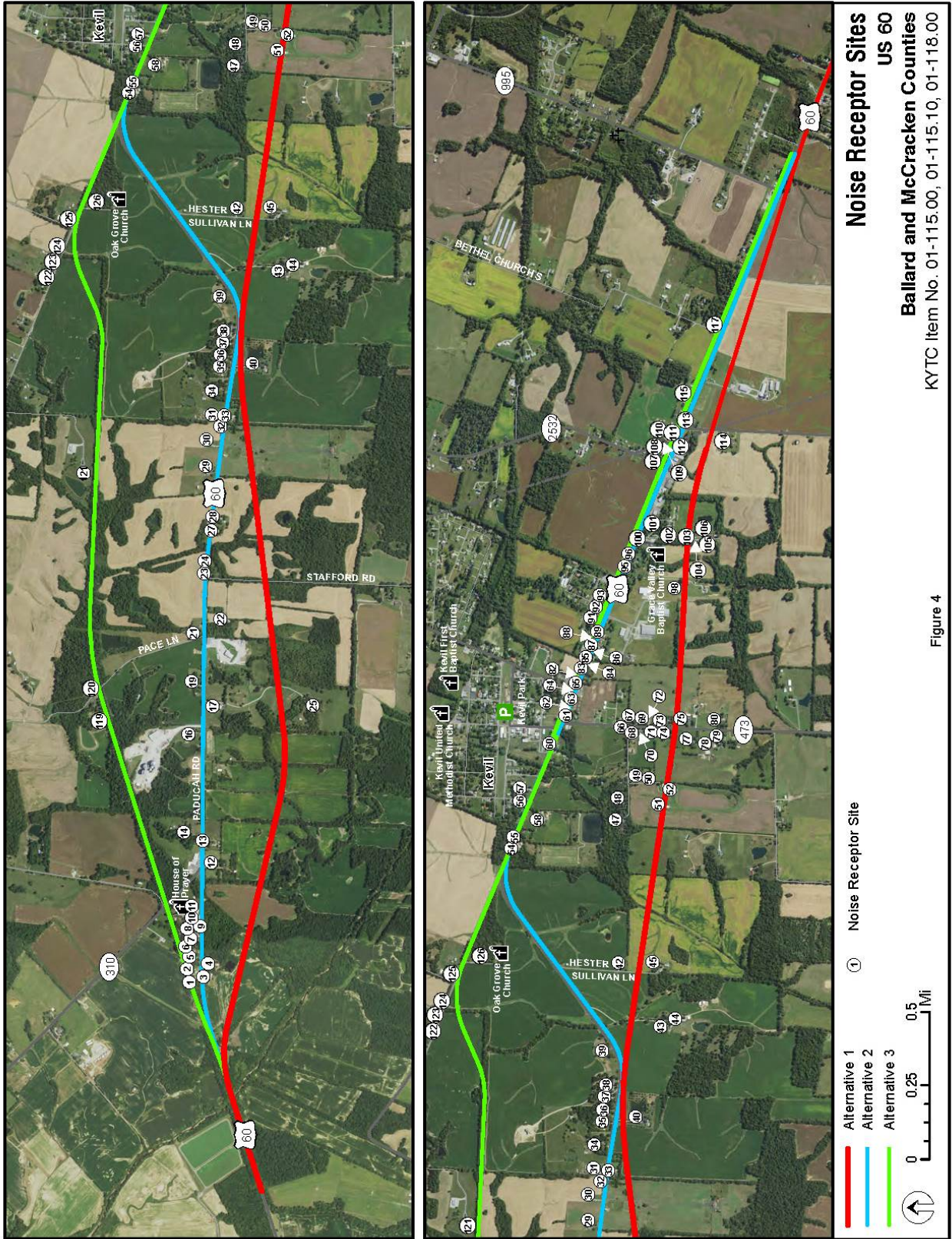


Figure 19: Noise Receptor Locations

## F. Aquatic and Terrestrial Ecosystems

An ecological baseline study was conducted during 2018-2019 to assess potential impacts to ecological resources. The effort included coordination with state and federal agencies, an inventory of the environmental setting, literature reviews, field surveys/sampling, and impact assessment. The baseline is included as **Appendix D**. No wildlife management areas, public forests or parks, exemplary natural communities, or champion trees were identified in the project area. No Cold Water Aquatic Habitat, Outstanding State Resource Waters, Exceptional Waters, Reference Reach Waters, Kentucky Wild River, or Outstanding National Resource Waters are nearby.



### 1. Streams, Wetlands, & Floodplains

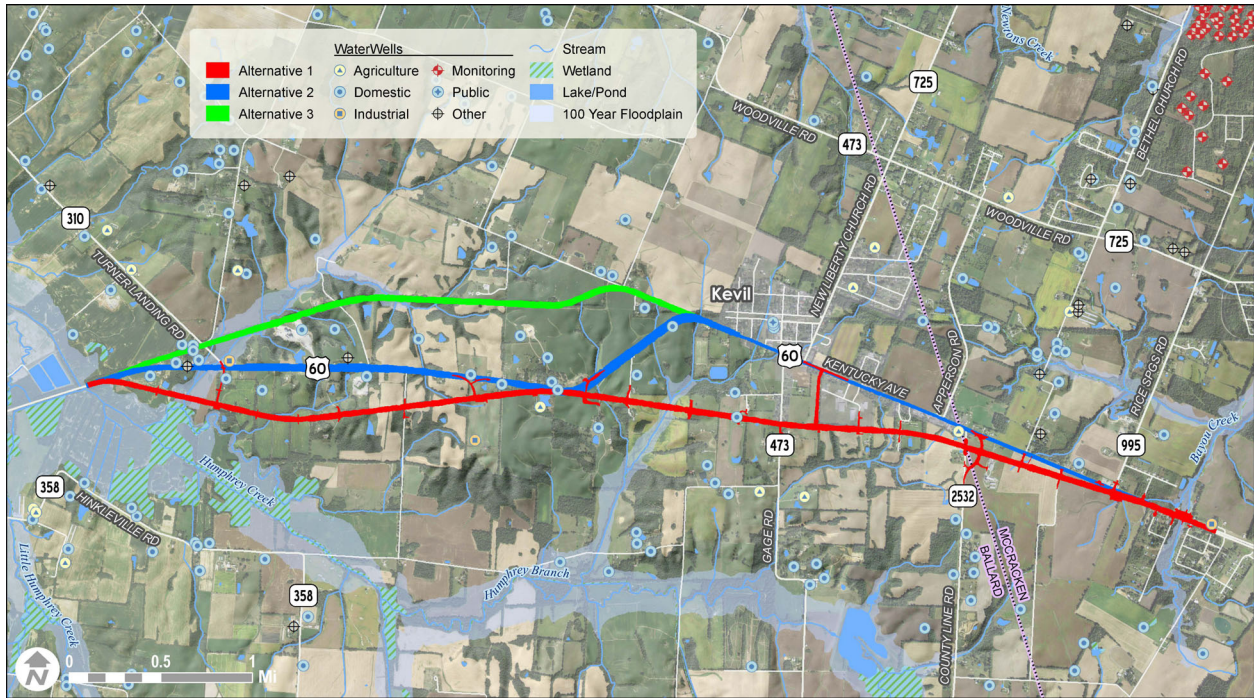
Jurisdictional under the Clean Water Act, “waters of the US” includes streams, wetlands, and some other surface water features regulated by the federal government, specifically the US EPA and US Army Corps of Engineers. Desktop research and field surveys were conducted during 2018-2019 to locate these resources. The project area lies in the Upper Humphrey Creek, Bayou Creek/Ohio River, and Middle Humphrey Creek watersheds.



*Representative Project Area Streams*

Investigations identified 38 streams, 15 wetlands, and two ponds within the project area. Streams, ponds, and wetlands identified within the project area are shown in **Figure 20**, alongside floodplain data from FEMA.

- Humphrey Creek, downstream of the project, is included in the Kentucky 2016 303(d) list, a statewide list of waterbodies impaired by pollutants. The pollutant listed for Humphrey Creek is fecal coliform of an unknown source.
- Bayou Creek, from the Ohio River to the headwaters, is also included in the Kentucky 2016 303(d) list. The pollutants listed for Bayou Creek include copper, lead, mercury, sedimentation/siltation, and nutrient/eutrophication biological indicators. The suspected sources of these pollutions are inappropriate waste disposition, industrial point source discharge, and non-irrigated crop production.



**Figure 20: Project Area Water Resources**

Various aquatic samples were collected during May 2018, August 2018, and February 2019 to establish baseline biological conditions, evaluating the overall health of project area streams. Macroinvertebrate sampling suggests stream quality is “very poor” at all four sample sites. Fish sampling rated three of the four sites as fair to good, with the fourth site dry during the field assessment; fish samples were dominated by facultative headwater species that tend to increase with impaired water quality. Stream habitat evaluations at 38 sites noted “poor” ratings at 28 sites through “good” ratings at two sites.

**Table 9** summarizes impacts to water resources based on preliminary designs for the Detailed Study Alternatives.

**Table 9: Impacts to Water Resources by Detailed Study Alternative**

Category	Alternative 1 (Preferred)	Alternative 2	Alternative 3
Stream Impacts	4,300 LF 15 streams	3,632 LF 12 streams	6,451 LF 24 streams
Perennial	1,272 LF	1,173 LF	1,983 LF
Intermittent	1,568 LF	1,172 LF	2,625 LF
Ephemeral	1,460 LF	1,287 LF	1,843 LF
Wetland Impacts	0.14 acres	0.63 acres	2.42 acres
Pond Impacts	None	0.09 acres	0.11 acres
Floodplain Impacts	9.15 ac	3.79 ac	6.57 ac

**Stream Impacts.** Construction activities and associated erosion will produce short-term and long-term impacts to streams in the project corridor. Potential direct, indirect, and cumulative impacts include:

- During construction, the potential for sedimentation may increase as sediments are exposed, extracted, and moved. Increased sedimentation can cause reduced stream capacity, which can increase flooding potential and smothering of aquatic habitat. Because fresh sediment and rock are exposed, levels may increase for parameters such as turbidity, conductivity, and suspended solids.
- Potential increases in the amount of impervious surface area following construction may contribute to greater and more rapid surface runoff to streams. Increased runoff during storm events may cause increased instream flows and velocities.
- New road surfaces will increase the potential for road salt, oil, antifreeze, and other nonpoint source pollutants to impact aquatic environments.
- Removal of any stream canopy may cause an increase in average stream temperatures during warmer months. Higher stream temperatures support lower concentrations of dissolved oxygen. Both factors have a negative impact on resident animal communities; in addition, more open canopies and the subsequent increase in sunlight promotes excessive algal growths.
- If not revegetated, streambanks may be less stable and could erode and release sediment into stream channels. Increased sediment inputs reduce in-stream cover for fish and macroinvertebrates.
- Removal of riparian vegetation along streams may also reduce the amount of coarse woody debris (i.e., sticks and leaves) entering the stream systems. This material represents an energy source for organisms inhabiting stream systems.

Strict adherence to KYTC's *Standard Specifications* will minimize erosion and in-stream siltation. Guidance for sediment control is also provided in the FHWA *Best Management Practices (BMP) for Erosion and Sediment Control*. An erosion control plan should be developed for the project and approved by KYTC DEA prior to construction. The plan should include stringent erosion control methods, monitored periodically to ensure that they are functioning as planned. Similarly, the Kentucky Department of Fish and Wildlife Resources recommended numerous BMP for all portions of the project corridor where streams are crossed.

**Wetland Impacts.** Construction will result in a direct impact to wetlands through filling, grading, and conversion to roadway. Avoidance measures should be used to avoid, reduce, or eliminate impacts to wetlands. Proper BMPs to reduce or eliminate runoff of contaminants should be used, including the proper use of silt fencing to protect wetlands from contamination and sedimentation.





*Representative Project Area Wetlands*

**Permits.** Impacts associated with implementing any Detailed Study Alternative are anticipated to require a 404 Permit issued by the US Army Corps of Engineers and a 401 Water Quality Certification and/or Permit to Construct along a Stream issued by the Kentucky Division of Water. Any alternative will require permanent stream loss greater than 300 feet on a single stream; therefore, mitigation for stream impacts may be required.

## 2. Threatened and Endangered Species

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The project area is located within the Mississippi Valley Loess Plains III ecoregion, characterized as an agricultural area composed of gently rolling uplands, broad bottomlands, and terraces. Natural vegetation was a mix of oak-hickory forests and prairie; grasslands and forested wetlands were once widespread but now have been replaced by cropland. High turbidity and siltation are common in the streams and rivers; many channelized streams occur. No unique species or terrestrial habitats were observed during 2018-2019 field surveys.

The US Fish and Wildlife Service (USFWS) lists four protected species potentially occurring with the project area:

- Gray Bat, *Myotis grisescens*, federally endangered, which dwell in caves year-round and forage along streams and other waterbodies.
- Indiana Bat, *Myotis sodalis*, federally endangered, generally dwell in caves during winter months and forests during summer months, roosting in exfoliating bark and tree cavities.
- Northern Long-eared Bat, *Myotis septentrionalis*, federally threatened, generally dwell in caves during winter months and during summer months roost on trees, bridges, barns, or other structures as available.
- Least Tern, *Sterna antillarum*, federally endangered, found primarily along seacoasts, lakes, and rivers where it rests on beaches, sandbars, and mudflats.

Suitable forest habitat for bats exists along the project corridor but no portals, caves, or open sinkholes were observed within one kilometer. No caves occur within five kilometers according to Kentucky Speleological Society records. No habitat for Least Tern was observed. **Table 10** summarizes available habitat within the project area for each Detailed Study Alternative.

**Table 10: Listed Species Habitat by Detailed Study Alternative**

Category	Alternative 1 (Preferred)	Alternative 2	Alternative 3
Bat Habitat, Forests	18 acres	14 acres	47 acres
Bat Habitat, Streams	3,594 LF	3,142 LF	6,879 LF
Bat Habitat, Caves/Portals	None	None	None
Least Tern Habitat	None	None	None

**Impacts to Threatened/Endangered Bats.** All practicable resources should be utilized to minimize impacts to threatened/endangered species habitats. BMPs should be applied at stream crossings to minimize erosion and sedimentation. Implementation of a well-developed erosion control plan, as well as the utilization of diversion channels and silt barriers, temporary seeding and mulching of cut and fill slopes, and limiting in-stream activity will minimize these adverse impacts.

Mitigation for impacts to forested Indiana bat habitat should be addressed by adhering to the current *Indiana Bat Programmatic Agreement* between KYTC, FHWA, and the USFWS and/or the *Range Wide Consultation and Conservation Strategy*. Because the project is not located within 1/2 mile of a known hibernacula or within 1/4 mile of a known summer maternity roost tree, it is covered under the Final 4(d) rule and compensatory mitigation and seasonal tree clearing restrictions will not be required for impacts to the Northern long-eared bat.

Impacts to Gray bat habitat and winter roost habitat for Indiana bat and Northern long-eared bat will be addressed through a Biological Assessment with USFWS coordination, including an effects analysis regarding the project’s impacts to forests and streams. This coordination will occur prior to the FONSI.

## G. Section 106 Cultural Historic & Archaeological Resources

The National Historic Preservation Act requires federal agencies take into account the effects that their activities and programs have on important historic properties. Important historic properties are those that are listed in or eligible for the National Register of Historic Places (NRHP). The NRHP is a list of districts, sites, buildings, structures, and objects administered by the National Park Service, which has developed national evaluation criteria to guide the selection of properties determined eligible for listing. The quality of significance in American history, architecture, archaeology, engineering, or culture may be present in resources that possess integrity of location, design, setting, materials, workmanship, feeling, and association with one or more of the following four criteria, defined in 36 CFR 60.4:

- A. Events that have made a significant contribution to the broad patterns of American history on a local, state, and/or national level
- B. Lives of persons significant in the history of the city, state, and/or the United States
- C. Distinctive characteristics of a type, period, or method of construction, or the work of a master, or high artistic values, or a significant and distinguishable entity whose components may lack individual distinction
- D. Information important in prehistory or history

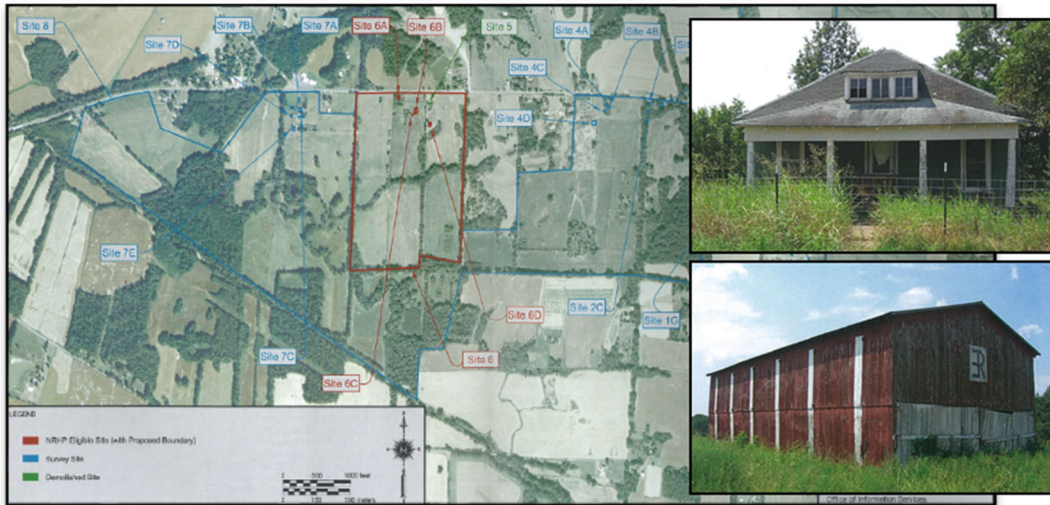
An assessment of effects was conducted according to the criteria of adverse effect (36 CFR 800.5). Per regulations from the Advisory Council on Historic Preservation, there are three levels of effects findings: No Effect, No Adverse Effect, and Adverse Effect. An Adverse Effect is an “alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register of Historic Places” such that a resource’s location, design, setting, materials, workmanship, feeling, or association is diminished. This can include both direct effects (caused by the action and occurring at the same time and place) and indirect effects (reasonably foreseeable effects caused by the project but occurring later in time or farther removed). A No Adverse Effect determination is found when the undertaking’s effects do not meet the criteria of the preceding sentences on adverse effects or the undertaking is modified or conditions are imposed to avoid adverse effects. No Effect is found when there are no historic properties present or there are historic properties present but the undertaking will have no impact on them.

This section outlines the work undertaken to date to satisfy requirements of this process. An extensive data collection effort was completed over the project development process to identify historic resources, which has been coordinated with the State Historic Preservation Office (SHPO). An opportunity to engage in the consultation process was provided through the KYTC DEA website and during the 2019 public meeting. No additional stakeholders have indicated a desire to participate to date.

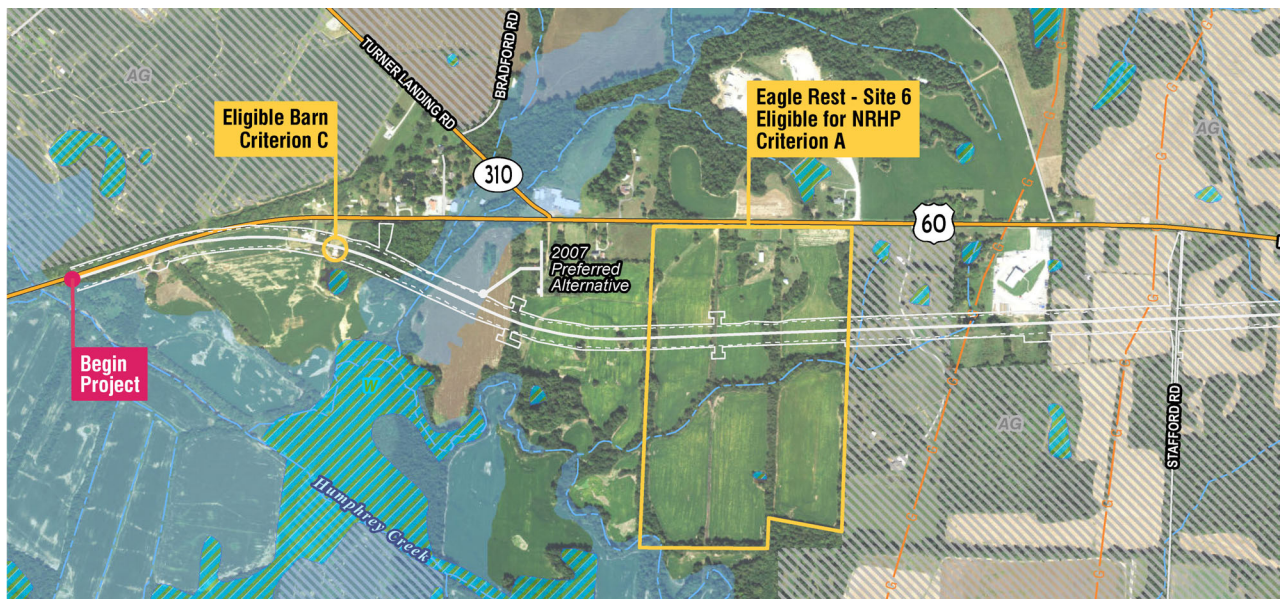
#### 1. Previous Historic/Architectural Investigations

Coinciding with the alternatives development process described in **Section III**, numerous investigations were conducted within the project area over the years.

- For the eastern section of the project (Items #1-115.0 and #1-115.1), a survey during 2004-2005 identified no NRHP-listed or eligible sites. The SHPO concurred with this finding on July 25, 2005, included in **Appendix E**.
- For the western section of the project (Item #1-118), a survey during 2007 examined the Eagles Rest Plantation and other buildings in the vicinity to identify resources listed on or eligible for the NRHP. The study recommended a portion of the farm—Site 6, shown in red in **Figure 21**—as eligible under Criterion A as a rural historic district, which covered 95 acres and included a bungalow, tobacco barn, metal silo, mule barn, and crop fields. The SHPO concurred with its eligibility April 18, 2008 (**Appendix E**), noting the then-preferred alternative would have an adverse effect on the resource (**Figure 22**).
- Shortly after the survey was completed, an additional outbuilding was identified that had not been included previously: a barrel-vault mule barn west of the US 60/KY 310 intersection, recommended NRHP eligible under Criterion C. The SHPO concurred with its eligibility September 28, 2009 (**Appendix E**), noting the then-preferred alternative would have an adverse effect on the resource. The NRHP boundary includes all land within the current fence line surround the barn and pond. A photo of the structure and the NRHP boundary are shown in **Figure 23**.
- During 2012, the Robinson family (property owners for the Eagles Rest Plantation) hired a local historic preservation specialist, who continued researching the history of the property. Though supplemental information was collected, no nomination form was submitted to the NRHP to initiate listing.



**Figure 21: Eagles Rest Site 6 Boundary, Bungalow, and Tobacco Barn**



**Figure 22: NRHP Resources Compared to 2007 Preferred Alternative**



**Figure 23: BA-180, NRHP-eligible barrel-vault mule barn**

## 2. Assessment of Aboveground Eligibility and Effects under NEPA

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Building on these previous investigations, cultural historians completed additional analyses during 2018–2019, examining archival records and surveying 80 sites over 50 years of age within the Area of Potential Effect. The results of this effort are summarized in two reports: the April 2019 *Phase I Historic Resources Report for US 60 Improvement Project, Ballard and McCracken Counties* and its July 2019 Addendum.

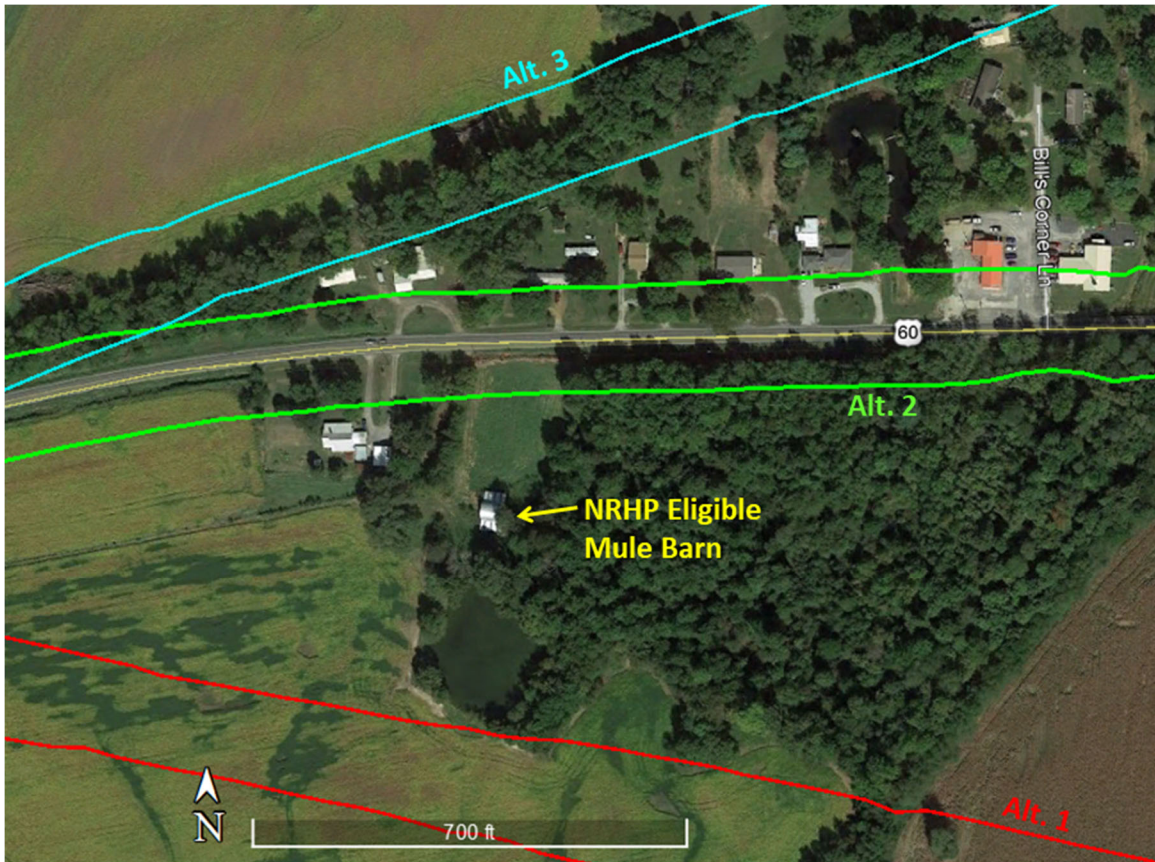
Site 6 (KHC #BA-155 and 178), shown in **Figure 19** was determined to be no longer NRHP eligible as the bungalow associated with the site was destroyed by fire during 2014. Further, fields/circulation networks were overgrown once crop/livestock production ceased, the connection to the Robinson family disappeared with the transfer of ownership, and the mule barn was being demolished.

The barrel-vault mule barn (KHC #BA-180) remains eligible for its architecture.

The remaining 78 resources did not meet the NRHP criteria; no resources are listed or eligible.

The project will have No Adverse Effect on the NRHP-eligible barn. Shown in **Figure 24**, the preliminary right-of-way for Alternative 1 (Preferred) is located over 300 feet south of the structure, separated from the new roadway by the adjacent tree-lined pond. Preliminary right-of-way for Alternative 2, which widens along the existing US 60 corridor, is located over 150 feet north of the structure and maintains a similar spatial relationship between the highway and barn. Alternative 3, north of existing US 60, is over 400 feet away at its nearest point.

The SHPO concurred with these findings in letters dated December 5, 2018; May 14, 2019; and August 20, 2019, all included in **Appendix E**.

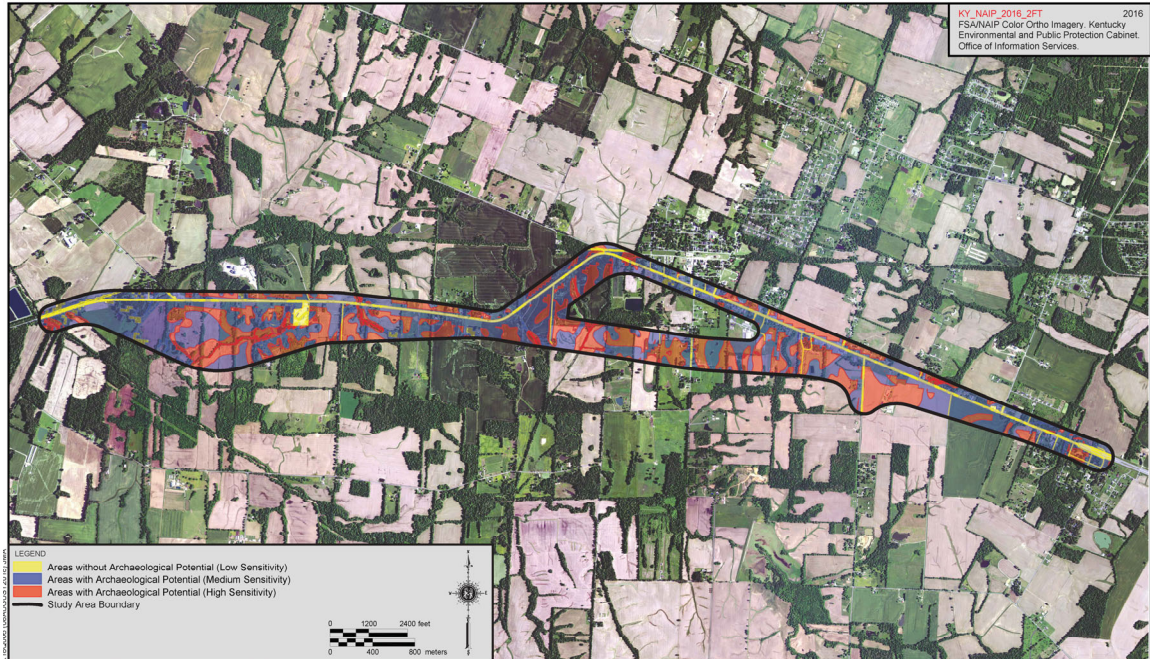


**Figure 24: Eligible Barn compared to Detailed Study Alternative footprints**

### 3. Potential for Archaeological Resources

An archaeological overview was prepared for the project during August 2018, summarizing previous survey efforts and assessing the potential to encounter previously undiscovered finds. The area has been extensively surveyed with 13 previous archaeological surveys conducted within a 2-kilometer radius of the project area. Records reveal two prehistoric open habitations without mounds (15Ba138 and 15Ba139) and one prehistoric mound (15McN4) near the project area. 15McN4 is well south of the proposed improvements; the other two sites are within or adjacent to the preliminary right-of-way limits associated with the western portion of Alternative 1 (Preferred).

A rating model was created to rank the probability for areas to contain architectural deposits, built on LiDAR, USDA soils data, and land use cover databases. Shown in **Figure 25**, the vast majority of the project area has a medium to high archaeological potential.



**Figure 25: Archaeological Potential from Rating Model**

Prior to the publication of a FONSI, Phase I archaeological surveys will be conducted for the footprint of the preferred alternative. Results will be incorporated in the FONSI.

## H. Hazardous Materials

A baseline assessment was conducted in 2018-2019 to identify hazardous materials and environmental conditions or concerns in accordance with ASTM Standard E1527-13. A database search and field investigation were conducted; additional sites were identified in the database search that fall beyond the project limits. No interviews with property owners have been conducted at this time.

As part of the investigation, analysts attempted to determine the historical use of properties dating back to 1940 or the first developed use. Properties within the Detailed Study corridors generally were historically undeveloped, agricultural, or rural residential since before 1940 with commercial and light industrial properties developing more in the 1960s, mainly adjoining the city of Kevil. The Illinois Central railroad line was present since before 1940 until the late 1980s.

An electronic database search of files maintained by the US EPA and the Kentucky Department for Environmental Protection was conducted to evaluate the regulatory history of properties associated with the Detailed Study Alternative corridors.

Site reconnaissance was conducted during July 2018 and February 2019.

- Hazardous substances and/or petroleum products were identified from visual observation associated with a five properties; based on the age of some commercial/light industrial properties and property configurations, some of the properties along US 60 may have formerly served automotive repair/retail petroleum purposes.

- Five sites likely containing underground storage tanks (UST) were identified, in addition to two properties with aboveground storage tanks (AST).
- One 55-gallon drum of unknown content was observed on the north side of the Jerrell Auto salvage yard during the site visit; no other obvious evidence of drums or containers which might contain hazardous substances or petroleum products were found.
- Polychlorinated biphenyls (PCBs) are organic compounds that have been used extensively in electrical capacitors and transformers, lighting ballasts, hydraulic fluids, heat exchange fluids, lubricants, inks, sealants, adhesives and surface coatings. Old pole-mounted transformers, with the potential to contain PCBs, were identified along the existing US 60 right-of-way and intersecting roads, owned by the local utility provider. No visible leaks were identified; the local utility provider should be contacted to identify potential PCB-containing transformers.
- No obvious drains, sumps, pits, ponds, or lagoons used for waste treatment or disposal were observed during the site reconnaissance. No strong, pungent or noxious odors were noted. No obvious evidence of process waste water discharge into a drain, ditch, or stream was identified.
- Minimal surface staining of asphalt and gravel lots was noted on commercial properties within the existing right-of-way; typical of areas used for parking automobiles.
- No obvious stained areas of soil or pavement, indicating hazardous material or petroleum product releases, were identified within the observable areas from the existing right-of-way during the reconnaissance. Stressed vegetation was observed in a circle around the AST at Rice’s Service Station.
- Small amounts of domestic waste from inappropriate disposal was observed within areas of the state’s right-of-way. A metal salvage yard associated with the Kevil Grain Company, 6696 Paducah Rd, is also located within right-of-way.
- Two auto salvage yards, one possibly inactive, are located on the east side of US 60 and are presumed to generate automotive-related fluid waste and lead acid batteries. Other than the auto salvage yards, no open waste disposal was observed.

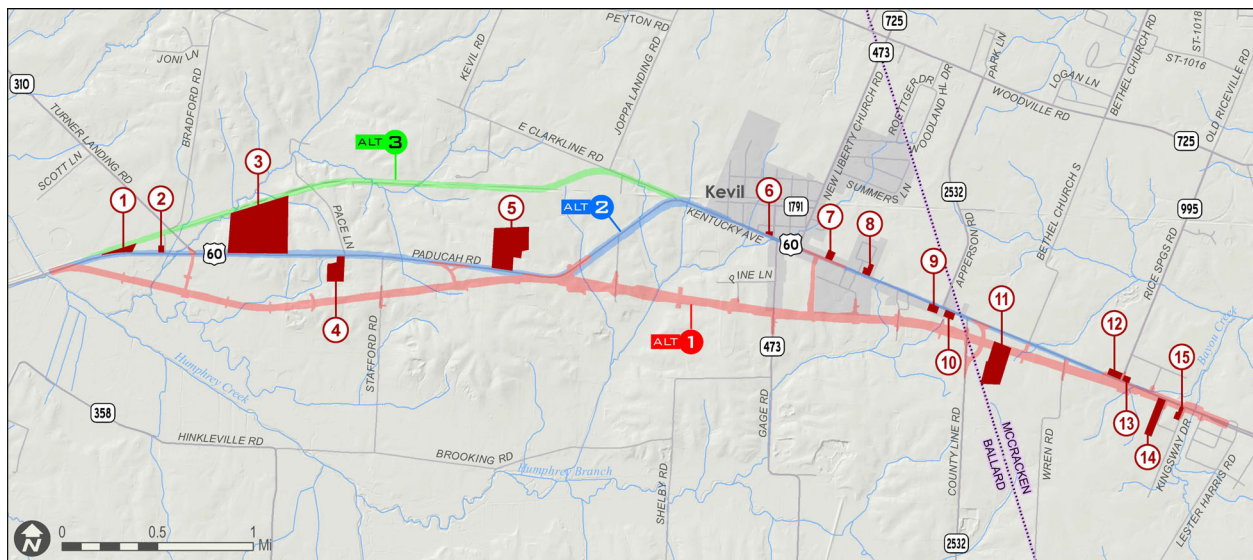
Listed in **Table 11**, further investigations are recommended at fifteen Recommended Environmental Conditions (REC) and Historic REC sites. Property Locations are highlighted in **Figure 26** as well.

**Table 11: REC and Historic REC with Further Investigation Recommended if Impacted**

Map ID	Address	Finding	Description	Alternative(s)
1	5847 Paducah Rd	REC	Current and Historical presence of light industrial and/or automotive related use.	2, 3
2	House of Prayer 6056 Paducah Rd	REC	Historical retail petroleum station; Active groundwater monitoring on site.	2
3	Kevil Grain Company 6696 Paducah Rd	REC	Evidence of domestic waste dumped in right-of-way	2, 3
4	Daher-TLI 7017 Paducah Rd	REC	Uranium cylinder services consisting of storage, washing, and recertification.	2
5	Central Tire Recovery 7846 Paducah Rd	HREC	Residence and former solid waste/landfill site with closed status. Historical automotive.	2
6	Kevil BP 1112 Kentucky Ave	HREC	Historical retail petroleum station with No Further Action (NFA) letter issued.	2, 3
7	804 Kentucky Ave	REC	Current garage/automotive repair type structure.	1, 2, 3



Map ID	Address	Finding	Description	Alternative(s)
8	Indian Hills Trading Post 586 Kentucky Ave	REC	Active retail petroleum station. Does not appear on leaking underground storage tank database.	2, 3
9	Cutmart County Store 233 Kentucky Ave	HREC	Historical retail petroleum station with NFA.	2, 3
10	Rice's Service Station 163/199 Kentucky Ave	HREC	Historical retail petroleum station with NFA.	2, 3
11	12240 US 60 W	REC	Retail farm equipment/materials sales with a former NPDES permit. Unknown sale and/or storage of agricultural chemicals, petroleum products.	1
12	Federal Materials 11715 US 60 W	REC	Historical light industrial property with a former NPDES permit. Bay doors indicate possible automotive use.	1, 2, 3
13	Light Industrial 11645 US 60 W	REC	Historical and current commercial property with offset building placement and bay door, which may indicate former retail petroleum and/or automotive repair use.	1, 2, 3
14	Auto Salvage Yard 11510 US 60 W	REC	Inactive automotive salvage yard.	1, 2, 3
15	Jerrell Auto 11410 US 60	REC	Active automotive salvage yard. 55-gallon drum observed on the north side of a warehouse.	1, 2, 3



**Figure 26: Locations of Potential Hazmat Concerns**

## I. Viewshed & Aesthetic Resources

“Aesthetics” refer to the visual qualities and scenic nature of an area. Studies show there can be individual and regional preferences over what qualifies as “scenic.” The project corridor encompasses primarily rural environments and presents typical viewsheds. Within the project area, typical aesthetic elements associated with corresponding land uses (agricultural fields and rural residential, with limited commercial

and industrial fronting US 60) are present, as demonstrated in figures and photographs presented in earlier chapters. No visually sensitive resources were identified.

While the viewsheds of all Detailed Study Alternatives have typical aesthetic qualities of a rural west Kentucky landscape, none present unique aesthetic features or viewsheds that would be potentially impacted by the project.

## J. Potential Construction Impacts

Depending on the availability of funding, initial construction could include only two lanes on the full, four-lane ultimate right-of-way, resulting in lesser direct impacts that presented throughout this chapter.

The proposed project is anticipated to produce a beneficial short-term economic impact by stimulating the local economy in terms of construction-related jobs, sales, income, government revenue and expenditures, and other variables. Furthermore, it could be expected to produce a beneficial long-term impact by providing the necessary infrastructure for more efficient and safe mobility.

Highway construction activities would also have temporary air, water quality, noise, and traffic flow impacts within the project area. Steps to minimize or avoid these temporary impacts are included below. These steps could be applied to the construction of the roadway and construction-related activity should a Build Alternative be selected.

- The air quality impact would be temporary, and primarily in the form of diesel-powered construction equipment emissions and dust from exposed earth. Air pollution associated with airborne particle creation would be effectively controlled by watering or the application of calcium chloride in accordance with the KYTC's *Standard Specifications for Road and Bridge Construction (Standard Specifications)*, as directed by the KYTC project manager.
- Water quality impacts resulting from erosion and sedimentation, and noise and vibration impacts originating from heavy equipment movement and other construction activities would be temporary and controlled in accordance with KYTC's *Standard Specifications*, as directed by the KYTC project manager, and by using BMPs. Temporary erosion control features could consist of measures like temporary placement of sod, mulching, sandbagging, slope drains, sediment basins, sediment checks, artificial coverings, and berms.
- Noise and vibration impacts could originate from heavy equipment movement, blasting, and construction activities such as pile driving and vibratory compaction of embankments. Noise control measures would include those contained in KYTC's *Standard Specifications*.
- Construction activities, including traffic maintenance and construction sequence, would be planned and scheduled to minimize traffic delays. Signs would be used as appropriate to provide notice of temporary road closures and other pertinent information to the traveling public. The local news media would be notified in advance of road closings and other construction-related activities that could excessively inconvenience local residents, allowing motorists to plan travel routes in advance. Property access would be maintained to the maximum extent practical through controlled construction scheduling. Traffic delays would be controlled to the maximum extent possible where many construction operations are in progress simultaneously. The contractor would be required to designate detour routes or maintain one lane of traffic in each direction at all times and to comply with BMPs.

## V. Public & Agency Involvement

A key component in the success of any transportation project depends on many factors, including the involvement of the local, state, and federal agencies; elected officials and area planners; and members of the community. The communication process includes both gathering information from stakeholders and providing information. This coordination is a dynamic process that will continue throughout the life of the project.

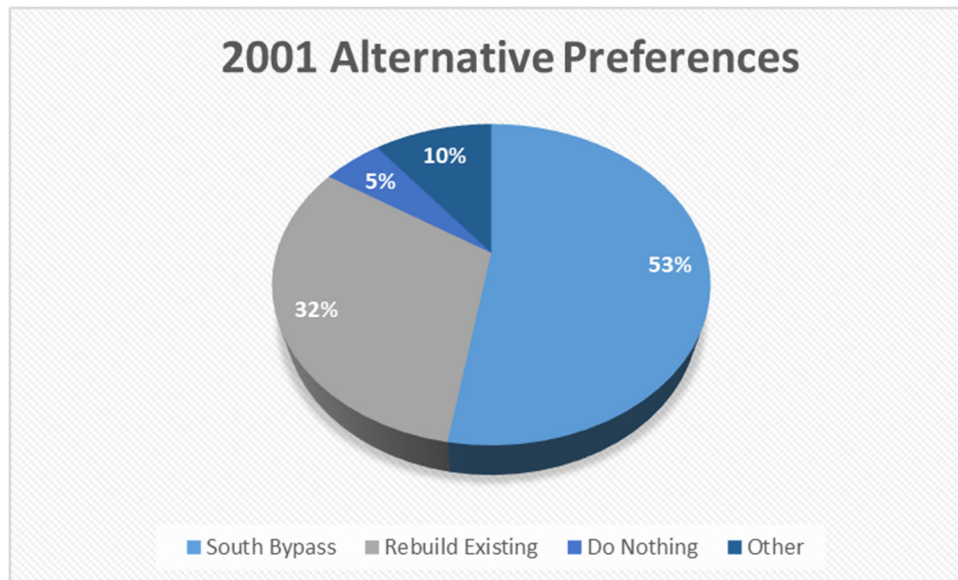
### A. Public Engagement

Public involvement on the US 60 project dates back to the 2001 planning study.

**Planning Phase.** A meeting with local elected officials and other interested groups was held June 13, 2000, to solicit input on project goals and community concerns. One of the major discussion points was the potential impact of bypassing Kevil:

There is some concern from local officials about the effects that a bypass would have on Kevil. Businesses located along the existing roadway may be opposed to a bypass, as would property owners located near a new alignment. From the city's standpoint, businesses might move out to the bypass and would request city services (water and sewer). The city is not certain they have the resources to extend services out to a bypass... Reconstruction along the existing route would likely impact many business and residential properties, and many of the existing businesses would also need to be relocated if that alternate were chosen. The truck traffic through Kevil is also a concern. It was also mentioned that future plans for reconstruction of US 60 also call for bypasses of LaCenter and Barlow. Those present at the meeting were in general agreement that a bypass is needed for the well-being of Kevil, Ballard County, and McCracken County even though it may have some perceived drawbacks.

On September 13, 2001, a public meeting was held in Kevil, attended by 52 citizens. In addition to handouts and a presentation of basic project information, members of the project team distributed a survey and were available for one-on-one discussions. Comments received included the need to improve curves, traffic flow, and safety; concerns about bypassing Kevil; concerns about community impacts if the existing route is widened; a suggestion to improve KY 286 as an alternate east/west connection; and farmland impacts. Of the 18 public surveys returned, the majority favored constructing a southern bypass (**Figure 27**).



*Figure 27: 2001 Survey Responses*

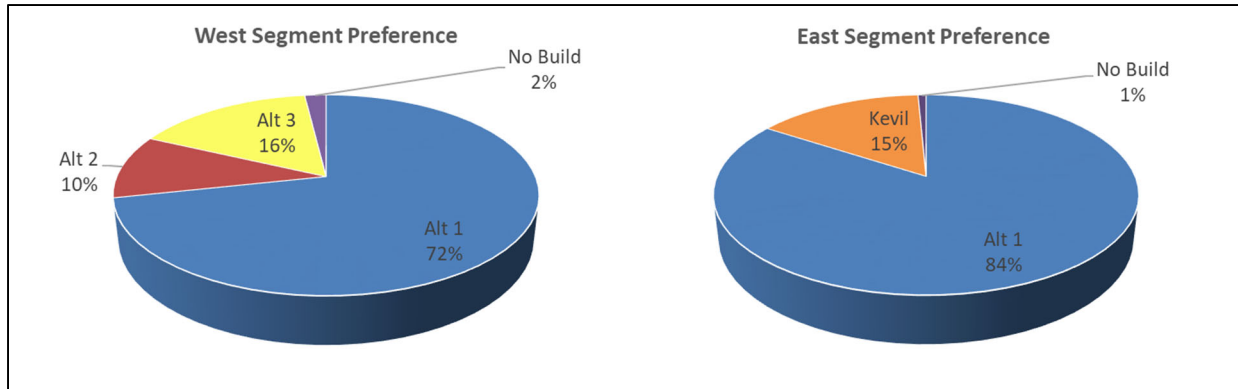
**State-Funded Design Phase.** As part of the initial design process, public meetings were held on February 10, 2004 and December 5, 2006 at the West Kentucky Technology Park. During each, preliminary alternatives were presented and public feedback was solicited. The major concerns that arose from these outreach efforts were 1) access to the industrial park and 2) impacts to Eagles Rest Plantation. Environmental field studies for endangered species, archaeological deposits, and historic resources were undertaken to resolve concerns raised, as summarized throughout the previous chapter.

**Consideration under NEPA.** Since the initiation of the NEPA process in 2018, one additional public outreach effort has been conducted to date. This included an afternoon briefing for local officials/stakeholders and evening public meeting, both on June 11, 2019. Summary information is included in **Appendix F**. At the meeting, large-scale maps of the proposed Detailed Study Alternatives<sup>10</sup> were displayed with members of the project team available for one-on-one discussions. In total, 187 members of the public attended the meeting. Summarized in **Figure 28**, the vast majority of the 331 surveys returned preferred Alternative 1 and over 85% preferred a 4-5 lane widening option over 2-3 lanes.



*2019 Public Meeting*

<sup>10</sup> Alternative 1 presented to the public differed slightly from the alignment presented herein. At the meeting, an improved link to US 60 was shown along KY 473. Since, this connection shifted east to minimize property impacts.



**Figure 28: 2019 Survey Responses**

Other survey comments included minimizing home/property impacts, minimizing impacts to the Kevil business community, accommodating semi-truck and farm equipment needs, and understanding the regional needs: the Ohio River Bridge at Wickliffe, regional traffic patterns, economic development potential, and commuter flows.

Upon publication of this EA, a public hearing will be held for the project. Results will be discussed in the FONSI.

## B. Agency Coordination

As part of the 2001 planning study, requests for input were sent to 75 resource agencies in June 2000. Issues raised during the effort include the following:

- Improved connectivity/access for Barkley Airport and areas to the west.
- There is potential to encounter significant archaeological sites in the Jackson Purchase region.
- Loss of farmland is a concern.
- Geotechnical problems might include wet embankment foundations, unstable subgrades, highly erodible soils, and extremely moisture-sensitive soils. Seismic activity is a concern.
- A rural template with a depressed median is preferred for maintenance and future rehabilitation needs.

In addition, consultation with appropriate resource agencies was undertaken throughout the NEPA process, as described in the previous chapter. This includes coordination with SHPO, USFWS, USDA, and others.

## VI. Conclusions, Mitigations, & Commitments

The proposed project creates an improved US 60 connection through eastern McCracken and western Ballard counties. The purpose of the project is to improve mobility and safety for the corridor. US 60 is the only east-west principal arterial link in Kentucky west of Paducah, leading to the only Ohio River highway crossing for an 80-mile stretch. Its narrow lanes, limited passing opportunities, closely spaced access points through Kevil, and substandard curves make the route challenging for freight carriers. Further, five years of data illustrate a history of crashes, with two high crash spots and five fatality collisions.

A wide range of solutions has been studied over the past decades, culminating in three Detailed Study Alternatives evaluated under NEPA (**Figure 9**). Alternative 1 is recommended as the Preferred Alternative, which creates a new four-lane divided highway south of the existing US 60 alignment. **Table 12** summarizes the environmental impacts associated with preliminary designs for the Detailed Study Alternatives, discussed throughout **Section IV**.

*Table 12: Comparison of Impacts for Detailed Study Alternatives*

Impact Category	Alt 1 (Preferred)	Alt 2	Alt 3
Project Length	6.29 miles	6.51 miles	6.46 miles
Cost (2019\$)	\$62.4 million	\$84.5 million	\$69.4 million
Meets Purpose & Need	Yes	Yes	Yes
2040 Daily Traffic	5,200-7,000 new 2,000-2,100 existing	7,300-9,000	7,300-9,000
Bicycle/Pedestrian	No dedicated facilities; wider shoulders improve safety		
Right-of-Way Impacts			
Parcels	68	168	154
Residential Relocations	19-20	12-21	10-17
Commercial Relocations	2	8-14, church	8-12
New Right-of-Way	200 ac	88 ac	103 ac
Business Community	Reduced pass-by traffic on old US 60; no utility connections along new route	Minimal changes beyond relocations	Minimal changes beyond relocations
Land Use	Consistent with regional land use, transportation plans		
Farmlands			
Prime/Unique Soils	65.5 ac	88.0 ac	102.7 ac
Statewide/Local Importance	15.6 ac	6.3 ac	8.5 ac
Land in Ag Districts	26.6 ac	33.5 ac	9.8 ac
NRCS Rating Score	190	140	138
Environmental Justice	Not Disproportionately High and Adverse	N/A*	N/A*
Air Quality	Minimal changes		
Noise Impacts	18 impacts; No abatement	23 impacts; No abatement	16 impacts; No abatement
Stream Impacts	4,300 LF/15 streams	3,632 LF/12 streams	6,451 LF/24 streams
Wetland Impacts	0.14 ac	0.63 ac	2.42 ac
Pond Impacts	None	0.09 ac	0.11 ac

Impact Category	Alt 1 (Preferred)	Alt 2	Alt 3
Floodplain Impacts	9.15 ac	3.79 ac	6.57 ac
Forested Bat Habitat	18 ac	14 ac	47 ac
Historic Effects	Not Adverse	Not Adverse	No Effect
Archaeological Sites	Undetermined	Undetermined	Undetermined
Hazardous Materials, USTs	6 potential sites	13 potential sites	11 potential sites
Construction Impacts	Typical impacts for highway construction project likely		

\* Findings based on survey responses from residential relocatees associated with the Preferred Alternative

## A. Commitments & Mitigation Measures for the Preferred Alternative

Based on the extent of impacts, several mitigation measures are proposed to offset adverse effects.

**Displacements.** Summarized in [Section IV.B.2](#), any build alternatives will displace homes and businesses. KYTC will implement a relocation program in accordance with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act*. Relocation resources will be available to all residential relocatees without discrimination with an experienced agent assigned to each displaced household or business to navigate the process. A review of the local housing market reveals an ample supply of comparable housing available at any one time. It is likely that sufficient comparable housing would be available when the right-of-way is acquired for this proposed project. Several residential relocatees were identified as likely low-income households; tenants may qualify for supplemental relocation assistance or Last Resort Housing following a detailed income calculation during future right-of-way acquisition.

**Bat Habitat.** Discussed in [Section IV.F.2](#), three federally-listed bat species have the potential to occur within the vicinity. No habitats of exceptional quality or rarity were identified. Appropriate resources should be utilized to minimize impacts to habitats conducive to threatened and endangered species such as BMPs at stream crossings to minimize erosion and sedimentation. Mitigation for impacts to forested Indiana bat habitat should be addressed by adhering to the *Indiana Bat Programmatic Agreement* between KYTC, FHWA, and the USFWS and/or the *Range Wide Consultation and Conservation Strategy*. As it is covered under the Final 4(d) rule, compensatory mitigation and seasonal tree clearing restrictions will not be required for impacts to the Northern long-eared bat. Impacts to Gray bat habitat and winter roost habitat for Indiana bat and Northern long-eared bat should be addressed through a Biological Assessment with USFWS coordination, including an effects analysis regarding the project's impacts to forests and streams as designs advance. Coordination with USFWS will continue, with additional information summarized within the FONSI.

**Archaeology.** Per [Section IV.G.3](#), a Phase I archaeological survey will be conducted for the remaining portions of the Preferred Alternative footprint that have not been previously cleared. Updated findings will be presented in the FONSI.

**Hazardous Materials.** Summarized in [Section IV.H](#), a few sites with potential hazardous materials were identified along the Alternative 1 footprint. Other possible environmental concerns throughout the project area include: power pole mounted electrical transformers, farms that handle and store pesticides/herbicides, and improperly functioning septic tank systems. During Final Design once impacts for utilities and road construction are known, including depth of excavation needed for utilities and

construction, KYTC should reevaluate the identified suspect/contaminated sites to see if Phase II assessments (i.e., soil and groundwater testing for known contaminants) are warranted.

**Construction.** As with any highway project, temporary and minimal air, noise, water quality, and traffic flow impacts are likely to occur during construction (see **Section IV.J**). Impacts should be addressed by implementing the KYTC's *Standard Specifications for Road and Bridge Construction*, as directed by the KYTC project manager, and through the use of BMPs.

## B. Next Steps

This EA will be published, circulated to local stakeholders, agencies, and other interested parties as appropriate. A public hearing will be held, highlighting information from analyses discussed herein and soliciting feedback. The NEPA process is anticipated to conclude with the publication of the FONSI, presenting a summary of supplemental analyses/coordination and an overview of the decision-making process.