Maysville Small Urban Area Study

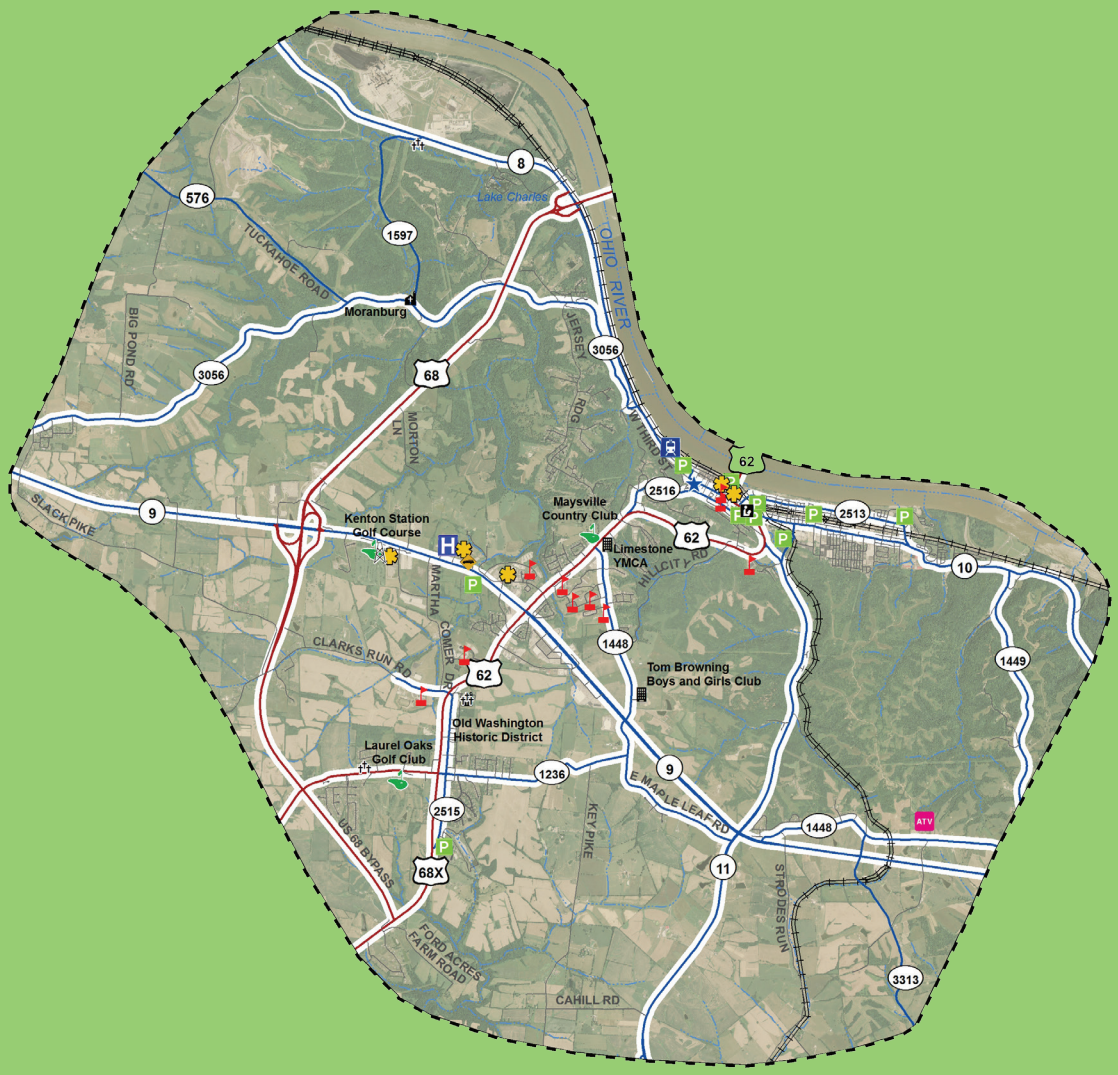
Mason County

February 2018

FINAL

Engineering Planning

KENTUCKY TRANSPORTATION CABINET



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EXECUTIVE SUMMARY

The Kentucky Transportation Cabinet (KYTC) conducted this transportation-focused Small Urban Area (SUA) Study for the city of Maysville in Mason County. Maysville is located along the Ohio River, approximately 66 miles northeast of Lexington, Kentucky. According to the U.S. Census Bureau's 2014 estimate, the population of Maysville was 8,851. Two bridges cross the river from Maysville to Aberdeen, Ohio: the Simon Kenton Memorial Bridge opened in 1931 and the William H. Harsha Bridge opened in 2001.

The purpose of this study is to identify and examine transportation issues on state-maintained routes related to safety and congestion in the city and its surrounding area. Study area roadways evaluated were KY 8, KY 9 (AA Highway)[1], KY 10, KY 11, KY 1236, KY 1448, KY 1449, KY 2515, KY 2513, KY 2516, KY 3056, US 62, US 68, and US 68X. The study focused on (1) short-term improvements—projects intended for quick and effective implementation at both an individual intersection level and an area-wide level; and (2) long-term future improvement projects requiring more significant resources. The initial focus of the study was to examine state-maintained roads; however, as the study progressed, it became important to study several local roads as well **(ES Figure 1, p. ES 4)**.

Basic project activities performed for this SUA Study include:

- Evaluating existing conditions, crash history, and geometric deficiencies to identify possible safety issues.
- Evaluating capacity needs of state-maintained routes and several routes of local significance.
- Working with Local Officials/Stakeholders (LO/S) and the Project Team to identify trouble spots and potential projects to address congestion and safety.
- Developing a list of short- and long-term recommendations for improvements the KYTC, Maysville, Mason County, and/or private developers could advance for further project development and implementation.
- Prioritizing local, short-term, and long-term improvement recommendations.
- Documenting the study process and recommendations.

Three studies have been conducted for the project study area: the 2000 *A-A Highway Safety Study*[2], the 2002 *KY 9 (AA Highway) Widening Study*[3], and the 2003 *Maysville Urban Area Transportation Study*[4]. Projects from the 2003 study either implemented or being pursued at some level include:

- KY 9 is under construction from the western edge of the study area to KY 10. The improvement will be built as a five-lane facility.

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1 A section of AA Highway (meant to connect Alexandria and Ashland), KY 9 is referred to hereafter by its state designation, only.

2 http://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1299&context=ktc_researchreports

3 http://transportation.ky.gov/Planning/Pages/Project-Details.aspx?Project

4 http://transportation.ky.gov/Planning/Pages/Project-Details.aspx?Project=Maysville

- KY 1448 (Maple Leaf Road) is under construction and will include wider lanes and a shared-use path.
- A deceleration lane on KY 9 was constructed at the westernmost entrance to the hospital rather than the main entrance to avoid an expensive culvert. The KYTC has also installed overhead and side advance warning flashers 900 feet prior to the KY 9/Kenton Station Road signalized intersection to warn eastbound motorists when the signal is about to turn red.
- A new route from KY 11 to KY 9 is included in Kentucky's FY 2016 – FY 2022 Highway Plan (dated June 2016) as Item No. 9-147.60 with SP funding.

The first LO/S meeting was held July 21, 2016, at the Buffalo Trace Area Development District (Buffalo Trace ADD) Board Room in Maysville. Attendees were divided into three groups and asked to participate in an exercise to identify and map transportation issues in the Maysville study area. Each small group then presented its findings to the entire group. The groups identified eight trouble spots related to congestion, 19 trouble spots related to safety, and five locations where growth is likely. The foremost concern at this meeting was the completion of the southern loop from US 68 to KY 9.

Based on a review of existing conditions including high crash locations, existing and future year traffic analyses, field reviews, identified areas of growth, and LO/S input, the Project Team developed 35 improvement projects (**ES Figure 1, p. ES 4)**. The projects or improvements were categorized as follows:

- **Local:** Local projects are not located on the state-maintained system and would likely need to be funded by the City of Maysville or Mason County. A private developer could also assume this responsibility.
- **Short-Term:** Short-term projects are typically lower-cost implemented in the near term. These project types require little or no right-of-way to construct and in some cases may be implemented by the KYTC Division of Maintenance or Traffic Operations.
- **Long-Term:** Long-term projects are higher-cost that would require more significant resources to implement. These project types would require additional right-of-way to construct and would likely need to be funded through the KYTC Highway Plan process.

Cost estimates were developed based on pavement, structures, and an estimate of earthwork quantities utilizing the KYTC's District 9 unit bid prices. The estimates were revised throughout the SUA Study process to account for the addition of detail items such as curb and gutter, culverts, signal heads, retaining wall, etc. District 9 staff provided right-of-way and utility estimates for each new project. The PIF projects' previous construction cost estimates were updated to 2016 dollars.

A second LO/S meeting was held December 8, 2016, at the Buffalo Trace ADD. A brief overview and presentation of the study's purpose, goals, and proposed projects for Maysville were provided. The LO/S received an exhibit identifying potential project locations, and individual Project Evaluation Worksheets to garner their level of support for each project.

Highway Plan projects currently underway with either funds not authorized or projects not progressing, and previously identified Project Identification Forms (PIFs—unfunded identified needs not in the current Highway Plan) were considered new projects.

Considering input from the LO/S evaluations, the Project Team prioritized local, short- and long-term projects as high, medium, or low. **ES Tables 1, 2, and 3 (pp. ES 5–7)** present projects according to their prioritization. Following are two notable changes from the second LO/S meeting.

- LO/S scored "0" for Projects A, B and C as they relate to restricting left turns from Downing Drive to US 68. Six LO/S added comments requesting consideration for allowing left turns from Downing Drive to northbound US 68, and an additional comment asked for more study of improving Downing Drive. Considering comments and discussion during the second LO/S meeting, the Project Team added a new short-term project, identified as Project II, to address new improvements allowing left and/or right turns at Downing Drive. The Project Team ranked Project II as a high priority.
- District 9 staff noted 2040 modeled Build traffic on KY 11 is projected to decrease with the proposed bypass extension to KY 11 (Project Y, Item No. 9-147.20) and the new interchange at US 62 (Project AA, Item No. 9-8809.00). A KY 9 truck acceleration lane east of KY 11 may be necessary if Project X (Item No. 9-8908.00), widening KY 9 to KY 1449, does not receive funding.

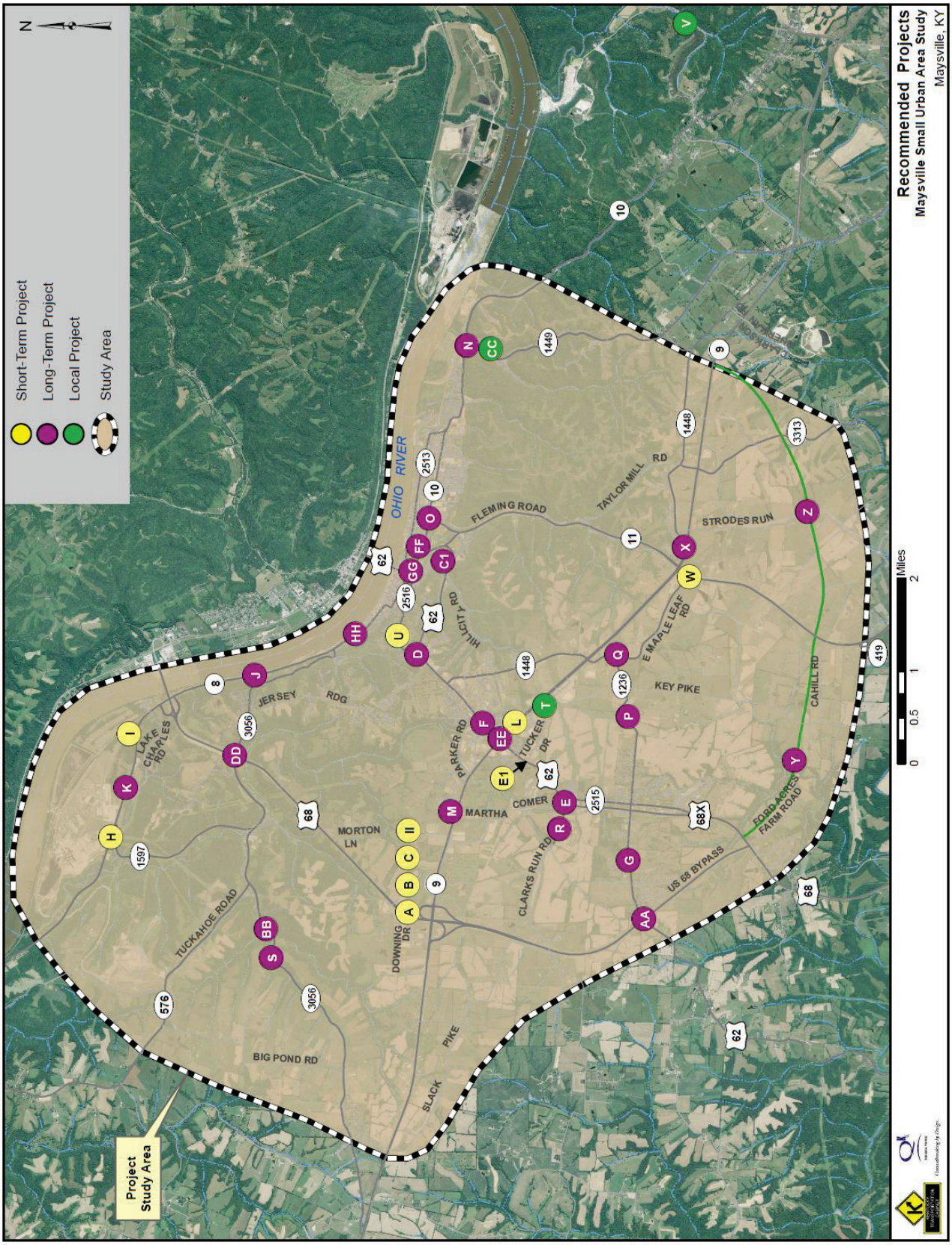

Figure ES 1: Recommended Projects

ES Table 1: High Priority Projects

Project ID	Project Description	Local, Short-Term or Long-Term	Cost Estimate (2016 Dollars)	Priority
V	Improve existing Springdale Road and connect to KY 3161.	Local	$19,500,000	**High**
E1	Evaluate US 62 at Tucker Drive for a "green left-turn arrow (protected) phase."	Short-Term	$30,000	**High**
L	Improve KY 9 transition from four lanes to two lanes between KY 11 and Strodes Run Pike.	Short-Term	$20,000	**High**
W	Add right-turn lane on KY 9 eastbound to KY 11 southbound.	Short-Term	$285,000	**High**
II*	KYTC to study improvements to allow left-and/or right-turns movements at Downing Drive/US 68.	Short-Term	$30,000	**High**
E	Widen KY 2515 (Clarks Run Road) to three lanes between Mason County Intermediate School and US 62 adding left- and right-turn lanes at US 62. Widen right-turn radius between US 62 and KY 2515 and between KY 2515 and Martha Comer Drive.	Long-Term	$1,360,000	**High**
M	1. Add right-turn lane on KY 9 at hospital entrance, and /or 2. Extend 45 mph speed limit.	Long-Term	$1,190,000	**High**
N	Realign KY 10 east of the KY 1449 intersection to improve curves and sight distance.	Long-Term	$2,400,000	**High**
P	Realign KY 1236, and add signage and high friction pavement.	Long-Term	$1,000,000	**High**
Y	Construct a new, fully controlled access road from US 68 near Washington east to KY 11 including a new interchange at KY 11**. SP (State) funds: No Build FONSI due to lack of funding. Item No. 9-147.20	Long-Term	$40,850,000	**High**
AA	Improve access/connectivity via the addition of an interchange on the Heather French Henry Southern Loop (US 62 and US 68). STP (Federal) funds not yet authorized. Design phase not yet authorized. Item No. 9-8809.00	Long-Term	$10,000,000	**High**
BB	Replace bridge on KY 3056 over S. Fork Lawrence Creek (081B00020N). Design phase authorized. Item No. 9-8906.00	Long-Term	$2,000,000	**High**
DD	Repair bridge on US 68 (081B00067N) over Lawrence Creek. Design phase authorized. Item No. 9-1095.00	Long-Term	$2,550,000	**High**
EE	Reduce lane widths and add turn lanes where possible at the intersection of KY 9 and US 62. PIF No. 09 081 B0062 1.00	Long-Term	$2,568,000	**High**

* *Added at the final Project Team meeting due to input from the second LO/S meeting. If implemented, Low Priority Projects A, B, and A3 would be removed from consideration. **Updated following final LO/S meeting.*

ES Table 2: Medium Priority Projects

Project ID	Project Description	Local, Short-Term or Long-Term	Cost Estimate (2016 Dollars)	Priority
T	Reconfigure Market Square Drive/Tucker Drive/Walmart Way intersection. Eliminate left turns from Tucker Drive to KY 9, and relocate Market Square Drive 500 feet west.	Local	$830,000	**Medium**
H	Clear trees in the northwest quadrant of Spurlock Power Station Entrance to improve sight distance for KY 8 motorists.	Short-Term	$40,000	**Medium**
I	Clear trees in southeast quadrant of KY 8 and the westernmost Lake Charles Road intersection, channelize business entrance on KY 8, and add “intersection ahead” signs.	Short-Term	$40,000	**Medium**
U	Install high friction pavement on KY 2516 in sharp curves.	Short-Term	$230,000	**Medium**
D	Realign US 62/KY 2516 intersection.	Long-Term	$300,000	**Medium**
F	Access management on US 62 between KY 9 and Kenton Station Road. Install a new traffic signal at the US 62/Tucker Drive intersection.	Long-Term	$310,000	**Medium**
Q	Reconstruct KY 1448 southeast of KY 1236 to improve sight distance.	Long-Term	$430,000	**Medium**
S	Realign KY 3056 east to flatten the curve.	Long-Term	$880,000	**Medium**
X	Widen KY 9 to four lanes from KY 1449 to KY 11. SP (State) funds: 2017 Design funds on hold. Item No. 9-8908.00	Long-Term	$31,600,000	**Medium**

ES Table 3: Low Priority Projects

Project ID	Project Description	Local, Short-Term or Long-Term	Cost Estimate (2016 Dollars)	Priority
A*	Install barrier wall on US 68 at Downing Drive.	Short-Term	$100,000	**Low**
B*	Install high tension cable median barrier on US 68 at Downing Drive.	Short-Term	$20,000	**Low**
C*	Install Qwick Kurb® on US 68 at Downing Drive.	Short-Term	$130,000	**Low**
C1	Extend US 62 two-lane eastbound section to KY 11. Eliminate Two-Way-Left-Turn-Lane (TWLTL) in part, convert shoulders to full-depth, and widen for minimal shoulders.	Long-Term	$1,500,000	**Low**
G	Install curb, gutter, and sidewalk on US 62 between the US 68 Bypass and US 68X/US 62 intersection.	Long-Term	$7,290,000	**Low**
J	Widen KY 8 between KY 3056 and the US 68 Bypass. PIF No. 09 081 D0008 83.0	Long-Term	$14,200,000	**Low**
K	Widen KY 8 between the US 68 Bypass and Spurlock/East Kentucky Power.	Long-Term	$12,800,000	**Low**
O	Construct bike lanes on KY 10 between Commerce Street and KY 2513 (Carmel Street).	Long-Term	$800,000	**Low**
Z	Construct a fully controlled access road between KY 11 and KY 9 including a new interchange at KY 9. SP (State) funds: No Build FONSI due to lack of funding. Item No. 9-147.60	Long-Term	$42,150,000**	**Low**
CC	Replace structurally deficient bridge on Kennedy Creek Road. Item No. 9-8911.00	Local	$1,100,000	**Low**
FF	Reconstruct US 62/KY 10 intersection to improve safety, congestion, and intersection function. PIF No. 09 081 B0062 17.00	Long-Term	$6,416,000	**Low**
GG	Spot improvements to improve efficiency and safety enhancements along US 62 and the intersection of KY 10 (Forest Avenue) continuing past Mulberry Alley. PIF No. 09 081 B0062 3.00	Long-Term	$2,377,000	**Low**
HH	Correct geometric and width deficiencies and improve long-term stability of KY 8 between Cox Alley and KY 3056.	Long-Term	$8,000,000	**Low**

* *Only one of these projects would be implemented. However, the LO/S preferred left turns be allowed, rather than restricted, at this intersection. Project II was added at the final Project Team meeting to provide for the KYTC District 9 re-evaluation of the left-turn restriction at this intersection. **Updated following final LO/S meeting.*

1.0 INTRODUCTION

The Kentucky Transportation Cabinet (KYTC) conducted a Small Urban Area Study (SUA) for the city of Maysville in Mason County. The purpose of the study is to identify and examine transportation improvements related to safety and congestion in the city and its surrounding area.

The study process has produced a list of short-term recommendations the KYTC, Maysville, Mason County, and/or private developers could use for further project development and implementation. The study also addressed long-term concerns by examining future transportation needs and developing options for long-term improvement projects.

1.1 Study Area

The study area was developed to encompass the Federal Highway Administration's (FHWA) Urban Area Boundary, including and beyond the Maysville incorporated limits, as shown in **Figure 1**. It is approximately 53 square miles and includes study area roadways KY 8, KY 9 (AA Highway)[5], KY 10, KY 11, KY 1236, KY 1448, KY 1449, KY 2515, KY 2513, KY 2516, KY 3056, US 62, US 68, and US 68X. In addition, during the planning process the Project Team, composed of the KYTC District 9 and Central Office staff from various disciplines, expanded the study area to include the following:

- William H. Harsha Bridge north on US 68 across the Ohio River.
- Truck stop west on KY 9.
- Proposed US 68 Bypass extension alignment east of US 68.
- Quarry north of KY 10 east along the Ohio River outside the FHWA Urbanized Area Boundary.
- Power station and International Paper Company west along the Ohio River.

According to the U.S. Census Bureau, Mason County has a total area of 246 square miles. The county's northern border with Ohio is formed by the Ohio River. Mason County's population as of the 2014 census estimate was 17,166. The county seat is Maysville.

Maysville is located along the Ohio River, approximately 66 miles northeast of Lexington, Kentucky. As of the 2014 census estimate, the population of Maysville was 8,851. Two bridges cross the river from Maysville to Aberdeen, Ohio: the Simon Kenton Memorial Bridge opened in 1931 and the William H. Harsha Bridge opened in 2001.

[5] A section of AA Highway (meant to connect Alexandria and Ashland), KY 9 is referred to hereafter by its state designation, only.

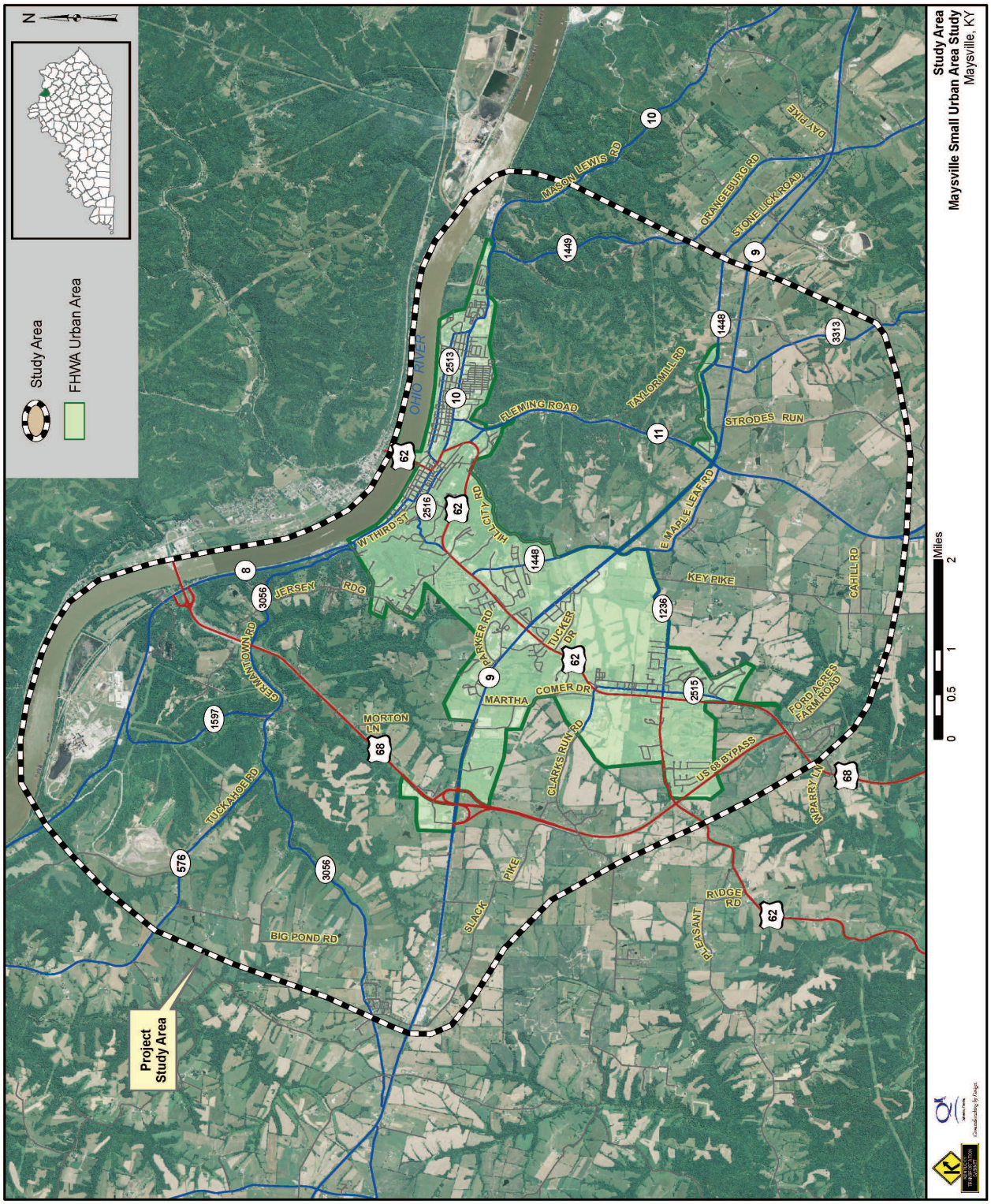

Figure 1: Study Area

1.2 Study Scope

The study scope included engineering services for the completion of an SUA planning study for the city of Maysville and portions of the surrounding unincorporated areas of Mason County. It examined existing transportation conditions in terms of both safety and operational characteristics. Basic project tasks include:

- Evaluating existing conditions, crash history, and geometric deficiencies to identify possible safety issues.
- Evaluating capacity needs of state-maintained routes and several routes of local significance.
- Review past planning studies related to transportation in the area.
- Working with Local Officials/Stakeholders (LO/S) and the Project Team to identify trouble spots and potential projects to address congestion and safety.
- Developing a list of short- and long-term recommendations for improvements the KYTC, Maysville, Mason County, and/or private developers could advance for further project development and implementation.
- Prioritizing local, short-term, and long-term improvement recommendations.
- Documenting the study process and conclusions.

The study includes analyses for state-maintained US and KY routes, (roadways highlighted in white on **Figure 2**). City streets integral to traffic operations in Maysville were included; however, improvements shall be funded by Maysville, Mason County, or privately.

1.3 Previous Identified Studies and Projects

The Maysville SUA Study builds upon completed studies in the region to ensure consistency with previous planning efforts. The following studies were consulted during its development.

1.3.1 A-A Highway Safety Study[6]

In 2000, the Kentucky Transportation Center (KTC), in cooperation with the KYTC, completed the *A-A Highway Safety Study,* which reviewed crash history of the A-A Highway (KY 9 and KY 10) and recommended improvements. The analysis concluded the A-A Highway did not have a high number or rate of total crashes when compared to similar types of roads statewide. Only along KY 10 outside the Maysville SUA study area was the fatal crash rate higher than the statewide average. Improvements were recommended along that section of highway.

1.3.2 KY 9 (AA Highway) Widening Study[7]

The KYTC completed the *KY 9 (AA Highway) Widening Study* in 2002. This study recommended three priority sections for a four-lane, partially-controlled, depressed median typical section, with Priority Section One identified in Mason and Bracken counties from KY 10 to KY 19. None of the priority sections are included within the Maysville SUA study area.

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6 http://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1299&context=ktc_researchreports

7 http://transportation.ky.gov/Planning/Pages/Project-Details.aspx?Project

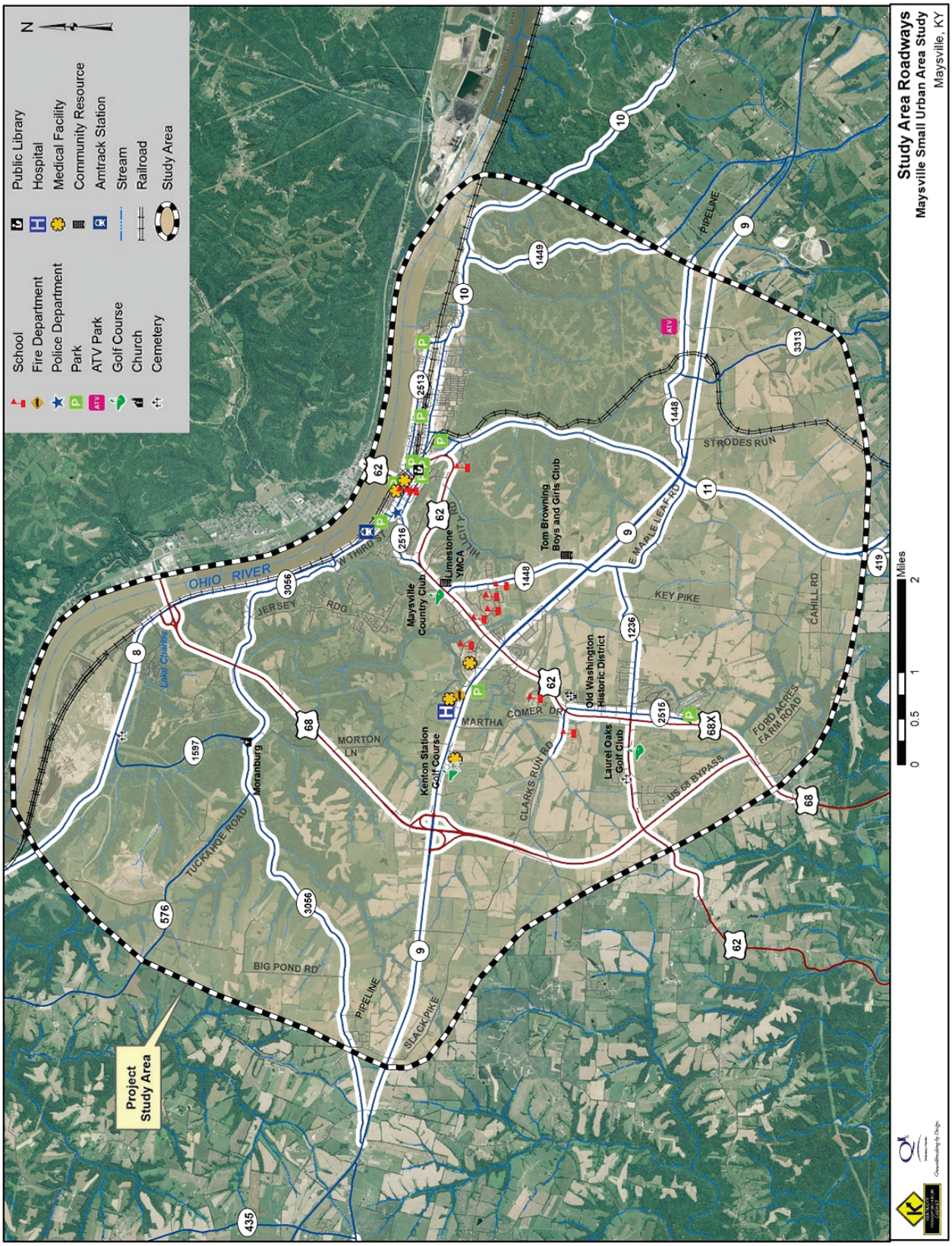

Figure 2: Study Area Roadways

1.3.3 Maysville Urban Area 2025 Transportation Study[8]

The *Maysville Urban Area 2025 Transportation Study* was completed by the KYTC in December 2003. The conclusion of the study was the development of the following recommended improvements to the Maysville Urban Area transportation infrastructure:

1) Widen KY 9 from KY 10 to Bracken County.
2) KY 1448 (Maple Leaf Road) Improvements.
3) Widen KY 9 from Lewis County to KY 11.
4) US 62/68 and KY 9 Intersection.
5) Deceleration Lane at Hospital Entrance.
6) KY 8 Stabilization Improvements.
7) Widen KY 11 from Fleming County to KY 9.
8) Realign US 62X and KY 10 Intersection.

Recommendations either completed or being implemented at some level include:

- KY 9 is under construction from KY 10 to the western edge of the study area. The improvement will be a five-lane facility.
- Maple Leaf Road is under construction and will have wider lanes, improved geometrics, and a shared-use path.
- KY 9 from KY 1449 to KY 11 is in the KYTC's current Highway Plan.
- A deceleration lane on KY 9 was constructed at the westernmost entrance to the hospital rather than the main entrance to avoid a double box culvert. The KYTC has also installed overhead and side advance warning flashers 900 feet prior to the KY 9/Kenton Station Road signalized intersection to warn eastbound motorists when the signal is about to turn red.

1.3.4 Marketing and Economic Development Analysis for the Maysville-Mason County Port Authority[9]

In 2015 the KTC completed the *Marketing and Economic Development Analysis for the Maysville-Mason County Port Authority,* which "examined the viability of a new port in Maysville to spur economic growth, create job opportunities, and position the city as a key node in a growing national and regional freight network." Citing the advantages of Maysville's Ohio River access, the presence of the CSX railroad, and a roadway network with regional access via the Harsha and Kenton bridges and US 62/68, the report advised a port "presents new opportunities for economic growth" in the Buffalo Trace ADD. The report identified "an ideal" port location, the Charleston Bottom site, which has access to water, rail, and roadways.

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8 http://transportation.ky.gov/Planning/Pages/Project-Details.aspx?Project=Maysville

9 http://transportation.ky.gov/Riverports/Documents/Riverport_Plans/Maysville%20Mason%20KTC%20Feasibility%20Study%20Draft.pdf

1.3.5 Maysville/Mason County 2016 Draft Comprehensive Plan Update[10]

The *Maysville/Mason County 2016 Draft Comprehensive Plan Update* (2016 Comprehensive Plan) is currently being reviewed for final adoption. In terms of transportation, the *Comprehensive Plan* established the following goal: "*To encourage the development and maintenance of a diversified transportation and communication system that will move people, goods, and information effectively."* The following objectives were developed toward accomplishing this goal:

1. Complete the transportation system improvements presently included in the KYTC's Highway Plan.
2. Continue to make recommendations for transportation improvements to be included in the KYTC's long-range and Highway Plan cycles.
3. Develop a plan for maximizing use of the proposed Southern Loop around the south side of Maysville while providing for orderly growth and development, via corridor districts, that is not detrimental to traffic flow.
4. Continue to reduce traffic congestion through operational improvements.
5. Support the improvement of KY 8 from the Harsha Bridge to downtown Maysville.
6. Continue to maintain the Simon Kenton Bridge.
7. Stay current with high-tech changes taking place, including the Kentucky Wired project to bring high-speed fiber optic cable to the entire state.
8. Increase utilization of the Ohio River for recreation, tourism, and commercial activities (Port Authority Study), and utilize signage, maps, and mobile technology to help guide visitors throughout the community.
9. Continue efforts to improve the county road system.
10. Encourage provisions for pedestrian and bicycle traffic along major routes and in residential subdivisions.
11. Continue to support expansion of the airport and promote use of the facilities.
12. Provide a plan for better transportation systems north of the community into Ohio.
13. Promote increased use of the local Amtrak station, and support heavy rail usage.

The city of Maysville, the Mason County Fiscal Court, and the Mason County Planning Commission have developed recommendations regarding the Southern Loop project. These recommendations include the following:

- Grade separations at all cross roads with grading for future ramps.
- Limited access.
- Two lanes from KY 9 south to US 68.
- Two lanes, but provide grade and drain for four lanes, from US 68 to KY 11.

[10] http://www.cityofmaysville.com/_uploads/2016_Comp-Plan_Word-Doc_Update2.pdf

- Provide grade separation at the intersection of KY 9 and KY 11. Alternately this situation can be addressed by expediting the construction of the remainder of the Southern Loop from KY 11 to KY 9 near Orangeburg.
- Provide grade and drainage for frontage roads at selected intersections with Maysville assuming ownership and maintenance responsibilities.

A proposed major highway improvement through a predominantly rural/agricultural area of Northern Kentucky is in the conceptual stage, with a proposed I-74 improvement corridor that extends from I-74 in Indiana, crosses the Ohio River near the Markland Locks and Dam, proceeds southeasterly through Gallatin, Carroll, Owen, Grant, Pendleton, Bracken, and Mason counties of Kentucky, crosses the Ohio River west of Maysville (new bridge), and terminates in Ohio. If built, the proposed I-74 highway would likely take the form of either (1) a major arterial highway with partial control of access, or (2) an interstate highway with full control of access. This proposed roadway, if built, would create additional traffic in Mason County and serve as another focal point for development.

Mason County's greatest long-term need for regional accessibility is an improved north-south connection. The Harsha Bridge provides a better linkage north to Highway 52 and Highway 32 (a four-lane highway) in Ohio. Lexington is an important southern focal point for interaction with Mason County, but access is very limited by the existing two-lane highway (US 68). Segments of US 68 are being reconstructed, and local officials continue to support for the entire route to be upgraded. Sections from Lexington to Paris and Paris to the south side of Millersburg are complete and construction started on the section around Millersburg in 2016.

1.3.6 KYTC 2016–2022 Highway Plan

Planned projects in the KYTC's Highway Plan, projects currently under construction, and projects identified as Project Identification Forms (PIFs—unfunded transportation needs not identified in the Highway Plan) are shown in **Figure 3.**

With three exceptions, projects shown in **Figure 3** have Design, Right-of-Way, Utilities, or Construction phases funded—a key requisite for FHWA project approval. The funded projects were considered "committed" projects for traffic modeling purposes. Exceptions were US 68 Bypass completion projects (Item Nos. 9-147.20, 9-147.60, and 9-8809.00). Due to lack of funding ($80 million), the Preliminary Engineering/Environmental phase of the US 68 Bypass extension projects will conclude with FHWA selecting the No Build Alternative in the Finding of No Significant Impact (FONSI). Although present lack of funding would prevent the projects' advancement to the Design phase, the KYTC District 9 staff recommended they be included in this SUA to gauge LO/S level of support for the projects.

In addition, some Highway Plan projects were included in the prioritization of future needs because these projects have not progressed in the project development process and require additional funding.

1.3.6 Project Identification Forms (PIFs)

The Maysville SUA Study includes the prioritization of active PIF projects **(Figure 3)**. PIF projects were not examined for improvement options; however, they were included in prioritization of future projects for this SUA.

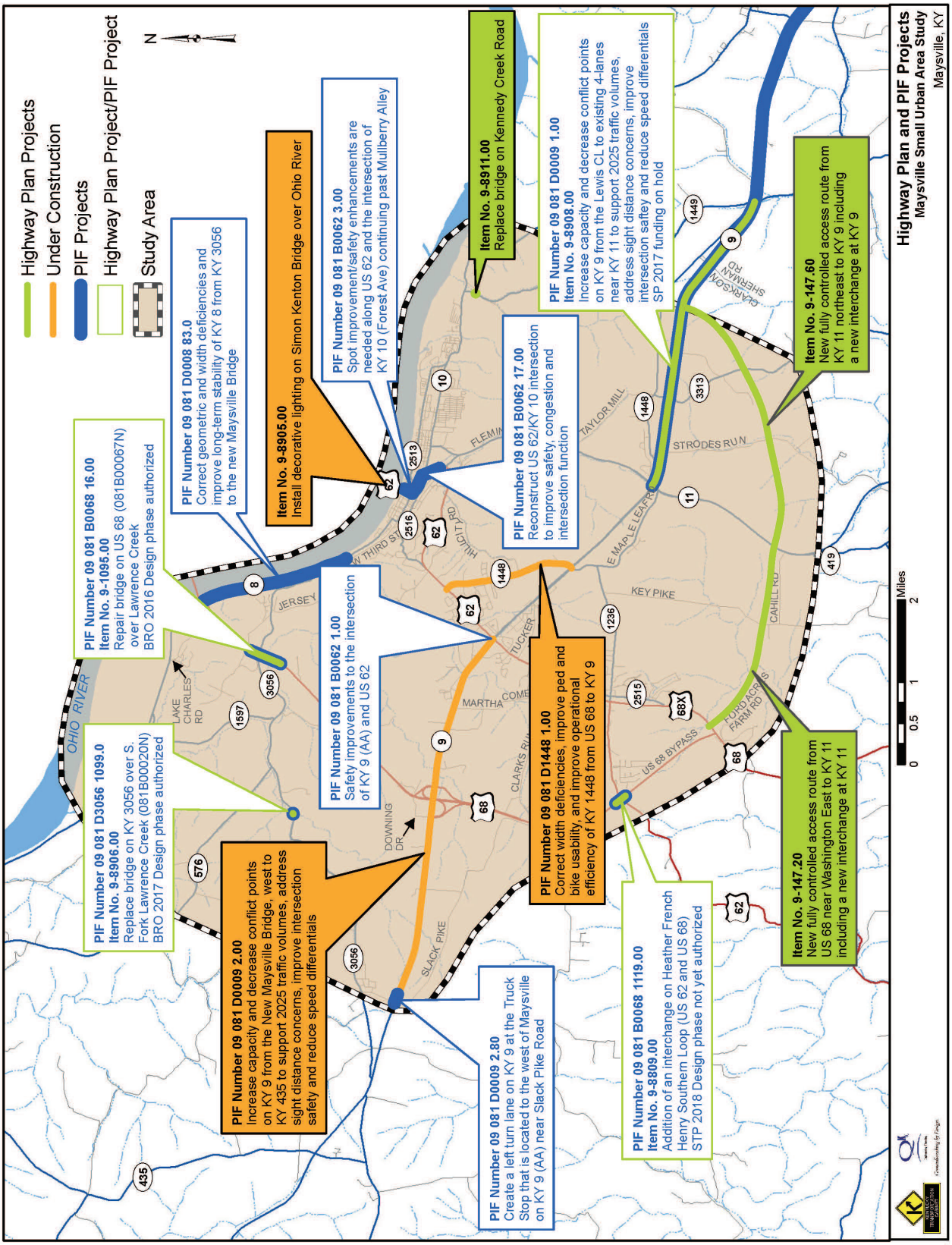

Figure 3: Highway Plan and PIF Projects

2.0 EXISTING CONDITIONS

Characteristics of the study area's existing transportation network are described in the following sections. The information includes roadway facilities and geometrics, bridges, multimodal, traffic and crash history. Data for this section were collected from the KYTC's Highway Information System (HIS) database, bridge inspection reports, National Bridge Inventory (NBI) forms, Kentucky State Police's (KSP) collision database, and field reviews.

2.1 Roadway Characteristics

This section documents study area roadway classifications, the National Highway System network and the Truck Network.

2.1.1 Functional Classification

Functional classification is the process of grouping streets and highways according to the character of travel service they provide. This classification system recognizes travel involves movement through a hierarchy of facilities that progress from lower classifications handling short, locally oriented trips, to higher classifications that serve longer-distance travel at a higher level of mobility.

Over the years, functional classification has come to assume additional significance. Functional classification includes expectations about roadway design, such as vehicle speed, capacity and relationship to existing and future land use development. Federal legislation uses functional classification in determining eligibility for funding under the Federal-aid program. Transportation agencies describe roadway system performance, benchmarks, and goals by functional classification. The following are short definitions of major functional classes for this SUA:

- **Principal Arterials (other than Freeways)** serve major centers of metropolitan areas, provide a high degree of mobility, and can also provide mobility through rural areas.
- **Minor Arterials (Arterial Streets in urban areas)** provide service for trips of moderate length, serve geographic areas that are smaller than their higher arterial counterparts and offer connectivity to the higher arterial system. The primary difference is usually multiple arterial routes serve a particular urban area, radiating from the urban center to serve the surrounding region. In contrast, an expanse of a rural area of equal size would often be served by a single arterial.
- **Collectors (Collector Streets in urban areas)** gather traffic from Local Roads and funnel them to the arterial network. Within the context of functional classification, collectors are categorized as either Major Collectors or Minor Collectors. In a rural environment, collectors generally serve primarily intra-county travel and shorter trips.
- **Local Roads** are not intended for use in long distance travel, except at the origin or destination end of a trip, due to their direct access to abutting land. They are often designed to discourage through traffic.

Figure 4 shows the functional classification of roadways within the study area.

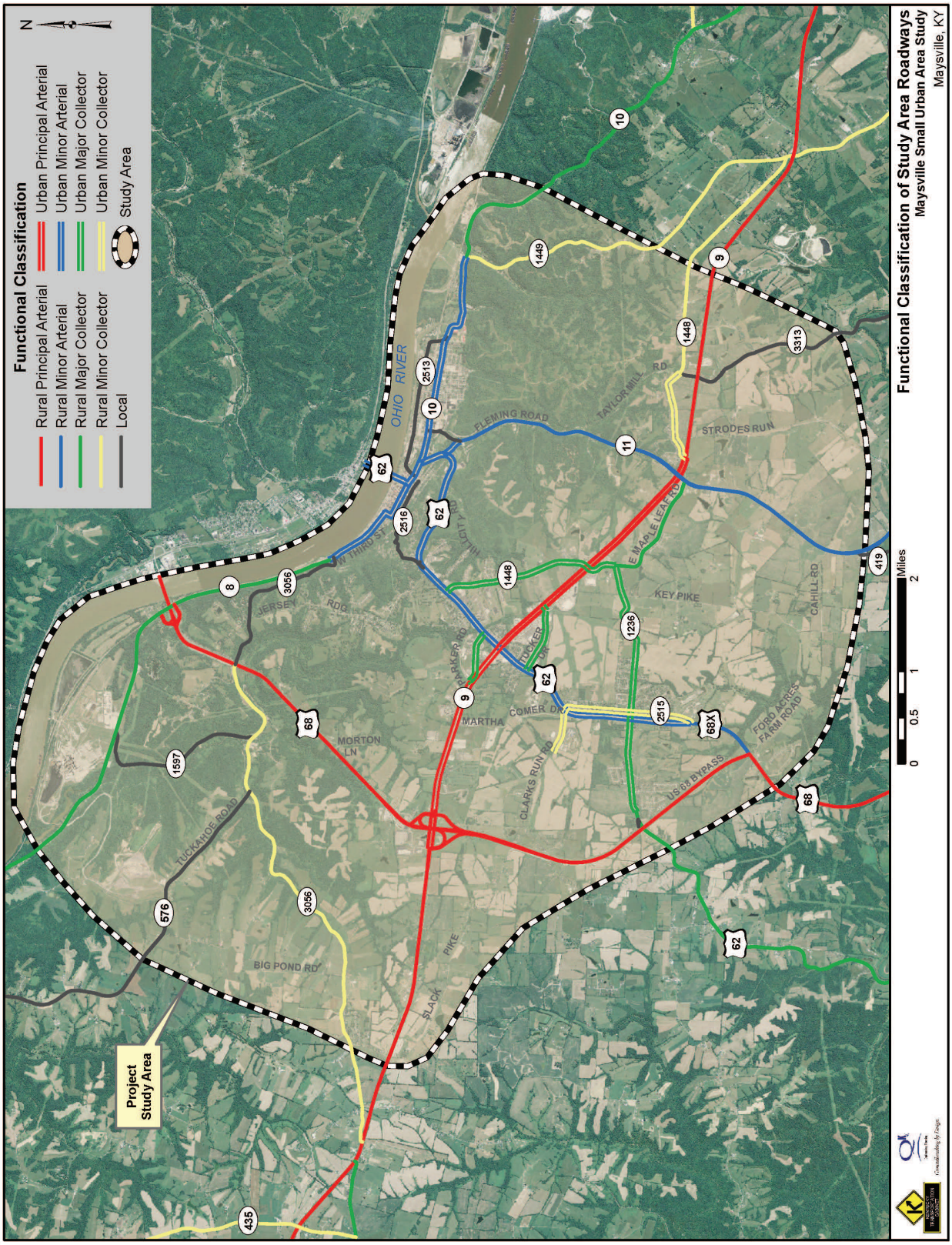

Figure 4: Functional Classification of Study Area Roadways

In the southern portion of the study area, US 68 and the US 68 Bypass heading north to the Ohio River are classified as Rural Principal Arterials and provide regional north-south connectivity. KY 9 provides east-west connectivity and is classified as a Rural Principal Arterial west of US 68 Bypass and east of KY 11. From the US 68 Bypass interchange to east of KY 11, KY 9 is an Urban Principal Arterial. KY 11 from the southern portion of the study area to just outside the Maysville city limits serves as a Rural Minor Arterial. KY 8, from the western study area boundary and continuing along the Ohio River also serves as a Rural Minor Arterial.

2.1.2 National Highway System (NHS)

The National Highway System (NHS) consists of roadways important to the nation's economy, defense, and mobility **(Figure 5)**. This designation includes the following subsystems of roadways[11]:

- Interstate: the complete Interstate System of highways is listed on the NHS.
- Other Principal Arterials: highways in rural and urban areas which provide access between an arterial and a major port, airport, public transportation facility, or other intermodal transportation facility.
- Strategic Highway Network (STRAHNET): a network of highways important to the United States' strategic defense policy that provides defense access, continuity and emergency capabilities for defense purposes.
- Major Strategic Highway Network Connectors: highways which provide access between major military installations and highways which are part of the Strategic Highway Network.
- Intermodal Connectors: highways that provide access between major intermodal facilities and four subsystems making up the NHS.

US 68 and KY 9 are on the National Highway System.

2.1.3 Surface Transportation Assistance Act of 1982 (STAA)

In compliance with the Surface Transportation Assistance Act of 1982 (STAA), Kentucky has established a network of highways on which commercial vehicles with increased dimensions may operate. These "STAA" vehicles include semi-trailers with 53-foot-long trailers and single-unit trucks with a total length of 45 feet. Portions of US 68, US 68X, US 62, and KY 11 are Federal Designated Truck Routes. US 68 Bypass and KY 9 are State Designated Truck Routes. These designated truck routes are shown on **Figure 6 (p. 13).**

[11] Source: http://www.fhwa.dot.gov/planning/national_highway_system/

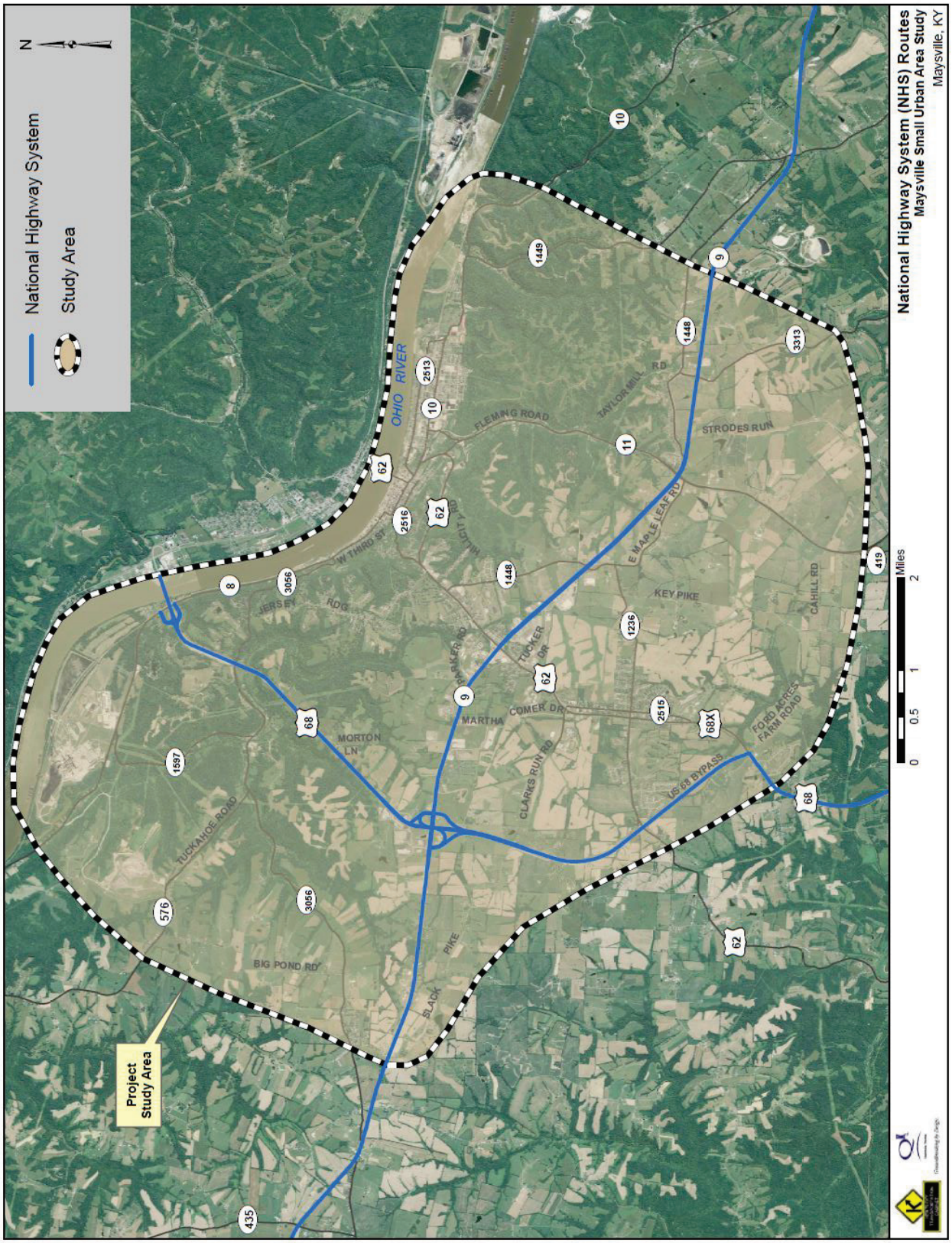

Figure 5: National Highway System (NHS) Routes

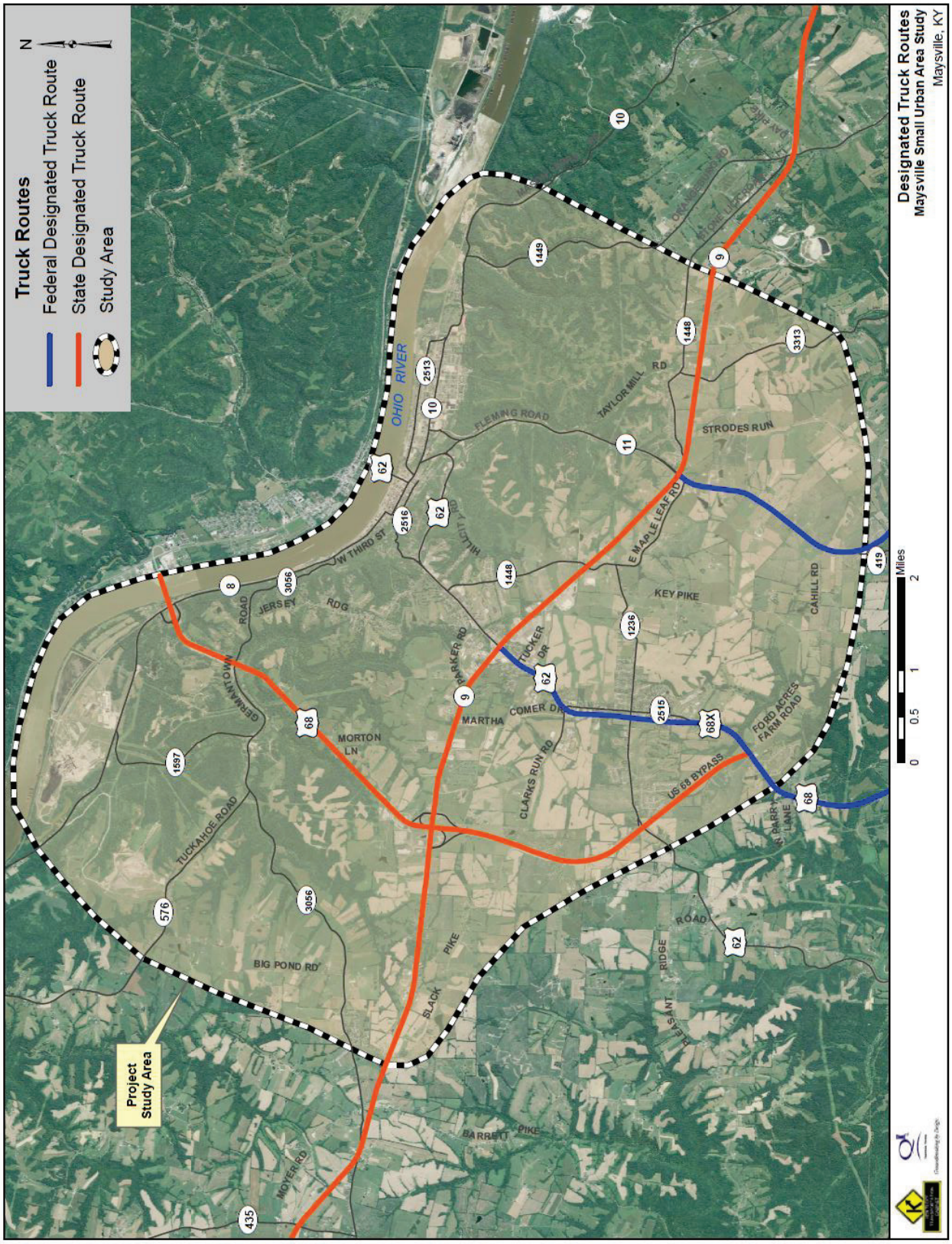

Figure 6: Designated Truck Routes

2.2 Geometric Characteristics

The current number of lanes and estimated lane widths along study area roadways are shown on **Figure 7**. The KYTC design guidelines suggest a minimum of 11-foot-wide lanes on arterial and collector roadways. The following routes have 10-foot-wide or less travel lanes: US 62, near the southern study area boundary and across the Ohio River; KY 8; short segments of KY 10 and KY 11; and the majority of KY 1448, KY 3056, KY 576, KY 2516, KY 1236, and KY 3313.

KY 9 from US 68 to KY 11 has 12-foot-wide lanes, and US 62 from KY 1236 north to outside the Maysville downtown area, has 11-foot-wide lanes. KY 11, KY 10 along the Ohio River, US 68 Bypass, US 62 in Maysville, KY 9 between KY 11 and the eastern study area limits, and KY 9 between US 68 and the western study area limits have 12-foot-wide lanes.

Estimated shoulder widths are shown on **Figure 8 (p. 16)**. Most arterial routes should have shoulders at least eight feet wide, the recommended minimum for such roadways. KY 9 west of US 62 has shoulders two to four feet wide where there is no curb and gutter. Portions of KY 8 adjacent to the Ohio River, and sections of US 62 have two- to four-foot-wide shoulders. More rural routes have shoulders between two and four feet wide. Many of the downtown streets have no shoulders or shoulders one foot wide, due to curb and gutter.

2.3 Bridges/Structures

The KYTC's Bridge Data Miner shows 18 bridges located along study area roadways **(Figure 9, p. 17)**. Two are major crossings over the Ohio River. In accordance with federal standards, bridges are inspected every two years to evaluate their conditions and other elements. A sufficiency rating—a numeric score from 0 to 100 describing the sufficiency of the bridge to remain in service—is calculated during each inspection. Bridges considered functionally obsolete are not necessarily unsafe. The category indicates the bridge has older design features not built to today's standards. A functionally obsolete bridge is likely not wide enough or tall enough to accommodate current vehicle sizes, weights, and traffic volumes.

Structurally deficient bridges cannot safely carry the weight they were originally designed to carry and are proscribed (by signage) from doing so. A bridge structure is eligible for federal replacement funds when it meets two criteria: (1) the bridge has a sufficiency rating below 50.0, and (2) the bridge is considered either structurally deficient or functionally obsolete.

The KYTC's Division of Maintenance records for study area's 18 bridges identify one as structurally deficient and having a sufficiency rating less than 50 (KY 3056 Bridge over South Lawrence Creek, which has Design funding authorized), and three as being functionally obsolete (KY 1448, US 62X, and KY 10 bridges just outside the study area).

2.4 Multimodal

Mason County is served by the CSX Railroad and the Trans-Kentucky Railroad (TTI), and Maysville has an Amtrak station. The Fleming-Mason Airport is located about six miles south of Maysville. According to the city/county *2016 Comprehensive Plan*, Maysville has a public transportation system that operates within the city limits, and disabled persons have access to a city-operated van. In addition, taxi service is available through private companies. A limited amount of river barge traffic originates from Mason County.

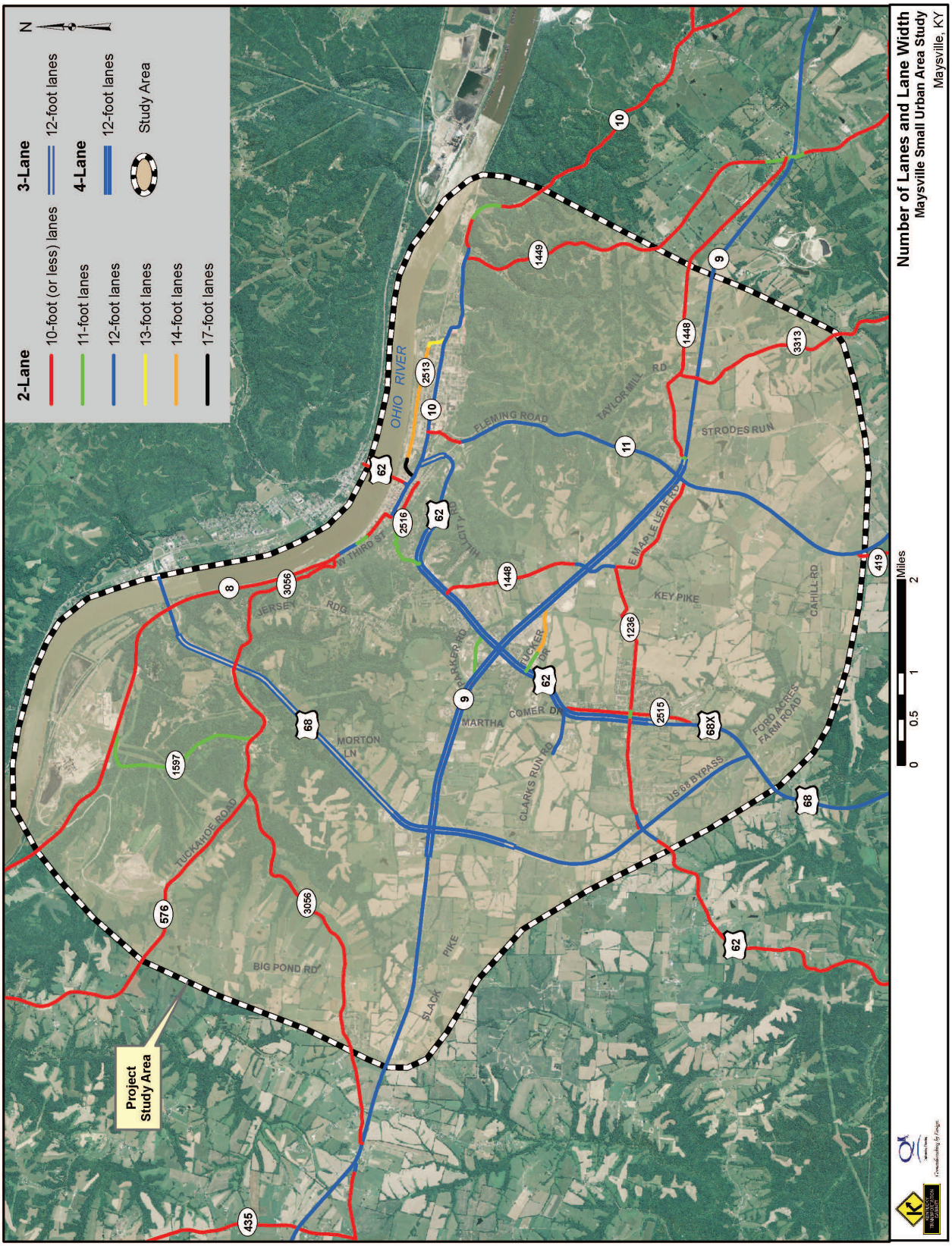

Figure 7: Number of Lanes and Lane Widths

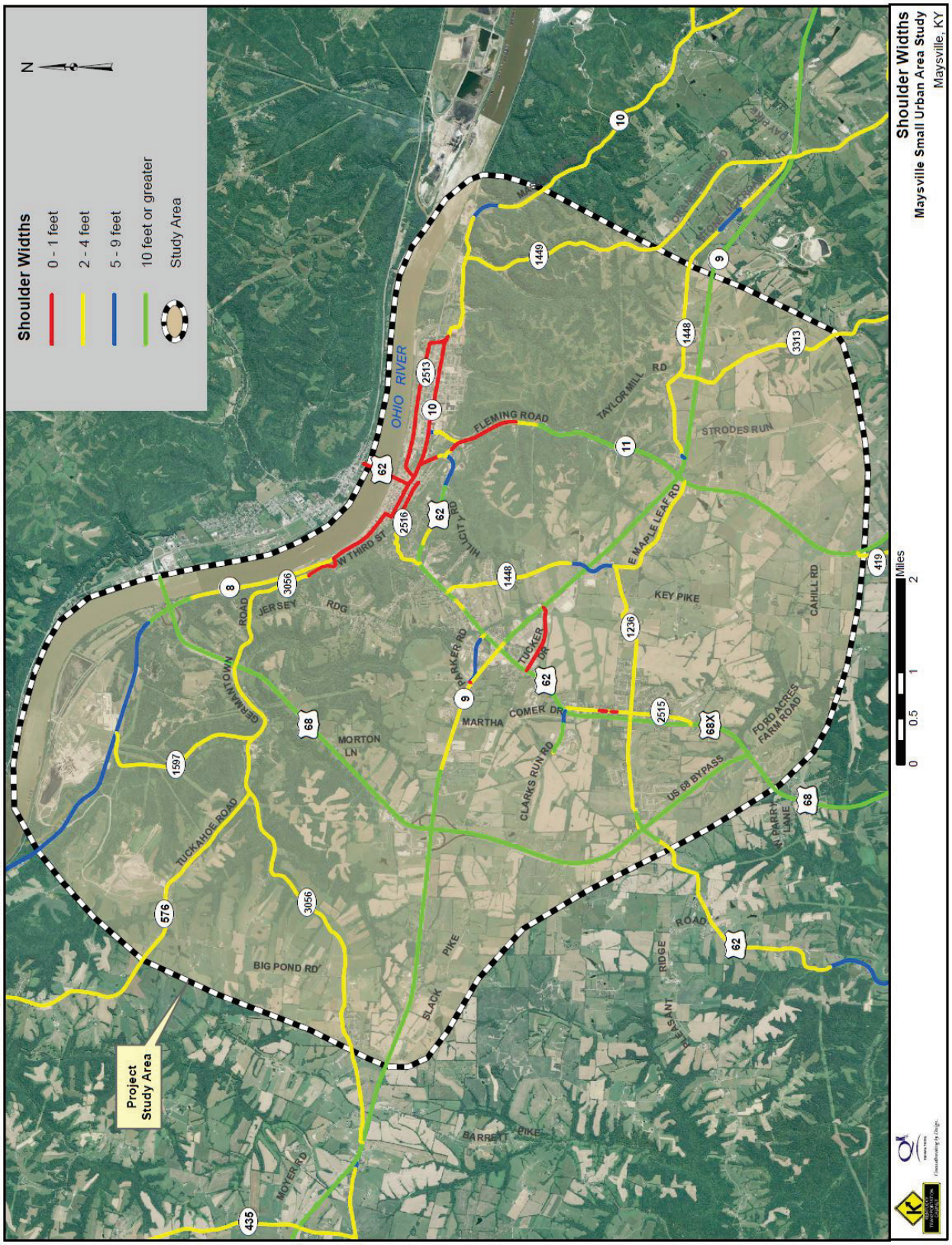

Figure 8: Shoulder Widths

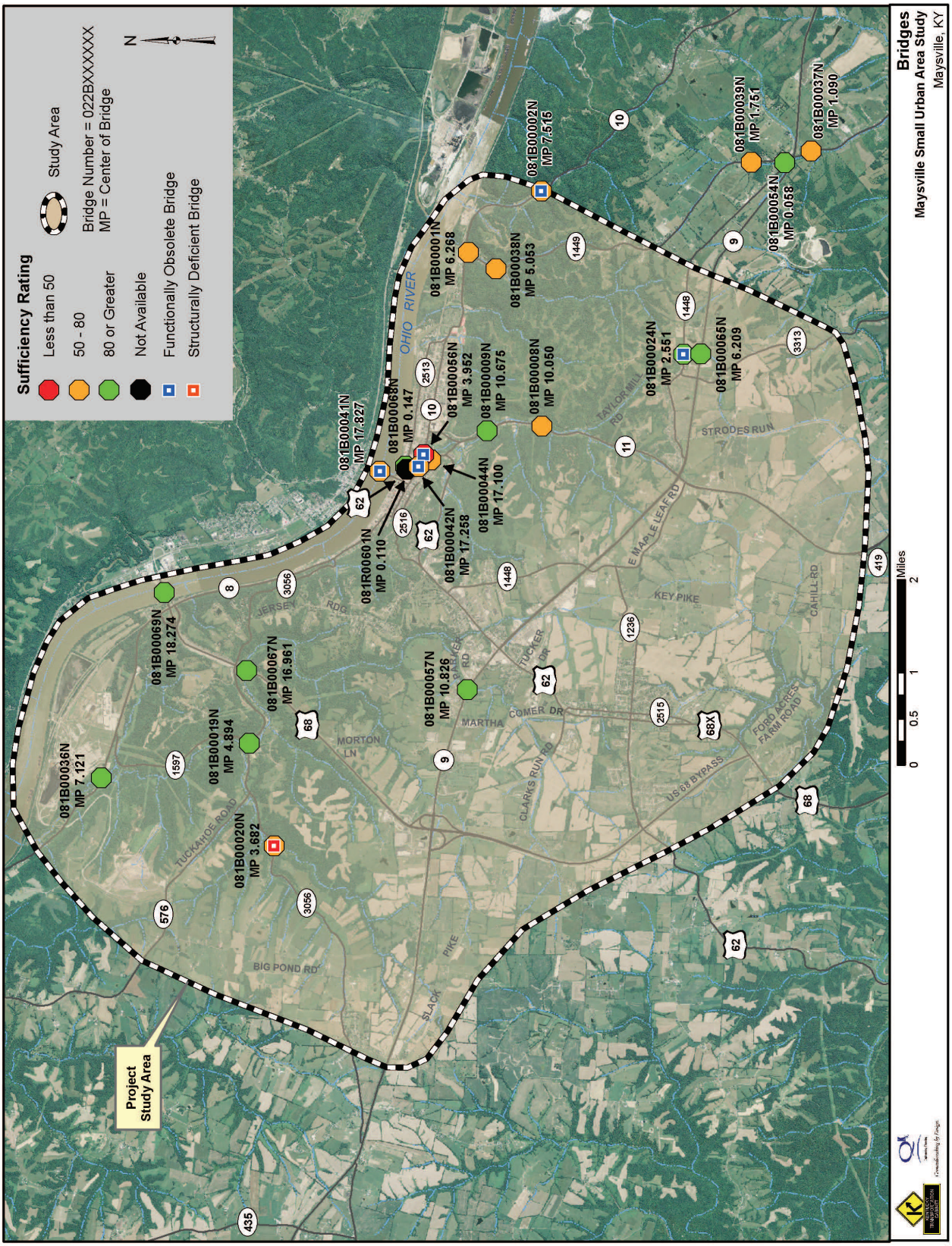

Figure 9: Bridges

2.5 2016 Traffic Volumes and Current Year Operational Analysis

The Maysville SUA study area roadways and their associated 2016 average daily traffic (ADT) volumes are shown in **Figure 10 (p. 20)** and **Appendix A**. ADT volumes on state-maintained study area roads range from 300 vehicles per day (vpd) on KY 3056 to 17,540 vpd on US 62. KY 9 carries between 7,890 vpd and 13,600 vpd east of US 62. US 68 and US 68 Bypass have ADTs of 4,820 vpd and 1,520 vpd, respectively.

The metrics used to describe traffic conditions in the study area include ADT, volume to capacity ratio (v/c), level of service (LOS), delay, and queue lengths (for intersections).

The KYTC's District 9 Area Travel Demand Model (ATDM) was used to compare 2016 ADT volumes to each area roadway's theoretical capacity. A v/c ratio greater than 1.0 indicates additional lanes might be justified.

LOS is a qualitative measure, as defined in the Highway Capacity Manual (HCM 2010)[12], that describes traffic conditions based on measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. LOS typically represents a driver's perspective of traffic conditions based on perceived congestion. LOS A is associated with free-flow conditions, high freedom to maneuver, and little or no delay. Conditions at or near capacity typically are associated with LOS E. At LOS F, traffic conditions are oversaturated and beyond capacity, with low travel speeds, little or no freedom to maneuver, and high delays. Although LOS C is desirable in urban areas, LOS D is generally acceptable.

2.5.1 2016 Volume to Capacity (v/c) Ratios

Using the District 9 ATDM volumes and HCM procedures, a v/c ratio analysis showed all study area roadway segments were operating at less than capacity, with a v/c ratio less than 1.0, as shown in **Figure 11 (p. 21)**.

2.5.2 2016 Segment Levels of Service (LOS)

Based on analysis, no study area roadways or roadway segments are operating at LOS E or LOS F. KY 9 from KY 1449 to the beginning of the four-lane section operates at LOS D **(Figure 10)**. This section of KY 9 is in the Highway Plan as Item No. 9-8908.00; therefore, improvements were not developed for this study area roadway. Likewise, the portion of KY 9 east of US 68 to the western edge of the study area is depicted as operating at LOS D. However, that section is under construction to widen to five lanes (PIF 09 081 D0009 2.00) in **Figure 2 (p. 4)**. Therefore no project improvement was developed.

2.5.3 2016 Intersection Levels of Service (LOS)

AM and PM turning movement counts were conducted at 17 intersections as part of the Maysville SUA Study. The turning movement data are provided in **Appendix A**. Using 2016 ADT and Design Hour Volumes, signal timings, geometry, and current HCM software, analysis of study area intersections identified in **Table 1** shows 14 intersections with approaches (northbound, southbound, eastbound, or westbound) operating at LOS C or better in both the AM and PM peak hour.

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[12] *Highway Capacity Manual*, Transportation Research Board, National Research Council, Washington, D.C., 2010.

Table 1: 2016 Levels of Service for Study Area Intersections

INTERSECTION	MP	TURNING MOVEMENT #*	LOS AM Peak Hour Approach or Intersection LOS				LOS PM Peak Hour Approach or Intersection LOS			
			NB	SB	WB	EB	NB	SB	WB	EB
KY 9/KY 11 (signalized)	7.560	1	C				C			
KY 9/Tucker Drive*	9.274	2	A	A	A	B	A	A	A	C
US 62/KY 9 (signalized)	14.387	3	B				B			
US 68/KY 9E Ramps	12.555	4	B	A		A	B	A		A
US 68/KY 9 SB Ramps (signalized)	12.620	5	B				B			
US 68B/US 68/US 68X	10.409	6		A		A		B		A
US 62/Kenton Station Road	14.588	7	B	B	D	F	A	A	C	B
US 62/Jersey Ridge Road (signalized)	15.522	8	C				B			
US 62/KY 11	16.927	9		A	C			A	E	
US 62/KY 10 (signalized)	17.234	10	D				E			
US 62/Bridge Street (KY 2513) (signalized)	17.383	11	A				A			
US 62/Simon Kenton Bridge (signalized)	17.491	12	C				C			
US 68/KY 9 N (Downing Drive NE Quadrant)	14.503	13			A	A			A	A
KY 8/US 68 Ramps/ SE (NB ramps)	9.257	14	A			A	A			B
US 68/KY 8 (SB ramps)	9.077	15	A			B	A			B
KY 2513 - (2nd Street)/ KY 10	5.195	16	A	A	A	A	B	B	B	B
KY 11/KY 2519 (Lexington Avenue)	10.994	17	A	A	B	B	A	A	C	B

Notes: Red letters signify areas of concern or intersection operating at LOS E or F in either/both AM or PM peak hour.

** Corresponds with Appendix A.*

*** Intersection approaches operating at acceptable LOS D or above but at least one movement (left, through, right) operating at LOS E or F.*

The following is a summary of key findings for specific movements, in addition to the table above:

- The US 62/KY 10 intersection exhibits a LOS D or below in both the AM and PM peak hours. This intersection is part of PIF No. 09 081 B0062 3.00; therefore, improvements were not developed.
- US 62 at Kenton Station Road is an unsignalized intersection with two approaches operating at LOS D and F in the AM peak hour. The eastbound approach operates at LOS F (delay 107.9 seconds/vehicle). Volumes at this intersection may warrant a traffic signal, though additional traffic data collection would be required.
- The US 62/KY 11 intersection westbound approach operates at LOS E in the PM peak hour due to the westbound left-turning vehicles (76.4 seconds/vehicle). However, the queue is only four vehicles.
- The KY 9/Tucker Drive intersection approaches overall operate at an acceptable LOS; however, the eastbound (Tucker Drive) through-/left-turn movement operates at LOS E in the PM peak hour.

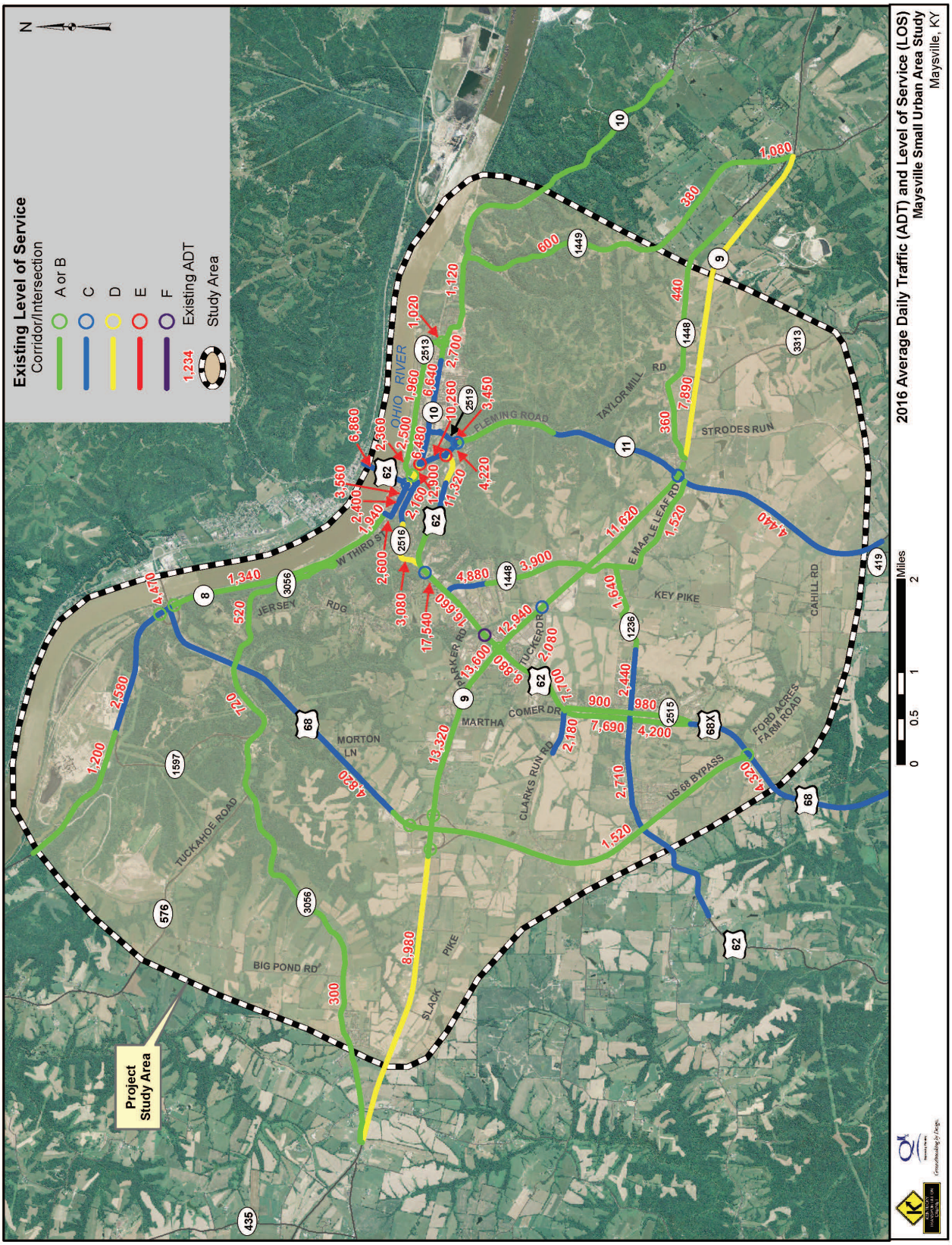


Figure 10: 2016 Average Daily Traffic (ADT) Volumes and Levels of Service (LOS)

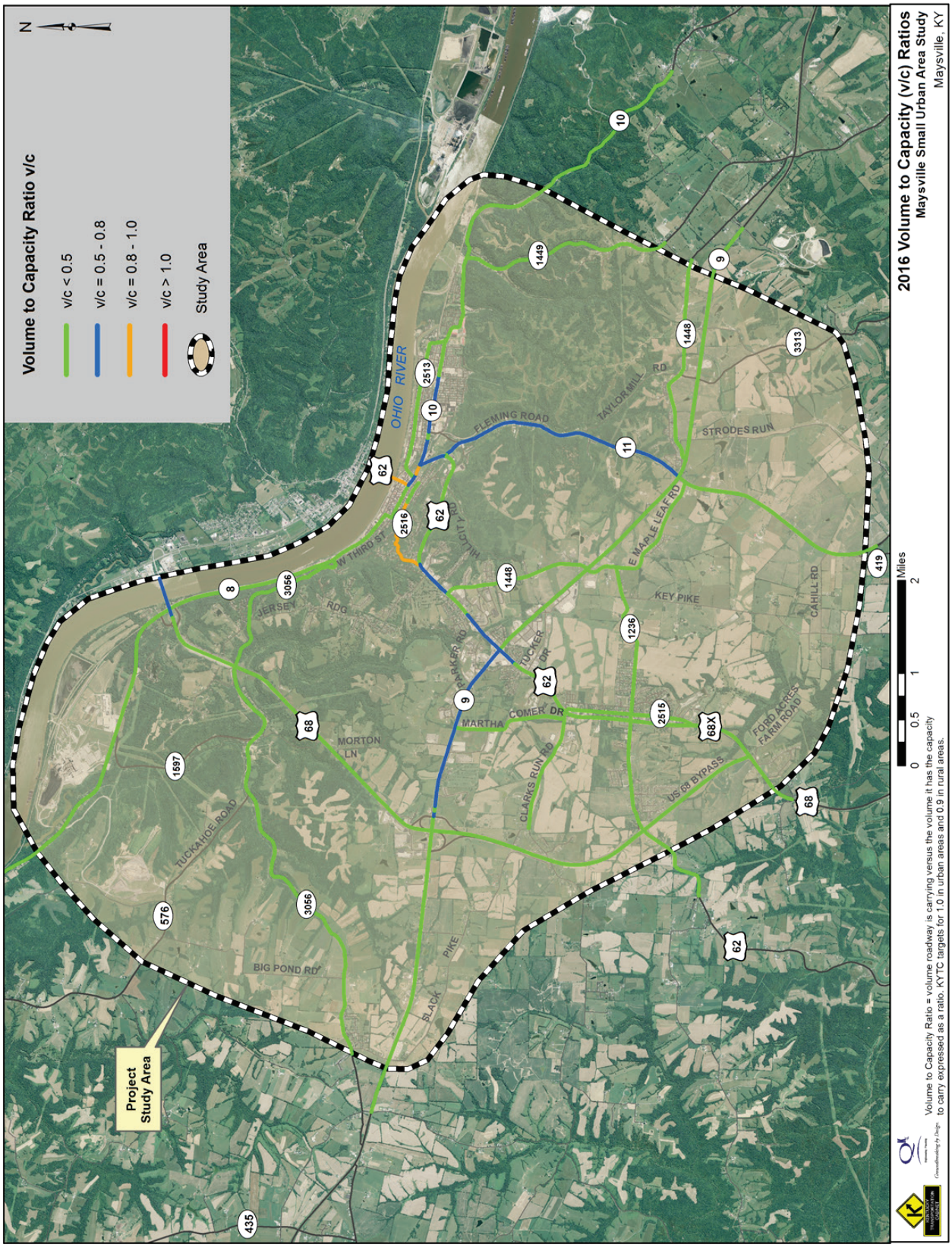


Figure 11: 2016 Volume to Capacity (v/c) Ratios

2.6 Crash History

Historical crash data were analyzed for study area roadways for a three-year period between 2013 and 2015 **(Figure 12, p. 25)**. A total of 600 crashes were reported. The majority of the crashes occurred on three routes: KY 9, KY 10, and US 62 (yellow shading in **Table 2**). For each of the three routes, over 75% of the crash types **(Table 2)** were property damage only (PDO). KY 9 had three fatalities during the analysis period; however, none have occurred since 2014. All corridor crashes by manner of collision are shown in **Figure 13 (p. 26)**. A dataset of crashes is in **Appendix B.**

Table 2: Study Area Roadways and Crash Types

Route	Total Crashes	Property Damage Only	Injury Crashes	Fatality Crashes	% of Total Crashes
KY 8	44	40	4	0	7%
KY 9	160	122	35	3	27%
KY 10	66	59	7	0	11%
KY 11	39	29	10	0	7%
KY 1236	19	19	0	0	3%
KY 1448	37	32	5	0	6%
KY 1449	12	10	2	0	2%
KY 2513	27	25	2	0	5%
KY 2515	6	6	0	0	1%
KY 2516	37	35	2	0	6%
KY 3056	29	25	4	0	5%
US 62	86	71	15	0	14%
US 68	37	25	11	1	6%
US 68X*	1	1	0	0	0%
Totals	600	499	97	4	100%

* *US 68X opened during the crash analysis period; therefore, only one crash was assigned to it by the State Police.*

The KYTC uses a systematic procedure to identify locations having high crash rates. The actual number of crashes, as obtained from the Kentucky State Police's (KSP) Kentucky Open Portal Solutions (KYOPS) Database, occurring within a roadway segment is used to calculate an Actual Crash Rate using the actual number of crashes, roadway length, AADT, and the number of years for which crash data is being examined. Using an analysis procedure from the KTC and referenced in *The Analysis of Traffic Crash Data in Kentucky (2010-2014)*[13], 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 greater statistically, 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. This procedure is a screening technique indicating

[13] http://www.ktc.uky.edu/projects/analysis-of-traffic-crash-data-in-kentucky-2010-2014/

locations where further analysis may be needed. It is neither a definitive statement nor a measurement of a crash problem.

Using this method, CCRFs for 0.1-mile spots were calculated. Twenty locations with 0.1-mile spots with CCRF values greater than or equal to 1.0 are shown in **Figure 14 (p. 27)** and are summarized in **Table 3**. **Table 4** provides details of these crashes, as cited in police crash reports.

Table 3: Summary of 0.1-Mile Crash Spots with CCRF Greater Than or Equal to 1.0

Route	Begin MP	End MP	Average Daily Traffic*	Number Lanes	R/U**	Functional Class Rate	CRASHES				CCRF
							Fatal	Injury	PDO***	Total	
KY 8	12.0	12.1	2,382	2	U	0.51	0	0	5	5	1.04
KY 9	7.5	7.6	7,872	4 - Divided	U	0.44	0	2	15	17	1.84
KY 9	10.2	10.3	12,009	4 - Divided	U	0.44	0	3	15	18	1.45
KY 9	12.6	12.7	8,961	4 - Divided	R	0.14	0	2	3	5	1.04
KY 10	3.8	3.9	6,478	2	U	0.51	0	0	10	10	1.11
KY 10	6.3	6.4	1,106	2	R	0.26	0	2	1	3	1.33
KY 11	8.4	8.5	4,387	2	R	0.26	0	1	7	8	1.73
KY 1236	1.1	1.2	1,635	2	U	0.51	0	0	7	7	1.81
KY 1449****	4.1	4.2	589	2	R	0.26	0	0	3	3	1.74
KY 2516	0.0	0.1	3,064	2	U	0.51	0	1	6	7	1.25
KY 2516	0.5	0.6	2,937	2	U	0.51	0	1	7	8	1.47
KY 3056****	2.3	2.4	282	2	R	0.26	0	1	1	2	1.53
KY 3056****	3.2	3.3	282	2	R	0.26	0	1	4	5	3.82
KY 3056****	4.9	5.0	696	2	R	0.26	0	0	2	2	1.08
KY 3056****	5.9	6.0	509	2	R	0.26	0	0	2	2	1.23
KY 3056****	6.1	6.2	509	2	R	0.26	0	0	2	2	1.23
US 62	13.3	13.4	2,673	4 - Undivided	U	0.57	0	2	5	7	1.27
US 62	14.0	14.1	8,869	4 - Undivided	U	0.57	0	6	6	12	1.00
US 62	14.3	14.4	8,869	4 - Undivided	U	0.57	0	6	22	28	2.31
US 62	14.4	14.5	16,650	4 - Undivided	U	0.57	0	4	17	21	1.09

* *Average Daily Traffic 2013-2015*

** *R-Rural; U-Urban*

*** *Property Damage Only*

**** *Low volume roads will produce a high CCRF with few crashes*

Table 4: Summary of Crash Reports for 0.1-Mile Crash Spots with CCRF Greater Than or Equal to 1.0

Route	Begin MP	End MP	CCRF	Total Crashes	SUMMARY
KY 8	12.0	12.1	1.04	5	4 of 5 were persons parking or already parked; right turn from alley, funeral, and parked cars could not see
KY 9	7.5	7.6	1.84	17	10 of 17 rear ends; 1 deer strike; 2 making a left turn from wrong lane
KY 9	10.2	10.3	1.45	18	10 of 18 rear ends (3 turning right when hit from behind); 6 sideswipes were in the wrong lane
KY 9	12.6	12.7	1.04	5	4 rear ends (1 turning into Town and Country Marathon, 1 at Downing Drive)
KY 10	3.8	3.9	1.11	10	No discernible pattern: 3 rear end, 1 load shift, 1 ran red light, 1 making left, 1 left turn into parking lot, 1 backed into parked car, and 1 backing
KY 10	6.3	6.4	1.33	3	All ran off of the roadway at night in a curve, 1 wet, 1 icy, 1 dry, 1 DUI, 1 left the scene of the crash
KY 11	8.4	8.5	1.73	8	7 of 8 rear end; 1 angle (ran red light). Characteristics: all daylight with 1 rear end, on straight alignment, only one angle on wet pavement
KY 1236	1.1	1.2	1.81	7	All 7 crashes in a curve: 3 single vehicle; 5 of 7 on wet pavement; 1 equipment failure; 1 head-on
KY 1449	4.1	4.2	1.74	3	1 wet roadway, 1 slid on ice, 2 in a curve (1 deer strike and 1 DUI)
KY 2516	0.0	0.1	1.25	7	4 of 7 rear ends; 2 vehicles backing; 1 ran off of the roadway
KY 2516	0.5	0.6	1.47	8	All 8 crashes occurred in a curve and grade; 4 single vehicles on wet pavement with 3 out of 4 in the dark; 3 too fast for conditions; 1 head-on speeding; 2 icy
KY 3056	2.3	2.4	1.53	2	1 icy and 1 snow (both lost control)
KY 3056	3.2	3.3	3.82	5	1 DUI, 1 deer strike, 3 in a curve (1 snow/slush)
KY 3056	4.9	5.0	1.08	2	1 pulled into path of another vehicle, 1 equipment failure
KY 3056	5.9	6.0	1.23	2	1 deer strike, secondary crash tried to stop and slid (wet pavement)
KY 3056	6.1	6.2	1.23	2	1 reached to get cell phone, 1 cab filled with smoke
US 62	13.3	13.4	1.27	7	4 of 7 in a curve and on level road, and 2 opposing left turn
US 62	14.0	14.1	1.00	12	1 single vehicle; 4 angle; 4 opposing left turn; 1 wet roadway
US 62	14.3	14.4	2.31	28	27 involved 2 or more units; 24 in daylight; 14 rear end; 26 dry roadway; 6 angle-turning; 3 opposing left turn; 3 sideswipe; 7 straight and grade
US 62	14.4	14.5	1.09	21	3 parking lot; 10 rear end; 6 left turns

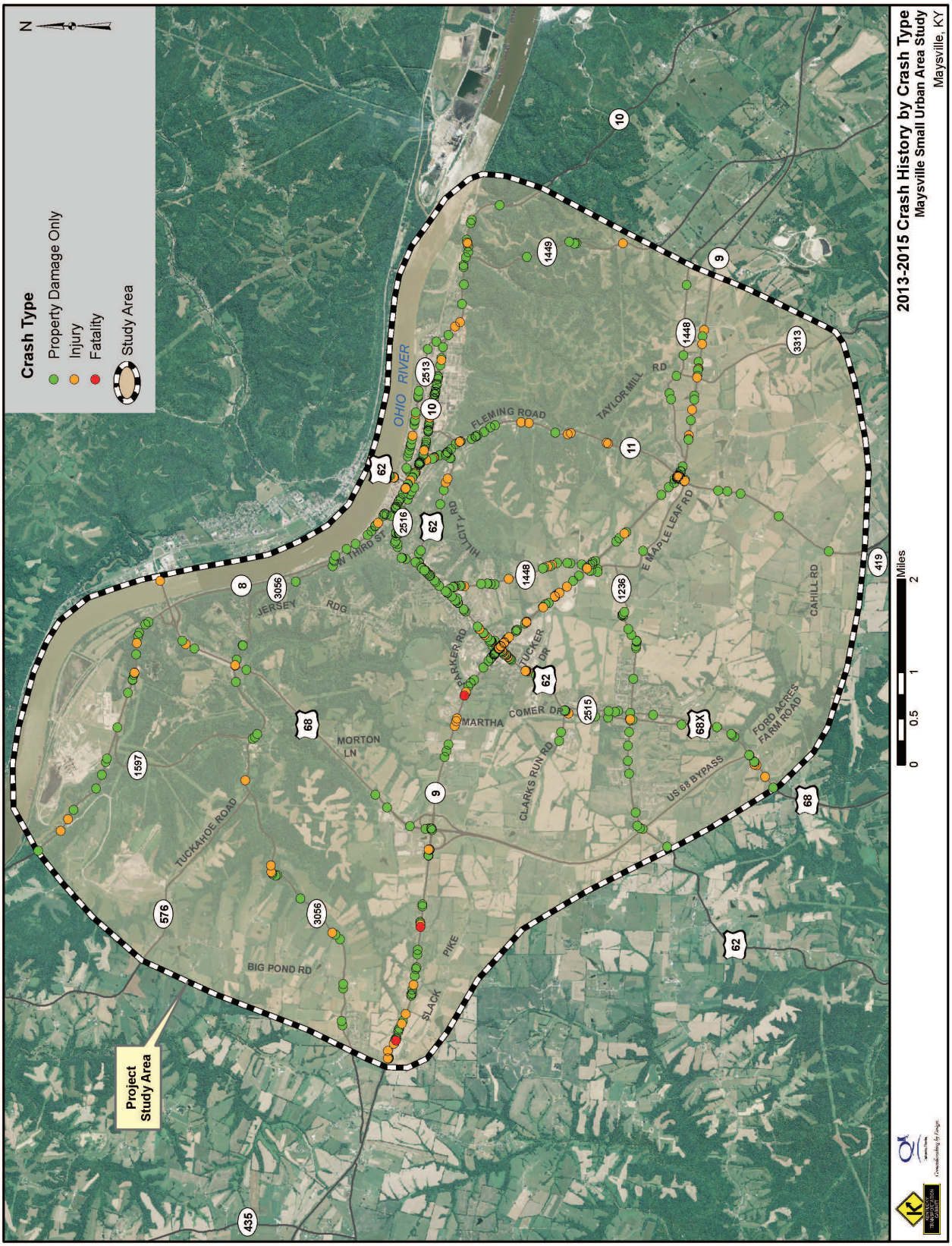


Figure 12: Crash History by Crash Type

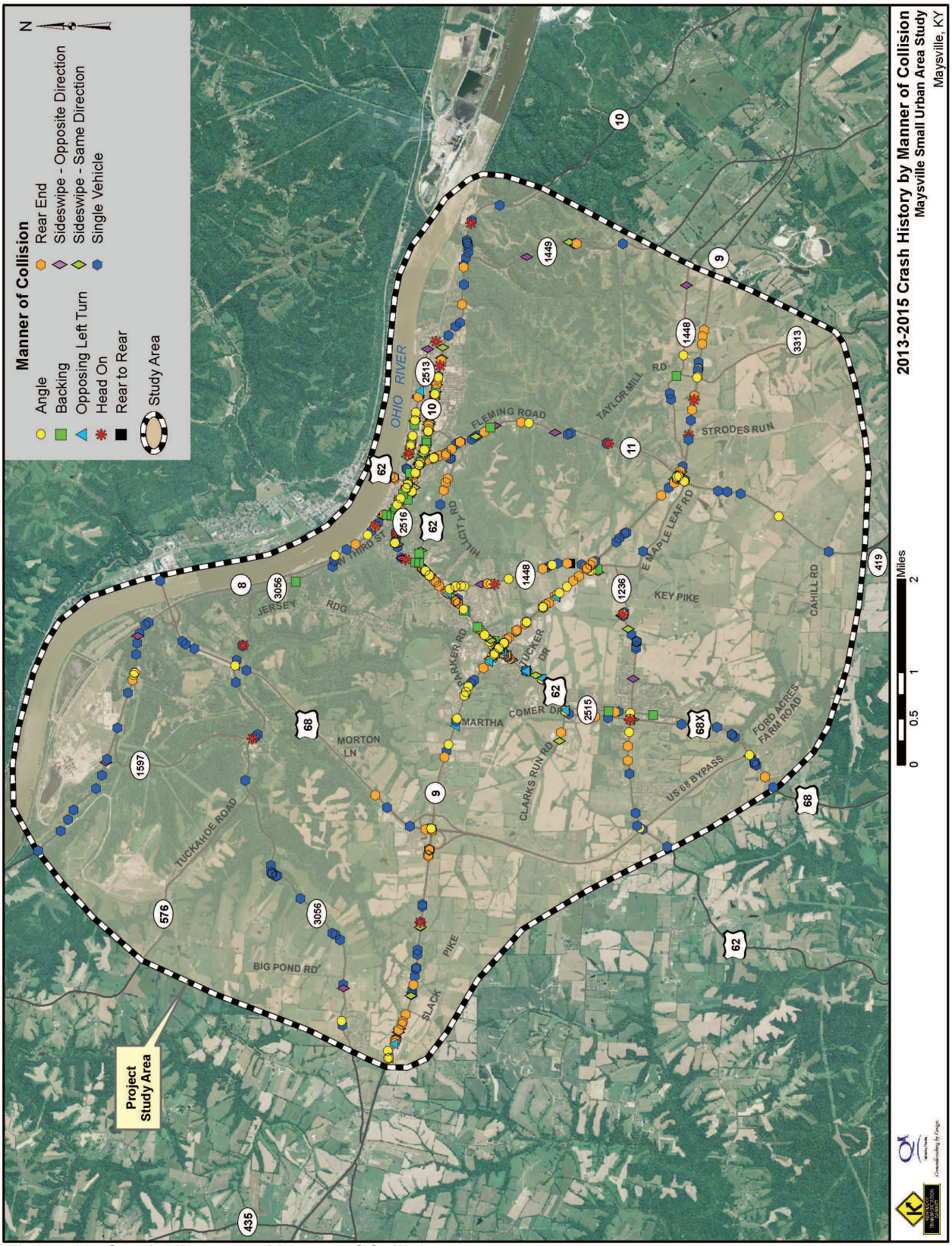


Figure 13: Crash History by Manner of Collision

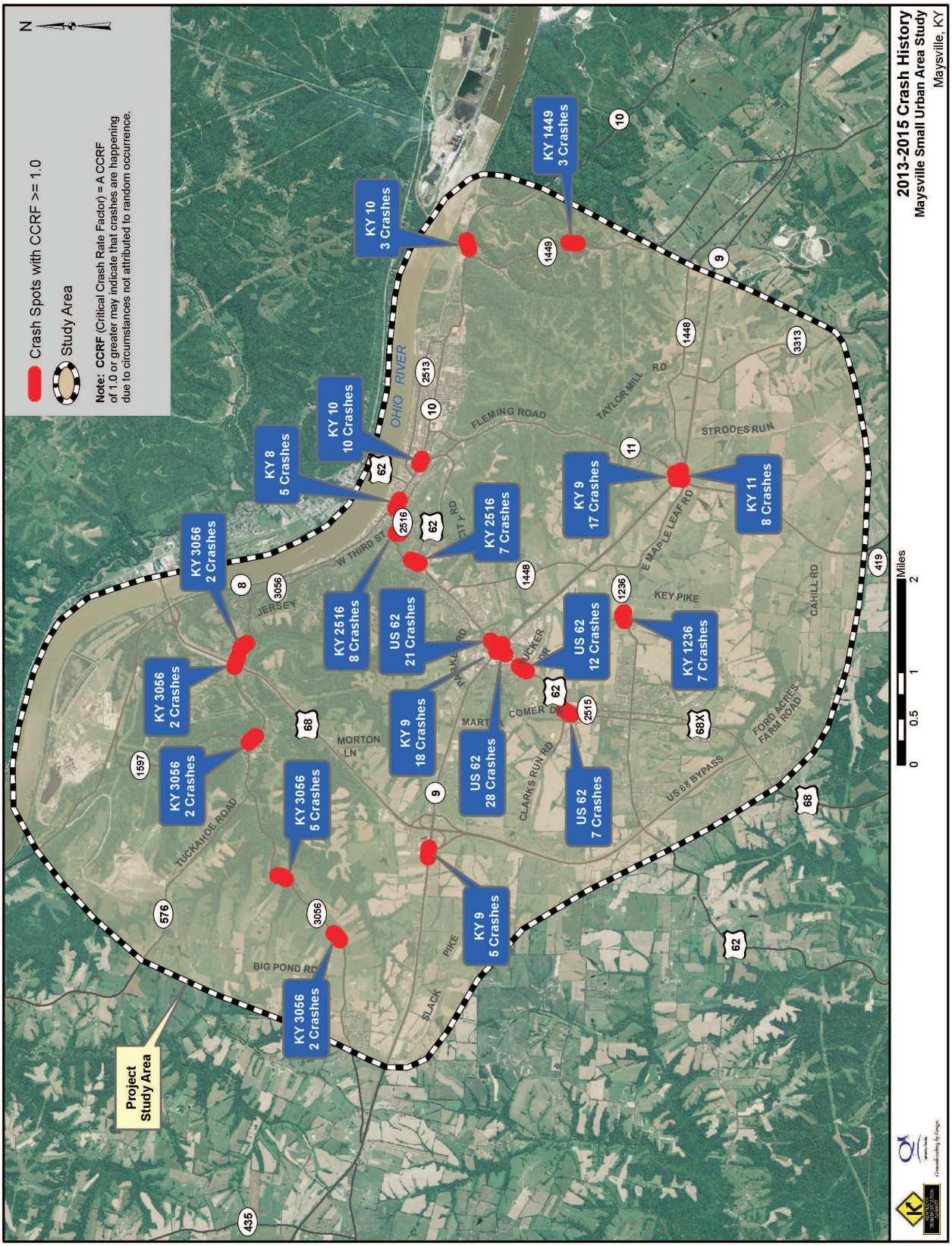


Figure 14: 0.1-Mile Crash Spots with CCRF Greater Than or Equal to 1.0

3.0 ENVIRONMENTAL OVERVIEW

An Environmental Overview was conducted to identify resources and potential issues for consideration during the development of transportation projects. Natural and human environmental resources were identified from a literature/database review. Study area environmental resources are shown in **Figure 15** and are summarized in the following sections.

3.1 Natural Environment

The natural environment typically refers to all living and non-living things found to occur in nature. It includes aquatic ecology such as rivers, streams, and wetlands; threatened and endangered species; prime and unique farmland; and geotechnical resources.

3.1.1 Rivers and Streams

The Ohio River is the most notable of Mason County's water resources. The county has approximately 20 miles of river front, with potential for commerce and recreation. Three major watersheds are within the county: (1) the North Fork of the Licking River is the largest stream, flowing west through central Mason County, (2) the southern portion of the county drains into the main tributary of the Licking River, and (3) the northern area drains directly into the Ohio River.

In addition to the Ohio River, 13 named streams are within the study area:

- Beasley Creek
- Big Threemile Creek
- Bull Fork Creek
- Fishing Gut Creek
- Goose Creek
- Kennedy Creek
- Lawrence Creek
- Limestone Creek
- Middle Run
- South Fork Lawrence Creek
- Strodes Creek
- Threemile Creek
- Wells Creek

In addition to these named resources, approximately 93 unnamed streams are documented.

3.1.2 Wetlands and Ponds

The National Wetlands Inventory (NWI) has documented 285 wetlands throughout the study area, with the majority being 242 freshwater ponds (172 acres), followed by 25 emergent wetlands (27 acres), 16 forested/shrub wetlands (44 acres), one lake, and one riverine wetland. The freshwater ponds are generally on scattered sites outside downtown Maysville.

3.1.3 Groundwater

Approximately 106 water wells are known, of which 65 are listed as monitoring wells, 17 are remediation wells, four are domestic use (single-household), five are public–community use, five are industrial use, and 10 are either unlisted or have an unknown use.

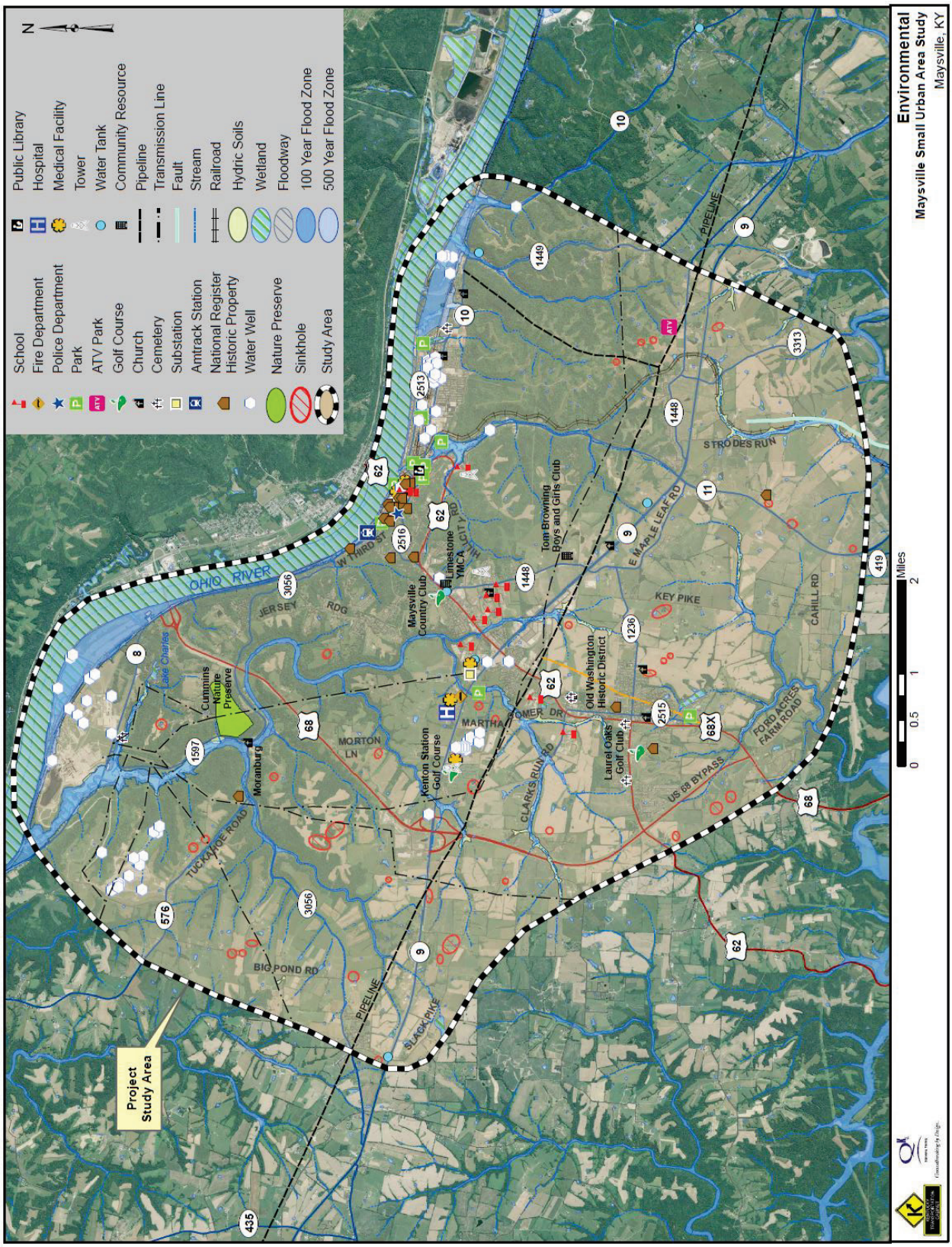


Figure 15: Environmental Overview

3.1.4 Floodplain/Floodway

Federal Emergency Management Agency (FEMA) 100-year floodplain occurs primarily along the Ohio River that serves as the northern boundary of the study area. The 100-year floodplain also occurs along Beasley Creek and Lawrence Creek in the northwest quadrant of the study area and along Kennedy Creek in the northeast quadrant. According to FEMA National Flood Hazard data, a designated floodway also occurs along the Ohio River.

3.1.5 Threatened and/or Endangered Species

Based on coordination and review of available database information from the U.S. Fish and Wildlife Service (USFWS), the Kentucky Division of Fish and Wildlife Resources (KDFWR), and the Kentucky State Nature Preserves Commission (KSNPC), 12 federally listed/protected species are known to occur or have the potential to occur in Mason County as summarized in **Table 5**.

Table 5: Threatened, Endangered, or Protected Species

Group	Scientific Name	Common Name	Federal Status	Resource Agency
Mammals	*Myotis septentrionalis*	northern long-eared bat	Threatened, *with 4D Rule*	USFWS, KDFWR, KSNPC
	Myotis sodalis	Indiana bat	Endangered	USFWS, KDFWR, KSNPC
	Myotis grisescens	gray bat	Endangered	USFWS, KDFWR, KSNPC
Mussels	*Pleurobema clava*	clubshell	Endangered	USFWS, KDFWR, KSNPC
	Cyprogenia stegaria	fanshell	Endangered	USFWS, KDFWR, KSNPC
	Lampsilis abrupta	pink mucket	Endangered	USFWS, KDFWR, KSNPC
	Obovaria retusa	ring pink	Endangered	USFWS, KDFWR, KSNPC
	Plethobasus cooperianus	orangefoot pimpleback	Endangered	USFWS, KDFWR, KSNPC
	Plethobasus cyphyus	sheepnose	Endangered	USFWS, KDFWR, KSNPC
	Pleurobema plenum	rough pigtoe	Endangered	USFWS, KDFWR, KSNPC
Birds	*Haliaeetus leucocephalus*	bald eagle	Delisted *	USFWS, KDFWR, KSNPC
Plants	*Trifolium stoloniferum*	running buffalo clover	Endangered	USFWS, KDFWR, KSNPC

* *Although bald eagles are no longer on the USFWS list of federally endangered species, and are not listed on Kentucky's Threatened and Endangered Species Comprehensive List February 2017, they are protected under both the Migratory Bird Treaty Act of 1918 and the Bald and Golden Eagle Protection Act (enacted in 1940 and amended several times).*

Projects that occur within known Indiana, gray, or northern long-eared bat habitat will require project-specific evaluation to assess appropriate minimization/mitigation measures. For other federally listed species, specific habitat surveys might be required for projects that potentially impact habitat. Coordination with the USFWS Kentucky Field Office will determine the need for surveys per project.

3.1.6 Prime Farmland

The Natural Resources Conservation Service (NRCS) soil survey shows 7,234 acres of prime farmland in Maysville and along the Ohio River northwest of US 68 and KY 8. Most areas south and west of Maysville and north of KY 9 are not considered prime farmland (approximately 16,159 acres). As shown in **Figure 16**, farmland of statewide importance (10,105 acres) is south of KY 9. Farmland classification data are in **Appendix C**.

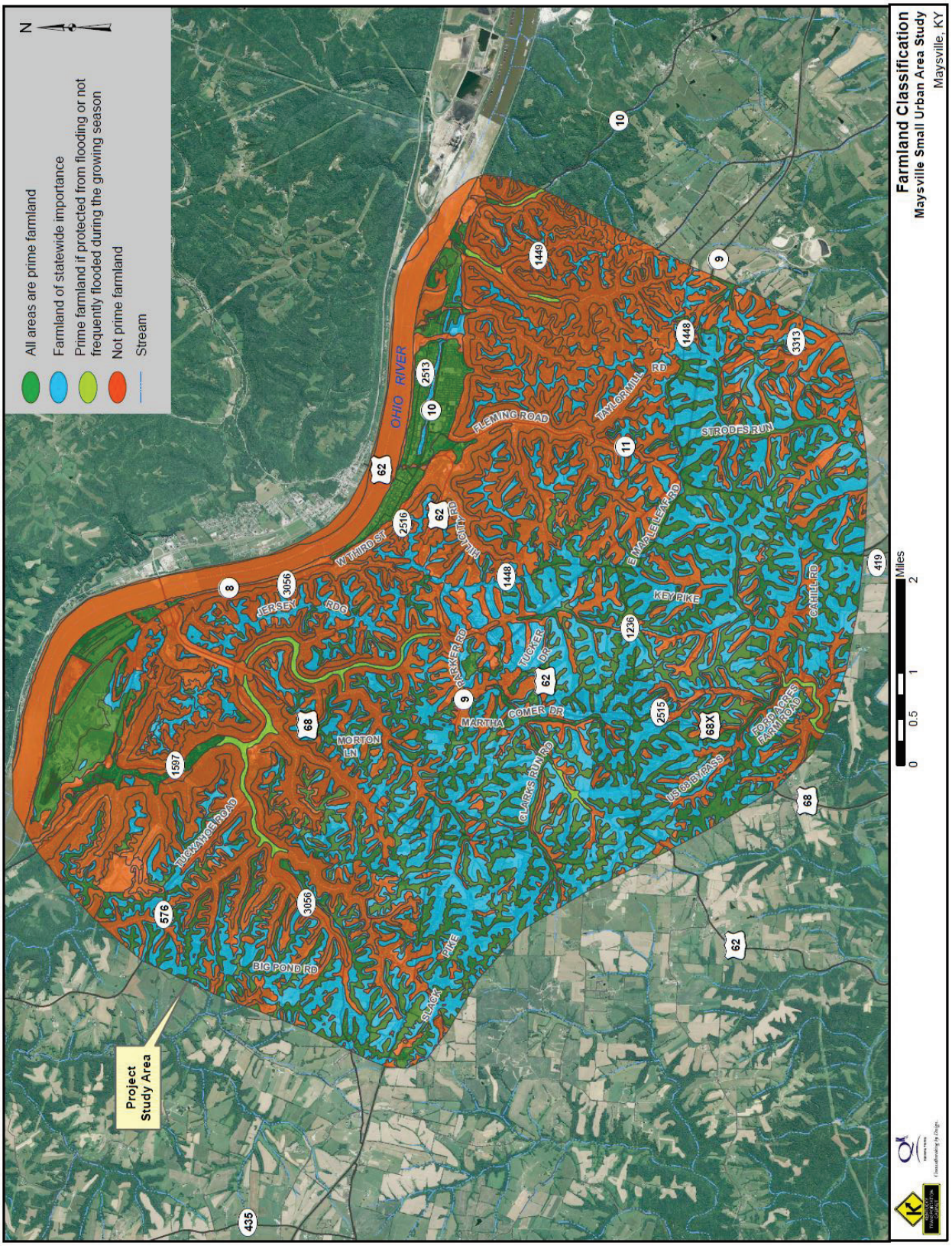


Figure 16: Farmland Classification

3.1.7 Karst Potential

Kentucky Geologic Survey's (KGS) karst potential classification [14] uses three simplified classes— intense, prone, and non-karst—to show the tendency to have sinkholes, springs, caves, or other solution features. The study area karst potential is characterized as "prone"—areas underlain by bedrock with moderate potential for karst development. As shown in **Figure 17** and in **Appendix D**, sinkholes are present.

3.1.8 Geotechnical Considerations

The geotechnical overview consists of a map of geologic conditions and a description of existing conditions for Mason County **(Appendix D)**. Mason County is in the Outer Bluegrass Physiographic Region and is characterized by deep valleys, with little flat land, because bedrock in this area is mostly composed of limestone and shale **(Figure 17)**. Mapping indicates a fault in the southeastern portion of the study area. Nearly all of Mason County is underlain by rocks composed of layers of limestone and shale. In general, when shale is dominant, terrain is rugged. When limestone is dominant terrain is more gentle and suitable for agriculture and development.

The terrain is rolling to hilly, with the lowest elevation in the southern part of the county and the greatest in the vicinity of the Ohio Valley. Immediately north of Maysville the difference in elevation between ridgetops and the Ohio River is more than 400 feet. Ridgetop elevations of 900 feet are common throughout the county. The lowest point, the normal pool level of the river, is 485 feet.

According to the NRCS Soil Report, soil types in the study area are predominantly silty or silt loam (nearly 80%), silty clay loam (10.3%), and Cynthiana-Faywood complex (10%), which is rocky. The Ohio River alluvium is the best source of groundwater in the county. Soils data are in **Appendix D.**

Landslide inventory from KGS shows landslides have occurred east of US 68 along the Ohio River both east and west of the center of town.

[14] http://kgs.uky.edu/kgsmap/kgsgeoserver/viewer.asp#

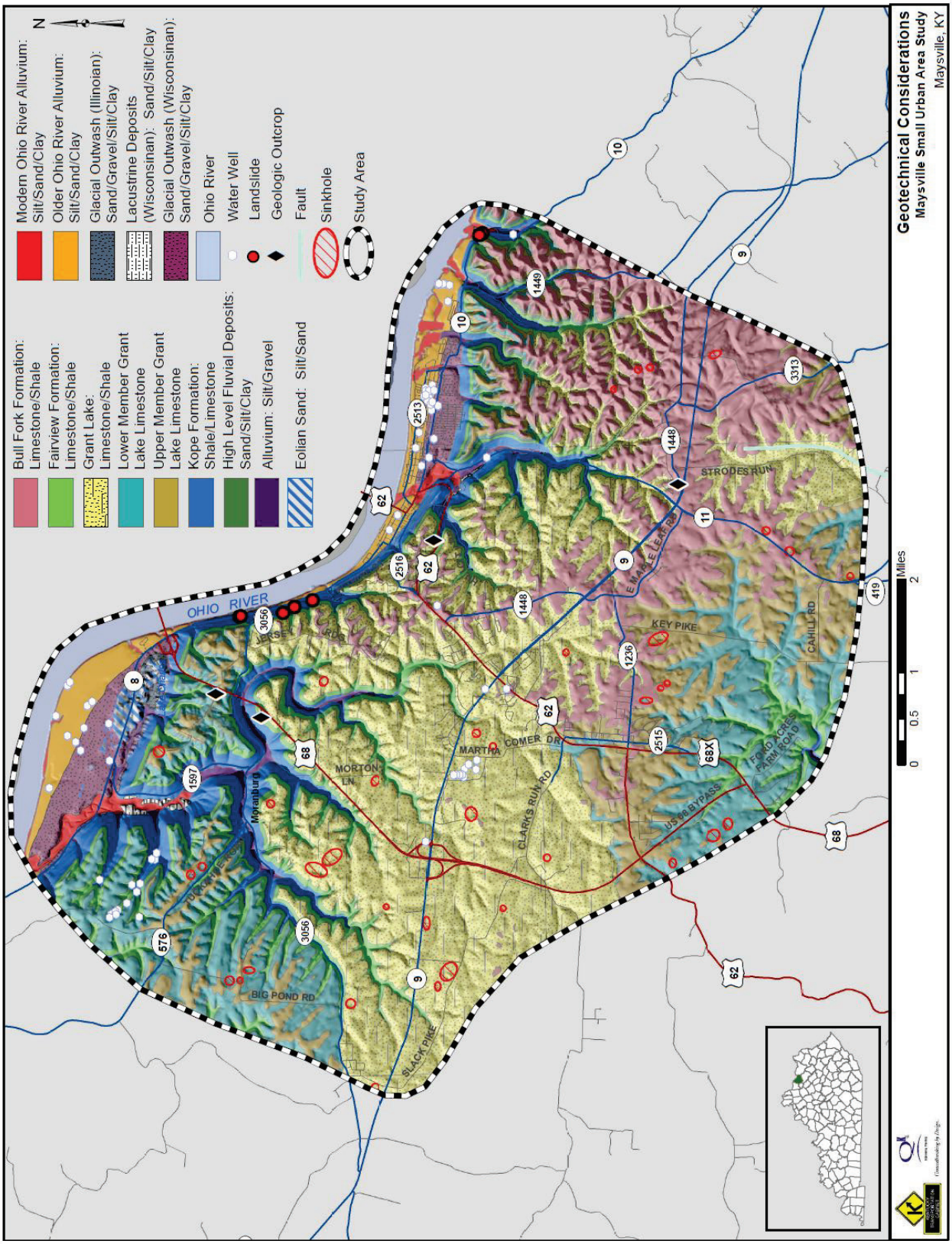


Figure 17: Geotechnical Considerations

3.2 Human Environment

The human environment is often defined as the "built" environment or can be described as what we live in and around or what we have built. Such resources that might be affected by roadway projects are discussed in the following sections.

3.2.1 Land Use

Most of the land in Mason County is used for agricultural activities. Three small cities are incorporated in the western part of the county: Sardis, Dover, and Germantown. In addition, there are several small rural communities dispersed throughout the county, and a few fairly sizeable residential subdivisions. Maysville is commercialized and industrial when compared to outlying areas of the county, which has more farming with open land. Maysville is the county seat and hosts a mix of urban land uses, including dense residential, commercial, industrial, and institutional government.

From its early farm economy orientation, the county has become diversified in its economic offerings. It not only serves as a retail/service center, but in the past decade has become a manufacturing center.

3.2.2 Employment

Mason County's employment by industry classification for 2013 is shown as follows:

Industry Classification	Employment
Construction	423
Manufacturing	1,218
Trade, Transportation, and Utilities Information	1,865
Financial Activities	232
Services	2,823
Public Administration	347

3.2.3 Tourism

Tourism for the county is managed by the Maysville-Mason County Convention and Visitors Bureau located in Maysville. Activities focus on the number of historic sites and structures found throughout the county, and on special events held during the year. One of the leading historic sites is Old Washington, a historic village that dates back to the late 1700s and contains a number of shops, historic buildings, and museums, including the Harriet Beecher Stowe Slavery to Freedom Museum. In downtown Maysville, the Russell Theater features Spanish Colonial Revival architecture dating back to 1930. Limestone Landing has attractive historic murals painted on the floodwall. The Landing is a stopping point for riverboats traveling the Ohio River, including the American Queen. Visitors can also stop by the Kentucky Gateway Museum Center, which includes the Kaye Savage Browning Miniature Collection, and Washington Opera Theater, which houses the Maysville Players.

3.2.4 Socioeconomic Study

Issues pertaining to minority, elderly, disabled, and low income (persons living in poverty) populations in the study area were evaluated and documented in the socioeconomic study prepared by the Buffalo Trace ADD and summarized in **Table 6**. The report is in **Appendix E**.

As shown in **Figure 18 (p. 37)**, the study area is in Census Tracts (CT) 9601, 9602, 9603, and 9604. The CTs are divided into smaller areas referred to as Block Groups (BG). Analyses of BG levels show eight BGs exceed the county average for disabled persons between ages 16 and 64; seven BGs exceed county averages for persons age 65 and older; six BGs exceed persons living below the poverty level; and five BGs exceed the county average for minority and Hispanic or Latino origins.

Limited English Proficiency (LEP) population is lower than state and national levels. Projects resulting from this SUA Study should not disproportionately impact the residences in this category.

3.2.5 Churches

As shown in **Figure 15 (p. 29)**, approximately 11 churches or houses of worship are in the SUA study area.

- Lawrence Creek Church
- Saint Patrick's Church
- Washington United Methodist Church
- Maysville Church of the Nazarene
- Purity Baptist Church
- Mason County Church of Christ
- Faith Assembly of God
- Seddon United Methodist Church
- Apostolic Faith Tabernacle
- Church of the Nativity
- First Christian Church

Table 6: Census Tract and Block Group Data

Census Tract	Block Group	Minority		Hispanic or Latino Origin		Age 65 and Older		Poverty		Population Speaking English Less Than Very Well		Disabled Population between 16 and 64	
		Exceeds County Average	Exceeds State Average	Exceeds County Average	Exceeds State Average	Exceeds County Average	Exceeds State Average	Exceeds County Average	Exceeds State Average	Exceeds County Average	Exceeds State Average	Exceeds County Average	Exceeds State Average
9601	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☑
	2	☐	☐	☑	☐	☑	☑	☐	☐	☐	☐	☑	☑
9602	1	☑	☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐
	2	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☑	☑
	3	☑	☑	☑	☐	☑	☑	☑	☑	☐	☐	☑	☑
	4	☐	☐	☐	☐	☑	☑	☑	☑	☐	☐	☑	☑
9603	1	☑	☑	☑	☐	☐	☐	☑	☑	☐	☐	☑	☑
	2	☐	☐	☑	☐	☑	☑	☐	☐	☐	☐	☑	☑
	3	☑	☑	☑	☐	☐	☐	☑	☑	☐	☐	☐	☐
	4	☐	☐	☑	☐	☑	☑	☐	☐	☐	☐	☐	☐
9604	2	☐	☐	☐	☐	☐	☐	☑	☑	☐	☐	☐	☐
	3	☐	☐	☐	☐	☑	☑	☑	☑	☐	☐	☑	☑
	4	☐	☐	☐	☐	☑	☑	☐	☐	☐	☐	☐	☐

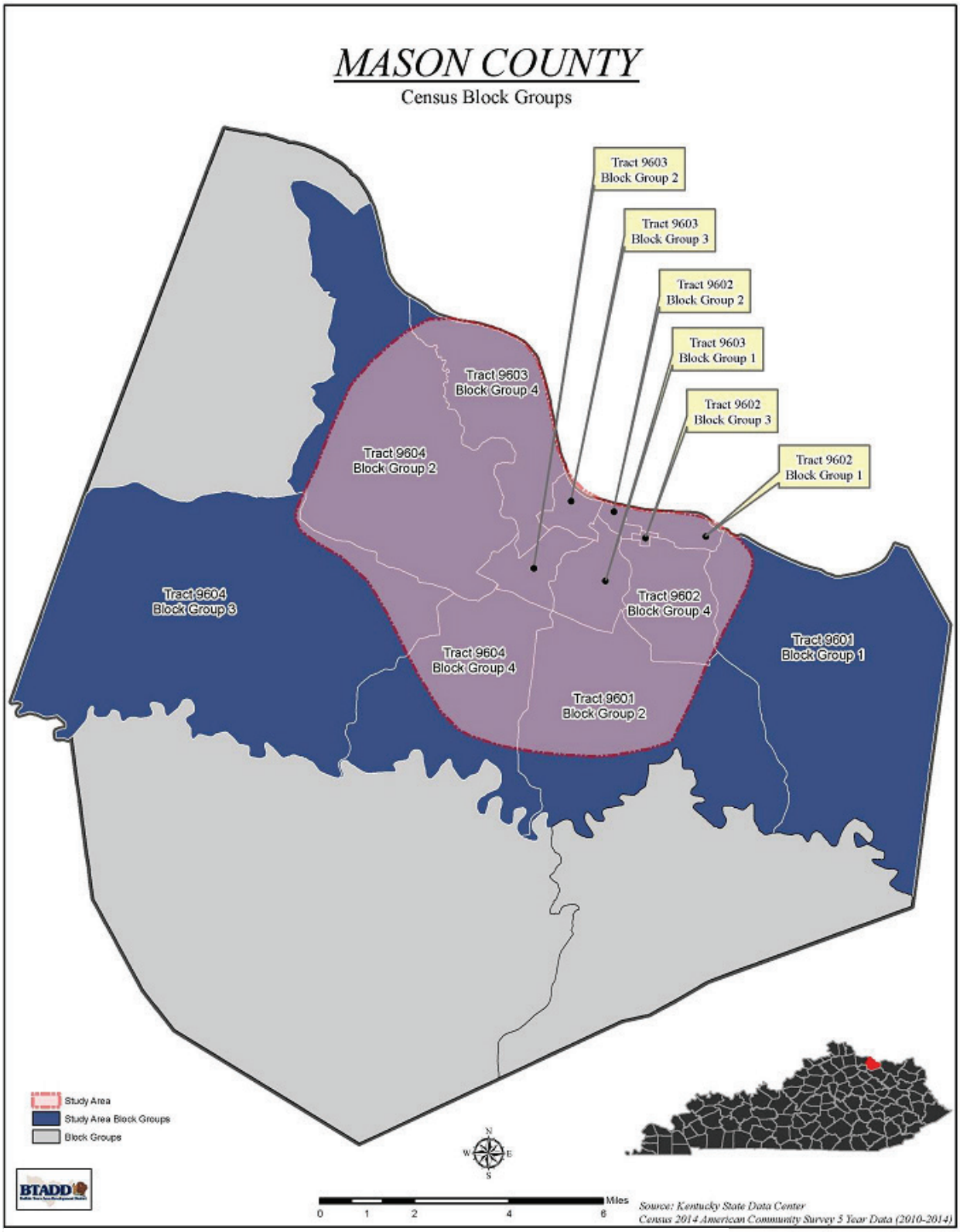


Figure 18: Census Block Groups

3.2.6 Schools

Six school facilities were identified in the study area:

- Charles Straub Elementary School
- Highland Christian School
- Mason County Middle School
- Mason County High School
- Mason County Intermediate School
- Saint Patrick's School

Maysville Community and Technical College is a two-year college that provides associate degree programs and career education and training. The college is located on US 62 between KY 9 and KY 2515.

3.2.7 Cemeteries

Based on current GIS and historical mapping, five known cemeteries were identified in the study area: Charleston Bottom Cemetery, Saint Patrick's Cemetery, and three unnamed cemeteries.

3.2.8 Public Services

The city of Maysville has a fire department staffed by 26 full-time public safety officers trained as fire fighters and EMTs or paramedics. The fire department responds to calls within the city limits while ambulance service is county-wide. Maysville has two stations: downtown Maysville and Kenton Station Road near the hospital.

The Washington-Maysville Volunteer Fire and Rescue Department has members who supplement the paid department and serve outside the city limits. County fire protection is provided by volunteer fire departments located at several sites. Each volunteer fire department has trained fire fighters and adequate equipment to cover unincorporated areas of the county.

Police protection is provided within Maysville by a department with full-time police officers. The department has a trained Emergency Response Team, cross-trained K-9 units, bike patrol, and a Criminal Investigation Section. Police protection is provided in the unincorporated parts of the county through the County Sheriff's Office and the Kentucky State Police. A new county-wide communication system is provided at the Maysville Police Department.

3.2.9 Cultural Historic and Archaeological Resources

According to the National Register of Historic Places (NRHP), 37 registered historic resources including five NRHP-listed historic districts are documented in Mason County. The historic districts are identified as:

- Maysville Downtown Historic District
- Armstrong Row
- Courthouse Square and Mechanic's Row Historic District (also known as Tub Row)
- Washington Historic District
- West Fourth Street District

In addition to five historic districts, 15 NRHP-listed properties are in the Maysville SUA study area:

- Cox-Hord House
- Tom Forman House
- Lee House
- Maysville-Aberdeen Bridge
- Ben Moran House
- Newdigate-Reed House
- Old Library Building
- Henry Perviance Peers House
- Phillips Folly
- Pogue House
- Point Au View
- John Brett Richardson House
- Russell Theatre
- Washington Opera House
- Woodlawn

Based on an archaeological survey conducted for a previous (2003) study, over 23 sites were recorded on 361 acres, of which more than half were recommended for further investigation. In addition, it is estimated approximately 200 sites exist in the study area of which many are composed of mounds. Maysville is near the center of one of the better defined mound clusters in Kentucky, with dozens of mounds identified in Mason County. Of 37 registered historic properties, only four are associated as archaeological sites, but this might be because most sites in the county have not been fully assessed or formally nominated. Due to the vast potential for archaeological resources within the study area, there is a high potential such resources could be encountered with any roadway reconstruction project.

3.2.10 Section 4(f) of the 1966 U.S. Department of Transportation Act

Section 4(f) provides protection to publicly owned parks and recreation areas, wildlife refuges, and historic sites. No documented wildlife refuges are in the study area. Mason County is served by a variety of recreation facilities, both public and private.

The largest park in the county is the Maysville-Mason County Recreation Park, near the US 68X/KY 2515 intersection south of Maysville. This park encompasses 57 acres and includes two pools, a par-three golf course, a miniature golf course, two softball fields, three tennis courts, picnic sites, a one-mile walking path, and a 12-acre fishing lake.

Other recreation facilities include the Limestone YMCA, the Tom Browning Girls and Boys Club, and two public golf courses: Kenton Station Golf Course and Laurel Oaks Golf Club.

Small parks are located at Dover, Germantown, and Mayslick. Other small parks include: January Park, Mulberry Park, the West End Adair Park, Veterans AMVETS Memorial Park, Wood Street Park, Wald Park, Market Street Park, Rotary Park, Maysville River Park, Beechwood Park. The Maysville Marina and Campground is along the Ohio River on the eastern edge of town. This park features 30 camp sites, a boat dock and launch, a picnic area, and playground.

The 100-acre Cummins Nature Preserve, located off Pickett Lane in Mason County, is an important resource located in the northwest quadrant of the study area that should be avoided because of its likely Section 4(f) and 6(f) involvement (see Section 3.2.11, below). It fulfills the last wish of Dr. Claude E. Cummins, who wanted the land to be used as a preserve open to the public for recreational use. Since 2002, the Mason County Fiscal Court has worked to turn the

land into a nature preserve with nature trails, a primitive camp for Scouts and other groups, a wildlife educational area, a rustic shelter, and a small restroom.

If proposed roadway projects use public parks/recreation land/facilities, Section 4(f) issues may arise.

3.2.11 Section 6(f) of the Land and Water Conservation Fund (LWCF)

Parks/recreation areas using Land and Water Conservation Fund (LWCF) Act grants are afforded certain protections under Section 6(f). LWCF records list 14 grants for Maysville and Mason County (**Appendix F)**.

The "Community Assessment" portion of the *2016 Comprehensive Plan* noted the Cummins Nature Preserve "was recently awarded a $10,000 grant to develop trails for additional recreational use*."* Others among the 14 recipients include the Maysville-Mason County Recreation Park, Market Street Park, Rotary Park, Beechwood Park, Maysville River Park, and Mulberry Park.

Because a Land and Water Conservation Fund grant was the funding source for the preserve, LWCF Section 6(f) issues may arise with any proposed improvement project that would use recreation land/facilities to which grants were applied.

3.2.12 UST/Hazmat Considerations

Hazardous materials are a concern for transportation projects as they can be costly to remove if acquired for right-of-way, and during construction workers can be exposed to harmful chemicals. Therefore, a database search of known sites that handle or have handled hazardous materials was conducted through Environmental Data Resources Inc. (EDR) for the Maysville area **(Appendix G)**. The search included 50 databases managed by federal, state, local and other jurisdictions, and 119 unique sites. A majority of those are not of concern. A summary of those that are of concern follows:

- The only known landfill/solid waste site within the study area is a recycling operation at Walmart. The Maysville/Mason County landfill is located outside the study area off KY 9 east of Maysville.
- One site exists on the Federal CERCLIS list, which is a list of sites on or proposed for the National Priorities List (NPL). The site is a power transmission area located in an industrial park south of US 62 and east of US 68.
- One known "brownfield" site exists; the former and currently vacant Hayswood Hospital. The hospital was in operation from 1915 to 1983 and was known to contain several hazardous materials.
- Approximately 30 registered Underground Storage Tanks (USTs) are located in the study area. Should these tanks be encountered by a highway project, an open records request should be made at the Kentucky Department of Environmental Protection, UST Branch to identify past report violations or spills.

3.2.13 Air Quality

Mason County is in attainment for all of National Ambient Air Quality Standards (NAAQS) for the six major air quality pollutants: particulate matter (PM), sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), and lead (Pb).

Traffic delays and vehicle idling can lead to increased emissions, especially in terms of CO and Mobile Source Air Toxics (MSAT). U.S. Environmental Protection Agency (EPA) regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. This will both reduce the background level of MSAT as well as the possibility of MSAT emissions created within the study area.

3.2.14 Noise

Due to the size of the study area, the environmental overview examined a general, county-wide issue for noise. Noise-sensitive receptors, as identified per FHWA's Noise Abatement Criteria (NAC) [15] and the KYTC's Noise Analysis and Abatement Policy (July 2015) [16] are present throughout the study area, including specified activity categories (land uses) for:

- Category B—Residential areas.
- Category C/D—Active sport areas, cemeteries, hospitals, parks, picnic areas, places of worship, playgrounds, Section 4(f) sites, schools (exterior and interior).
- Category E—Hotels, motels, offices, restaurants/bars, etc. (exterior).

Based on the recommendations developed for this SUA Study, specific traffic noise impact analyses may need to be conducted for individual projects.

3.2.15 Major Known Utilities

According to available mapping, major transmission lines and pipelines bisect the study area. These utilities are shown on **Figure 15 (p. 29)**.

[15] http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr;sid=1253e5cedf4b79ecfc5150fe9d7d00e7;rgn=div5;view=text;node=23%3A1.0.1.8.44;idno=23;cc=ecfr

[16] http://transportation.ky.gov/Environmental-Analysis/Environmental%20Resources/2015%20KYTC%20Noise%20Analysis%20and%20Abatement%20Policy.pdf

4.0 INITIAL MEETINGS

Two types of meetings were held during the course of the study: Project Team meetings and Local Officials/Stakeholders (LO/S) meetings. The Project Team was composed of the KYTC District 9 and Central Office staff from various disciplines. Involvement of local officials and stakeholders was an important role in this SUA Study. The purpose of this component of the study was to bring different groups of people together to express their ideas, identify areas of concern, and develop potential solutions. The LO/S component of this study was used to:

- Inform and educate local officials and stakeholders on the study and its goals.
- Gauge interest in the desire for transportation improvement projects.
- Identify the needs of the study area.
- Identify project issues and goals.
- Identify and prioritize potential improvement projects.

Summaries of all meetings are found in **Appendix H**.

4.1 Project Team Meeting No. 1

The first Project Team meeting was held July 21, 2016, at the Buffalo Trace ADD Board Room in Maysville. The purpose of the meeting was to prepare for the LO/S meeting and review existing conditions data including high crash locations, traffic data, current levels of service (LOS), and an environmental overview.

Key topics of discussion included the following:

- Mason County has a strong planning and zoning effort and implements many Local Public Agency (LPA) projects (e.g., sidewalks projects and transportation enhancements). Maysville has a historic downtown, Mitsubishi is a large employer, and local officials will pursue numerous projects in a proactive manner. KY 9 is considered by some locals to be unsafe.
- Before 2011, the KYTC's Strategic Highway Safety Plan included a Highway Safety Corridors program that identified corridors with a high rate of collisions, fatalities, and injuries within each highway district. The program's goal was to reduce fatalities and serious injuries in those corridors by 10% per year. The AA Highway corridor in Districts 6 and 9 (including KY 9 in the project area and KY 10 outside the area) was among those designated as a Highway Safety Corridor. Through this program, the corridor experienced a reduction in fatalities and injuries. In 2011, the KYTC updated its Strategic Highway Safety Plan, merging the Safety Corridor and other programs into the Roadway Departure Corridors. Through this initiative, the KYTC can analyze an entire roadway network to locate the greatest opportunities to reduce fatal and serious-injury roadway departure crashes.
- Carmeuse is an important lime industry for power plants. Trucks travel across the river from this quarry to power plants in Ohio.

- KY 10 has several curves that must be negotiated by trucks traveling from the asphalt plant. In addition, access to the asphalt plant is undesirable due to the narrow width and steep grade.
- The Cummings Nature Preserve is an important resource that should be avoided because of its likely Section 4(f) and 4(f) involvement.
- The Walmart Way/Tucker Drive intersection frustrates local drivers. Because Tucker Drive is the connector between US 62 and KY 9, many drivers believe it should not have a stop condition at Walmart Way.
- The Project Team agreed Item Nos. 9-8809, 9-147.20, and 9-147.60 should not be considered committed projects in the traffic model. Although preliminary design and an environmental document are near completion, a "No Build" decision within the Finding of No Significant Impact (FONSI) is expected due to lack of funding. The Project Team desires to gauge LO/S support for the bypass extension.

4.2 Local Officials/Stakeholders Meeting No. 1

The first LO/S meeting was held following the first Project Team meeting to present the study area, solicit feedback on existing conditions, and identify a broad range of potential problem areas and possible solutions. Representatives from the KYTC Central Office, the KYTC District 9, Buffalo Trace ADD, city of Maysville, Mason County, fire and police departments, Maysville Community and Technical College, Mason County Board of Education, US Senate and House of Representatives, and key stakeholders (Mitsubishi, International Paper, and Carmeuse Lime and Stone) met at the Buffalo Trace ADD Board Room in Maysville.

After a brief presentation, local officials and stakeholders were divided into small groups to participate in an exercise to identify transportation issues in the Maysville study area. Each small group reported issues to the entire group. The approximate location of trouble spots identified by the LO/S associated with congestion, safety and growth are summarized in **Figures 19, 20 (p. 45), and 21 (p. 46).** The number one need identified by the LO/S was the completion of the US 68 Bypass.

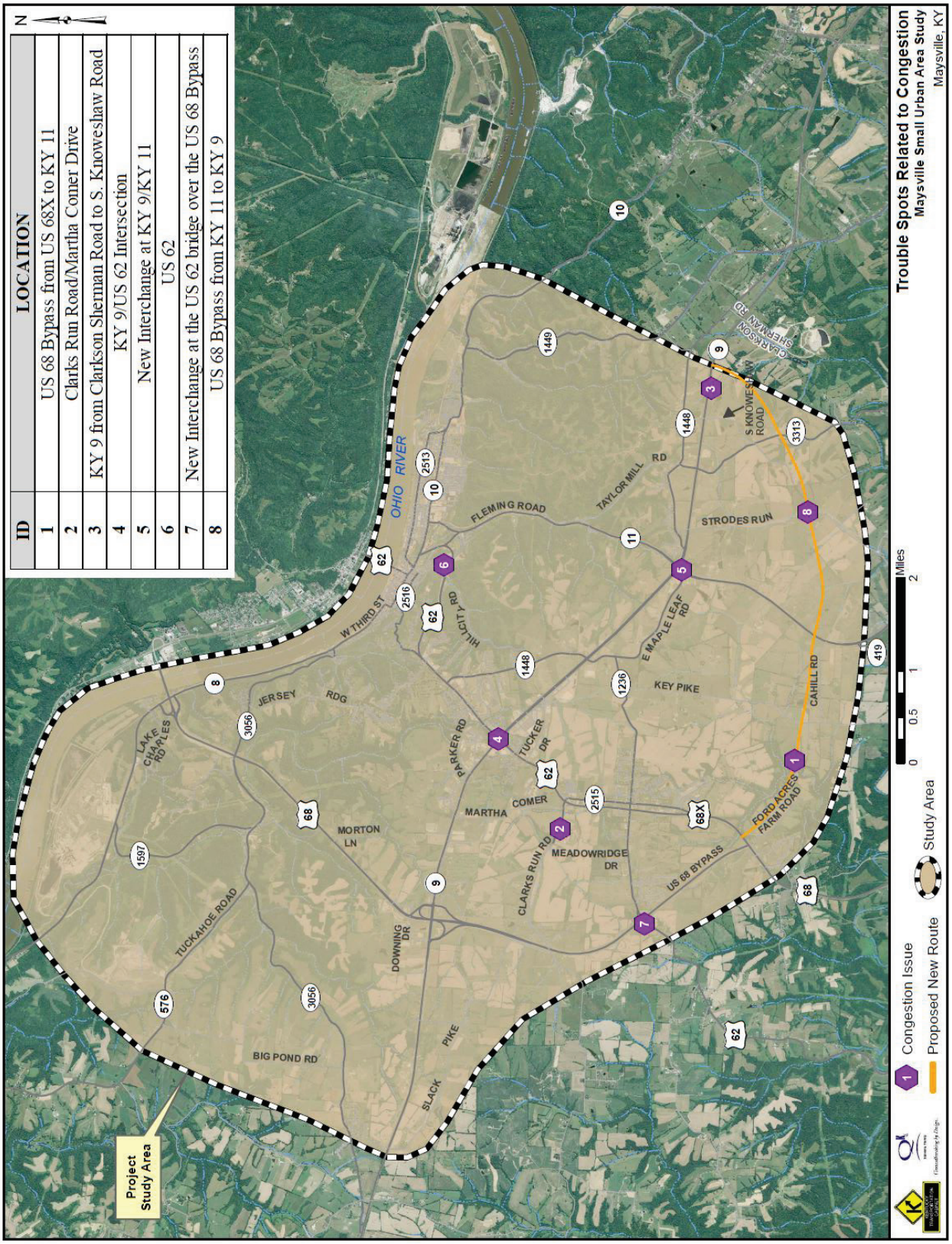


Figure 19: Trouble Spots Related to Congestion

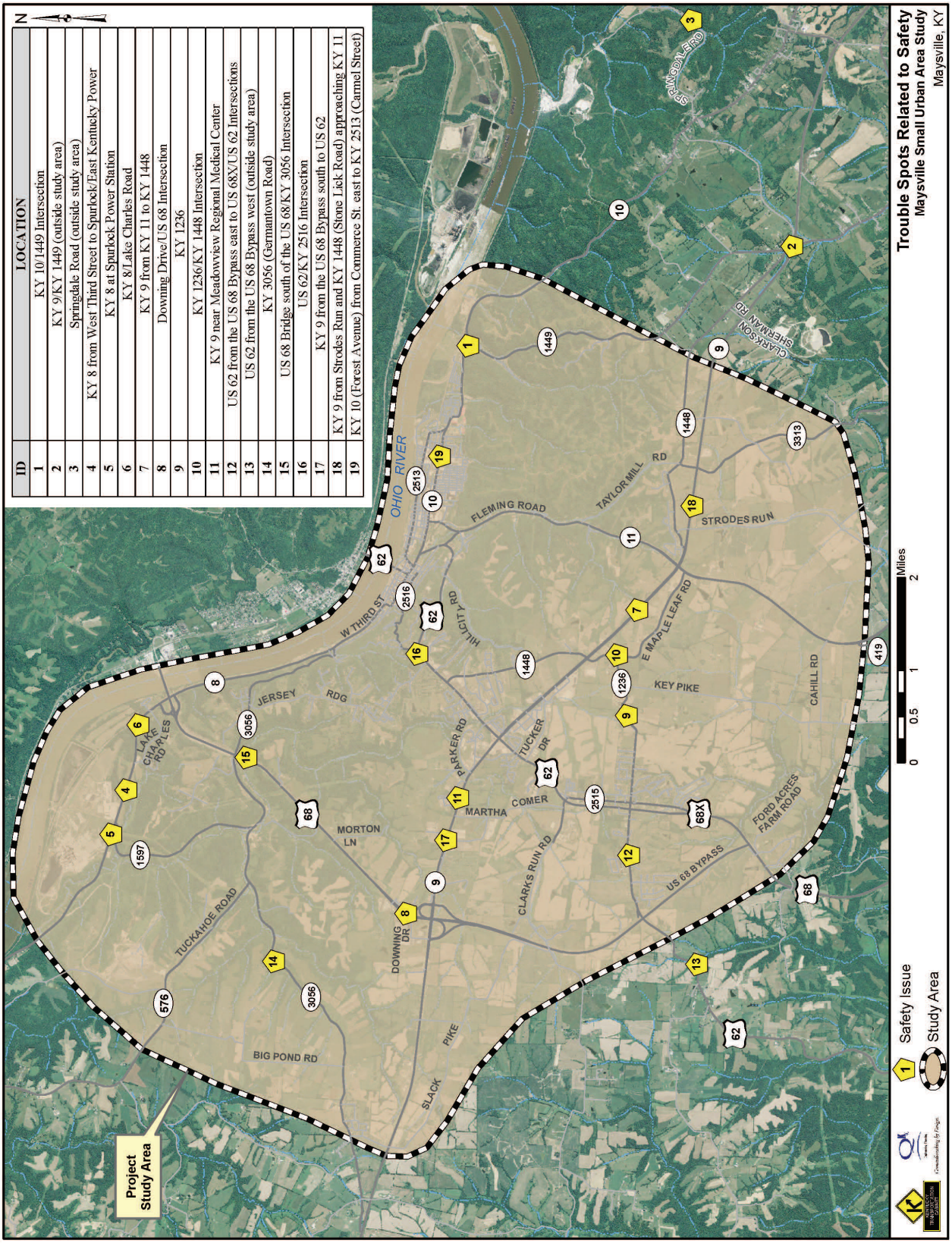


Figure 20: Trouble Spots Related to Safety

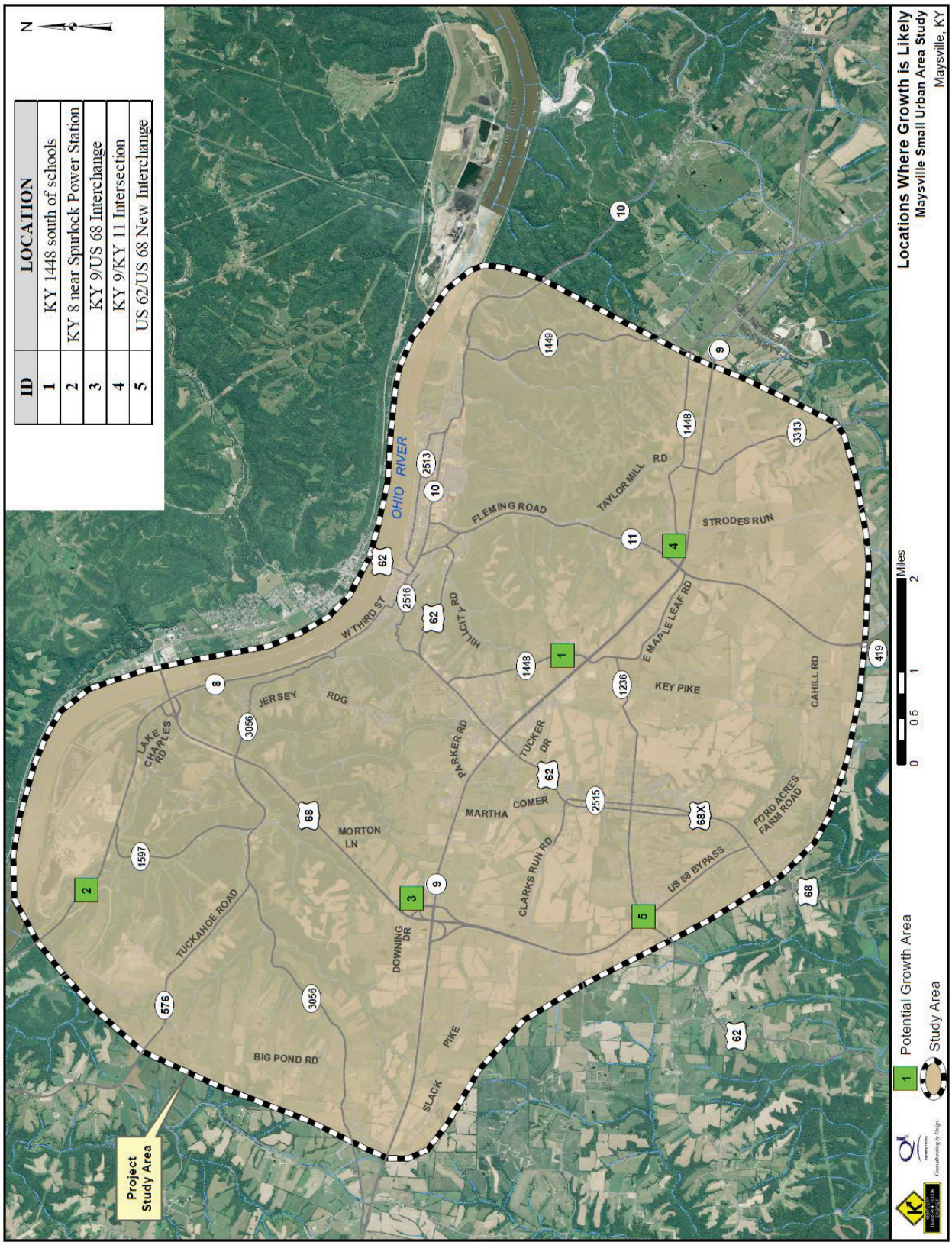


Figure 21: Locations Where Growth Is Likely

5.0 TRAFFIC FORECAST AND FUTURE YEAR ANALYSES

This chapter summarizes the anticipated future traffic conditions within the study area. The abbreviated Traffic Forecast is in **Appendix A**.

5.1 District 9 Area Travel Demand Model (ATDM)

The traffic forecast for the Maysville SUA was developed from the District 9 ATDM, which covers eight District 9 counties, including Mason County as well as three southern Ohio counties. The model was first developed in 2015 based on the KYTC's preferred model structure and contains household and employment information and an updated roadway network for the 2015 base year.

Traffic Analysis Zones (TAZs) form the geographical basis for organizing socioeconomic data used by the model to generate vehicular trips assigned to the roadway network. Household and population data, as well as employment and school enrollment, are quantified in each zone. Forecast values for households and population are used to determine levels of travel demand throughout the model area.

TAZ boundaries from the Kentucky Statewide Model and the Rowan County Model initially served as the basis for development of the model's TAZ boundaries for the District 9 area, including Mason County. TAZs from both models were further refined, with a focus on urbanized areas in Kentucky. These zones for urbanized areas in the ATDM depict the interaction of local trips within a small (like Maysville) to the level of detail needed for the SUA Study. These smaller, more defined zones made it possible to represent the distribution of trips between zones more accurately, which meant a better fit of traffic assignments and observed counts on the study area roadway network.

Initially, household growth forecast in Mason County for the 2040 future year was developed from county-wide level growth factors calculated from population forecasts produced by the Kentucky State Data Center. Employment growth was based on a third party forecast using trends from the Bureau of Labor Statistics.

As part of the development of this study, the Maysville area was further updated to reflect 2015 socioeconomic conditions and roadway updates. Household and employment data for the 2040 forecast year were also revised to more accurately reflect local development patterns expected to occur. At the first LO/S meeting, participants were asked to identify anticipated areas of future housing and business development. This information was collected and incorporated into the 2040 scenario. Discussion included new/proposed or changes in school locations, future enrollment, and areas of potential industrial or business growth or traffic generators with significant truck traffic. In addition, a questionnaire was provided to industry representatives to glean information regarding industry expansion and peak hour truck information. One survey was returned from a major employer in the region, Mitsubishi.

This information was provided to the KYTC Division of Planning modeling branch for appropriate model adjustments. Locations of proposed developments were identified and physical and infrastructure-related constraints influencing future growth were taken into account in the placement of future households and employment centers. While population projections were reasonable, the amount of job growth was tempered and was redirected to grow in areas based

on LO/S input. Changes in population and jobs between the base year 2015 and design year 2040 within each TAZ are shown in **Figure 22** and **Figure 23**, respectively.

Model runs for the 2015 and 2040 No Build traffic were provided by the KYTC. These extracts were used to develop volume to capacity (v/c) ratios for all study area roadways. Following development of build alternatives, a 2040 Build extract was provided to determine traffic volumes with a bypass added to the model network.

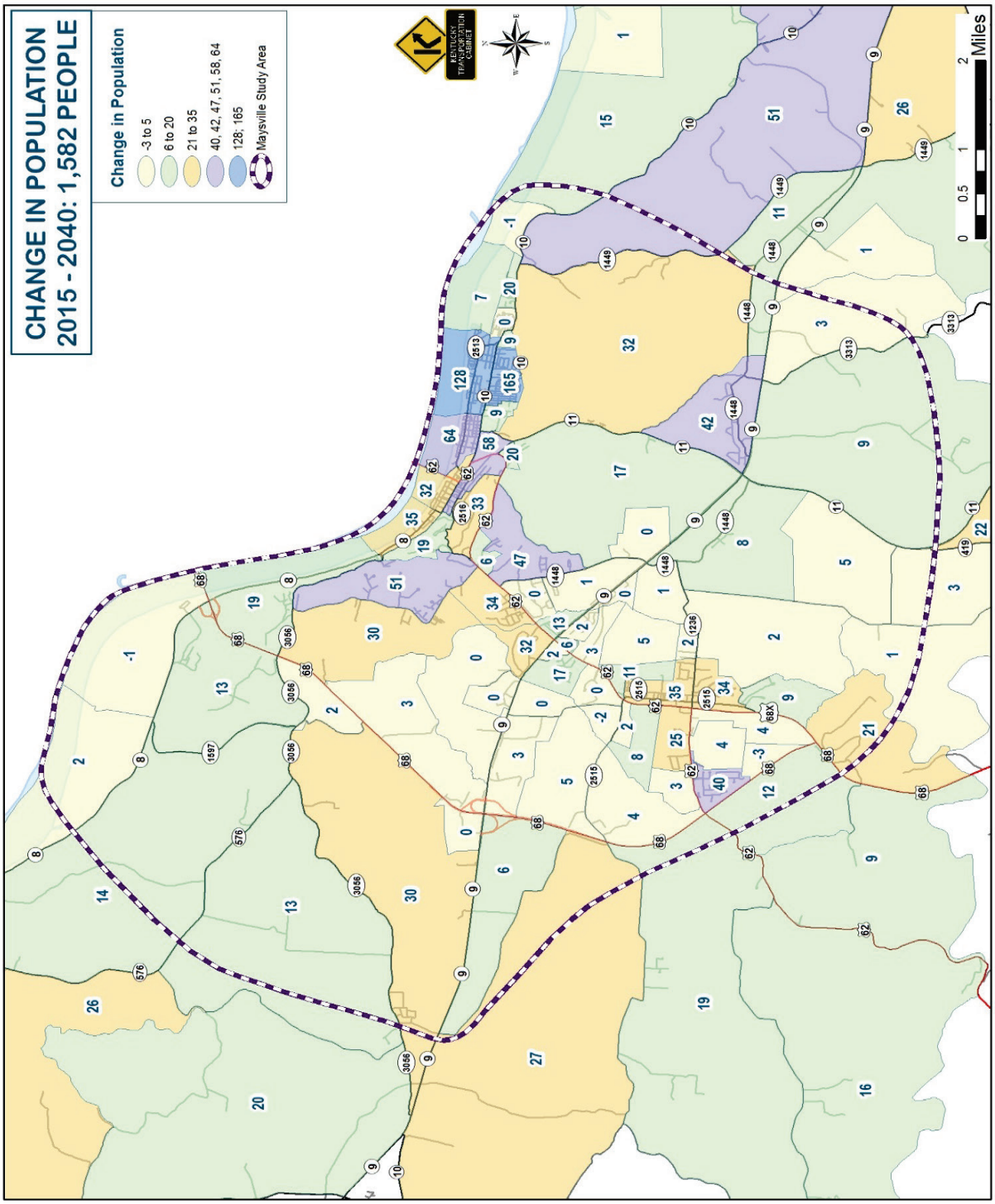


Figure 22: Traffic Analysis Zones—Change in Population

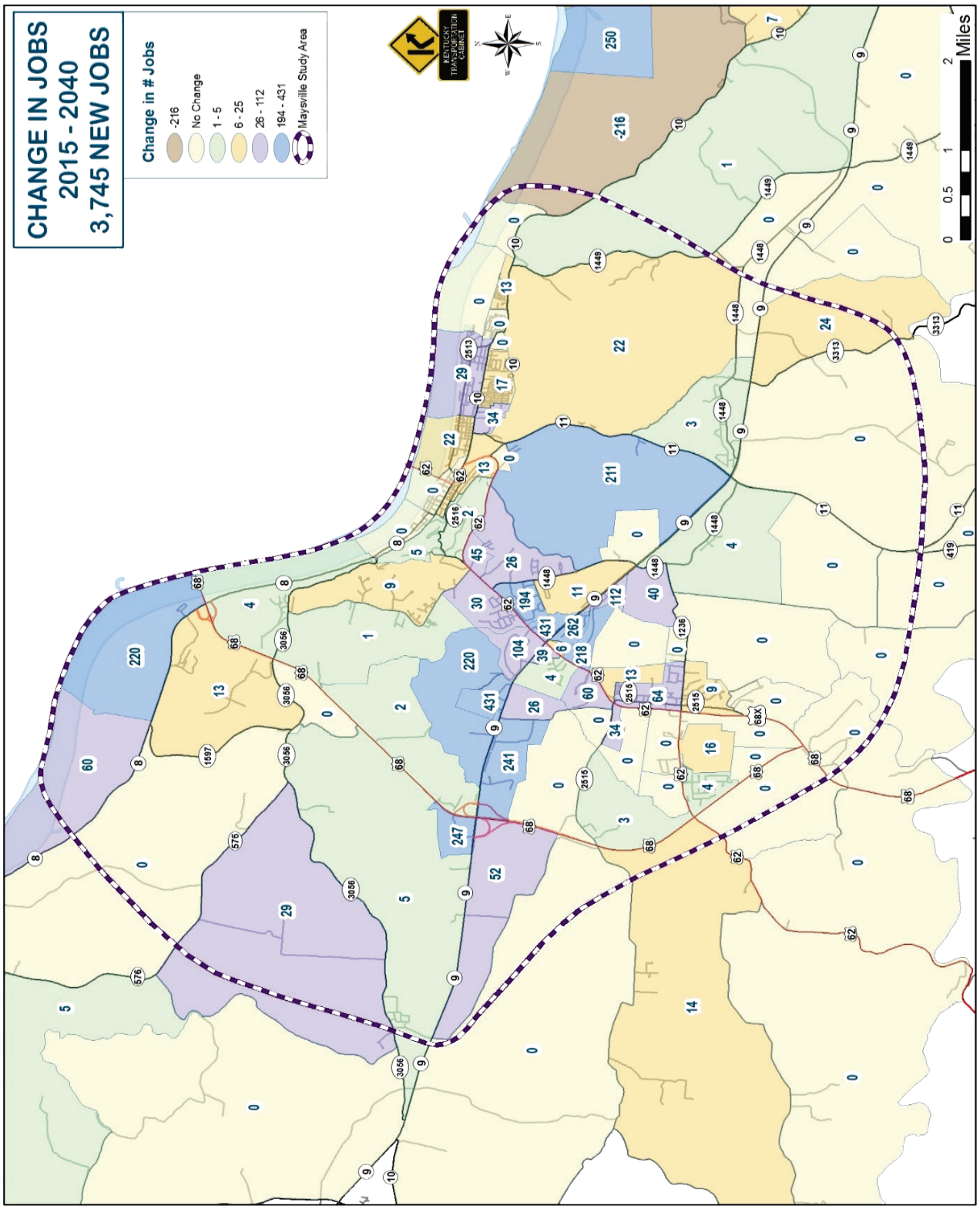


Figure 23: Traffic Analysis Zones—Change in Jobs

5.2 2040 No Build Traffic Forecasts and Future Year Analysis

Following calibration of the ATDM, the KYTC provided a regional-level study area annual growth rate of 0.657%. This growth rate was used to forecast 2040 No Build traffic and AM and PM peak hour intersection turning movement volumes. The 2040 No Build ADT includes the following PIFs as committed projects **(Table 7)**:

Table 7: Committed Projects

Route	Begin MP	End MP	PIF Number Description	PIF Number or Item Number
KY 1448	5.423	7.003	Widen to three lanes with two-way-left-turn lane, improve shoulders, with a shared use path between US 62 and KY 9.	PIF No. 09 081 D1448 1.00
KY 9	0.000	7.560	Increase capacity (four lanes) and decrease conflict points on KY 9 between the Lewis County Line and the existing four lanes near KY 11.	Item No. 9-8908.00 PIF No. 09 081 D0009 1.00
	10.260	14.930	Increase capacity (four lanes) on KY 9 and decrease conflict points between the New Maysville Bridge and KY 435.	PIF No. 09 081 D0009 2.00
KY 8	9.200	11.040	Correct geometric and width deficiencies and improve long-term stability of KY 8 between KY 3056 and the new Maysville Bridge.	PIF No. 09 081 D0008 83.00

The metrics or measures of effectiveness (MOE) used to describe traffic conditions in the study area include ADT, v/c ratio, LOS, delay, and queue lengths (for intersections).

5.3 2040 No Build Volume to Capacity (v/c) Ratios

To evaluate congestion on study area roadways, 2040 ADT volumes were compared to the route's theoretical capacity using the District 9 ATDM. A v/c ratio developed using the HCM procedures shows one segment with a v/c ratio greater than 1.0: KY 2516 from US 62 to downtown. A v/c ratio greater than 1.0 indicates additional lanes might be justified. All other road segments are expected to operate at less than capacity with a v/c ratio less than 1.0 **(Figure 24, p. 53)**. 2040 v/c Ratios from the ATDM showed similar results **(Appendix A)**.

5.4 2040 No Build Levels of Service (LOS)

Design year 2040 levels of service (LOS) were calculated for study area roadways and intersections as shown in **Figure 25 (p. 54)**. The following sections provide a brief discussion of the results.

5.4.1 2040 Segment Analysis

Using the regional annual growth rate provided by the KYTC, segment ADTs were projected for design year 2040. Then HCM software was used to determine a No Build LOS for each study area road. The 2040 LOS yielded all study area roads operating at a minimum of LOS D.

5.4.2 2040 Intersection Analysis

Using the regional growth rate provided by the KYTC, study area intersection AM and PM peak hour volumes identified in Section 2.5 were projected to 2040. Using 2040 ADT, signal timings, geometry, and current HCM software, analysis of study area intersections identified in **Table 8** shows 14 intersections with approaches (northbound, southbound, eastbound, or westbound) operating at LOS C or better in both the AM and PM peak hour. Three intersections have approaches that are expected to operate at LOS E or F in either or both the AM or PM peak hour. The intersections are shown in **Figure 25 (p. 54)**.

Table 8: 2040 No Build Peak Hour Levels of Service for Study Area Intersections

INTERSECTION	TURNING MOVEMENT #*	LOS AM Peak Hour Approach or Intersection LOS				LOS PM Peak Hour Approach or Intersection LOS			
		NB	SB	WB	EB	NB	SB	WB	EB
KY 9/KY 11	1	C				C			
KY 9/Tucker Drive**	2	A	A	B	C	B	A	A	C
US 62/KY 9	3	B				B			
US 68/KY 9E Ramps	4	B	A		A	B	B		B
US 68/KY 9 SB Ramps	5	B	A		A	B	B		B
US 68B /US 68/ US 68X	6		B		A		C		A
US 62/Kenton Station Road	7	B	B	E	F	B	B	F	F
US 62/Jersey Ridge Road	8	C				B			
US 62/KY 11**	9		A	C			B	F	
US 62/KY 10	10	E				F			
US 62/Bridge Street (KY 2513)	11	A				A			
US 62/Simon Kenton Bridge	12	C				C			
US 68/KY 9 N (Downing Drive NE Quadrant)	13			A	A			B	A
KY 8/US 68/ SE (NB Ramps)	14	A			A	A			A
US 68/KY 8 (SB Ramps)	15	A			B	A			B
KY 2513 (2nd Street)/ KY 10	16		A		A		B		A
KY 11/KY 2519 (Lexington Avenue)	17	A	A	B	B	A	A	C	B

Notes: Red letters signify areas of concern or intersection operating at LOS E or F in either/both AM or PM peak hour.

* *Corresponds with Appendix A.*

** *Intersections with most/all approaches operating at acceptable LOS D or above but having at least one movement (left, through, right) operating at LOS E or F.*

The following is a summary of key findings for specific movements, in addition to the table above:

- Although the intersection approaches have acceptable LOS, two intersections have at least one movement (i.e., left, through, right) operating at LOS E or F (shown as *).
- US 62/Kenton Station Road is an unsignalized intersection where traffic volumes should be monitored and/or a signal warrant analysis conducted.
- The eastbound through movement for the US 62/KY 10 intersection exhibits LOS F in both the AM and PM peak hours with queues of 21 and 34 vehicles, respectively, and a

PM control delay of 293 seconds/vehicle. This intersection is slated for improvement as a part of PIF No. 09 081 B0062 3.00.

- The US 62/KY 11 intersection westbound left is projected to operate at LOS C (queue of three vehicles) in the AM and LOS F (queue of six vehicles) in the PM peak hours, with PM peak hour delay projected to be 210 seconds/vehicle.
- Although the KY 9/Tucker Drive overall intersection is projected to operate at an acceptable LOS, eastbound left movements from Tucker Drive are projected to operate at LOS E (AM peak hour) and F (PM peak hour). However, queues are expected to be no more than two vehicles.

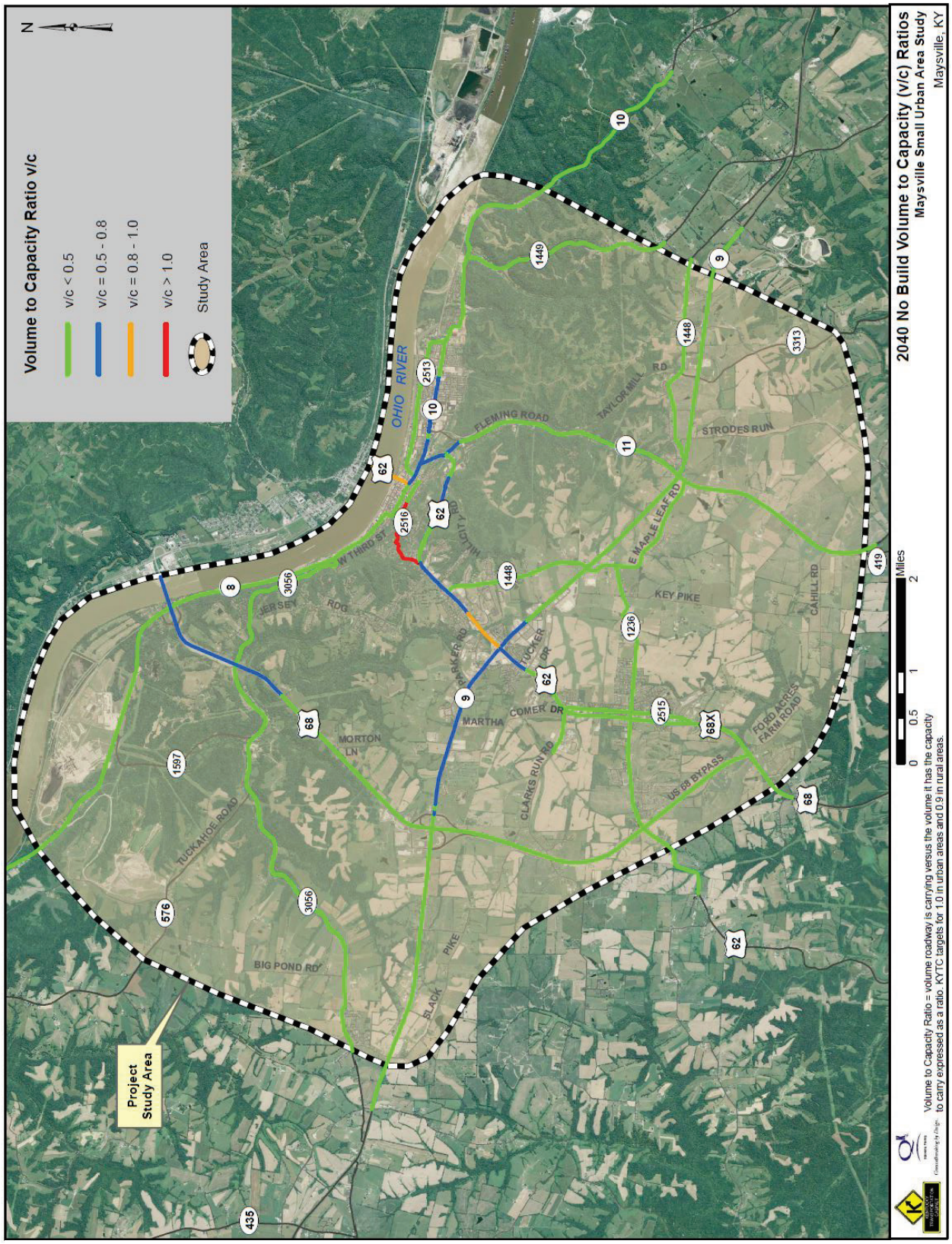


Figure 24: 2040 No Build Volume to Capacity (v/c) Ratios

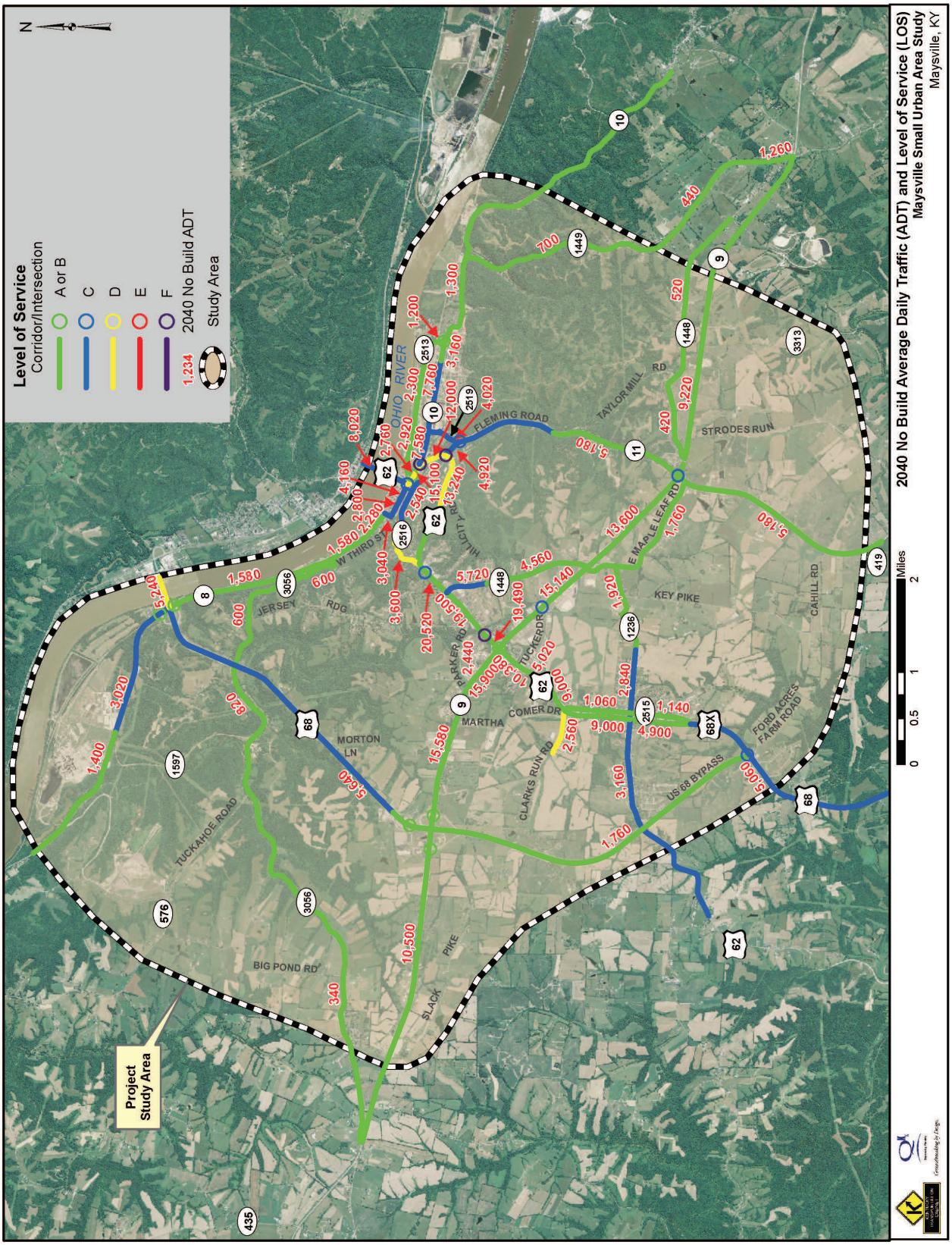


Figure 25: 2040 No Build Average Daily Traffic (ADT) and Levels of Service (LOS)

6.0 PROJECT DEVELOPMENT

Projects were developed to improve safety and congestion taking into consideration high crash locations, existing and future year traffic and associated levels of service, v/c ratio analysis, identified growth areas, and LO/S input. Concepts were not developed for projects currently underway (highway plan projects) with either funds not authorized or projects not progressing, and previously identified PIFs.

Cost estimates were provided for each new project based on pavement, structures, and an estimate of earthwork quantities using the KYTC District 9 unit bid prices. Other detail items such as curb and gutter, culverts, signal heads, retaining walls, etc., were estimated where appropriate. The KYTC District 9 staff provided right-of-way and utility estimates for each new project. PIF projects' previous construction cost estimates were updated to 2015 dollars using the KYTC's 2015 construction cost index, and inflated to arrive at 2016 dollars. PIF projects' design, right-of-way, and utility estimates were also adjusted using an inflation rate to year 2016.

6.1 Project Team Meeting No. 2

November 1, 2016, the second Project Team meeting was held in Flemingsburg at the KYTC District 9 office. The meeting purpose was to review each identified project in preparation of the second LO/S meeting in December 2016. Slight revisions were made such as typical sections (e.g., shoulders to curb and gutter), cost estimates for ditches, sidewalk length adjustments, and utilities. In addition, the following projects were added, combined, or removed from consideration:

- Added option (Project C) to install Qwick Kurb® on US 68 at Downing Drive to prohibit left turns with an estimate of $125/linear foot, totaling $125,000.
- Eliminated Project C2 from consideration, with Project C1 to move forward. Because the site used to be a school and is now a day care, the problem likely has been resolved. Widening US 62 westbound will be evaluated to determine if it improves the level of service.
- Added right-of-way ($1 million) and utility ($1 million) costs to Project G (US 62), warranted if the planned interchange is constructed. A change to curb and gutter and sidewalk ($2 million additional construction costs) increases the design cost by $500,000 ($4.5 million total).
- Added a warning sign to indicate intersection ahead to Project I (KY 8).
- May need to shift KY 8 north toward the railroad and/or install curb and gutter to avoid the Pogue House, which is along KY 8 and is listed in the NRHP.
- Added a right-turn lane project on KY 9 southbound to KY 11.
- Eliminated Project L—restriping northbound KY 9 at US 62 for one left lane, two through lanes, and one dedicated right-turn lane to reduce intersection delay and queues—due to recently improved signal timing that allows motorists to travel unimpeded through a series of green lights; the offset driving lanes, northbound, created by the project; and increased speeds motorists would drive through the intersection proposed by Project L.

- Added a new Project L to modify KY 9 south of KY 11 through the transition area from four to two lanes as the area is confusing to drivers. The transition occurs near Stonelick Road (KY 1448) where motorists turn left.
- Removed sidewalk costs for KY 10 (Project O).
- Included Item No. 9-8908.00, and bypass Item Nos. 9-147.20 and 9-147.60 as long-term projects for prioritization.
- Increased right-of-way costs by $1 million for Springdale Road (Project V). In addition, a construction estimate for a "cross country" route from KY 3156 to Springdale Road is needed.
- Excluded from the project list KY 1449 projects outside the study area.

The proposed projects were "renumbered" in alphabetical order (e.g., Projects A, B, C, and D). Due to re-numbering, Projects E and R were renamed to Project E.

At the conclusion of the second Project Team meeting, new projects were categorized as follows:

- **Local:** Local projects are not located on the state-maintained system and would likely need to be funded by the city of Maysville or Mason County. A private developer could also assume this responsibility.
- **Short-term:** Short-term projects are typically lower-cost implemented in the near term. These project types require little or no right-of-way to construct and in some cases may be implemented by the KYTC Division of Maintenance or Traffic Operations.
- **Long-term:** Long-term projects are higher cost that would require more significant resources to implement. These project types would require additional right-of-way to construct and would likely need to be funded through the KYTC Highway Plan process.

Project Team meeting minutes are found in **Appendix H**.

6.2 2040 Build Traffic

The following projects identified in the Highway Plan **(Table 9)** were included in the 2040 Build traffic model. The bypass will likely be designated a required truck route. In the model, an attempt to force truck traffic out of downtown and onto the bypass was made. However, the model could only replicate all or no trucks on the bypass.

Table 9: 2040 Build Modeled Projects

Project	Project Description	KYTC Item Number
Project Y (US 68)	US 62 to KY 11	9-147.20
Project Z (US 68)	KY 11 to KY 9	9-147.60
Project AA (US 68)	US 62/US 68 interchange	9-8809.00

A ratio of District 9 ATDM Build traffic volumes/No Build traffic volumes was applied to the 2040 forecasted traffic in Section 5.2 of this report to determine 2040 Build traffic volumes for the study area roadways. The 2040 Build volumes from the District 9 ATDM for projects identified in **Table 9** were not adjusted.

The 2040 Build traffic shows the continuation of the US 68 Bypass, from US 62 to KY 11 (Project Y), would attract nearly 3,500 vpd, however the extension from KY 11 to KY 9 (Project Z) would attract fewer than 300 vehicles per day. It is possible if the bypass is designated a required truck route, future traffic volumes could increase on the bypass, and decrease on other routes including bypassed KY 9 providing greater congestion and safety benefits.

The 2040 Build traffic output for the US 62/US 68 interchange (Project AA) projects ramp ADT volumes to be about 300 to 600 vpd in 2040 **(Figure 26)**[17].

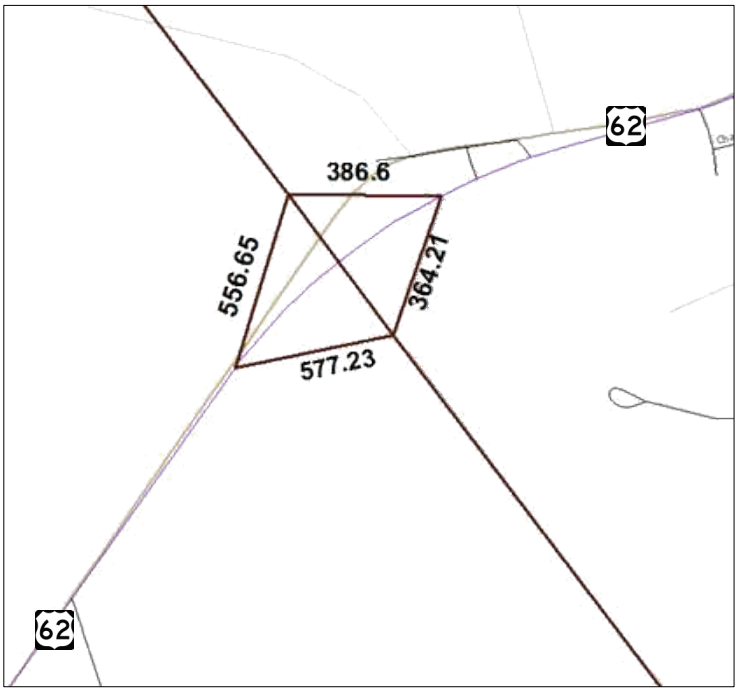


Figure 26: US 62/US 68 Interchange, District 9 ATDM Build ADT

6.3 2040 Build Volume to Capacity (v/c) Ratios

To evaluate congestion on study area roadways for the Build scenario, 2040 Build ADT volumes (**Figure 27**) were compared to the roadways' theoretical capacity using the District 9 ATDM. The v/c ratios are unchanged from the No Build scenario with the exception of the bypass projects shown in **Table 9 (p. 56)**. KY 2516 shows a v/c ratio greater than 1.0 indicating additional lanes may be justified. All other roadway segments are expected to operate at less than capacity with a v/c ratio less than 1.0, as shown in **Figure 28 (p. 59)**.

[17] The reader should exercise caution when utilizing the Build traffic volume output from the District 9 ATDM as shown in Figure 27 for Projects Y, Z, and AA (Table 9). These volumes are an indicator of a project's viability and could be over- or underestimated by the traffic model by as much as 30%.

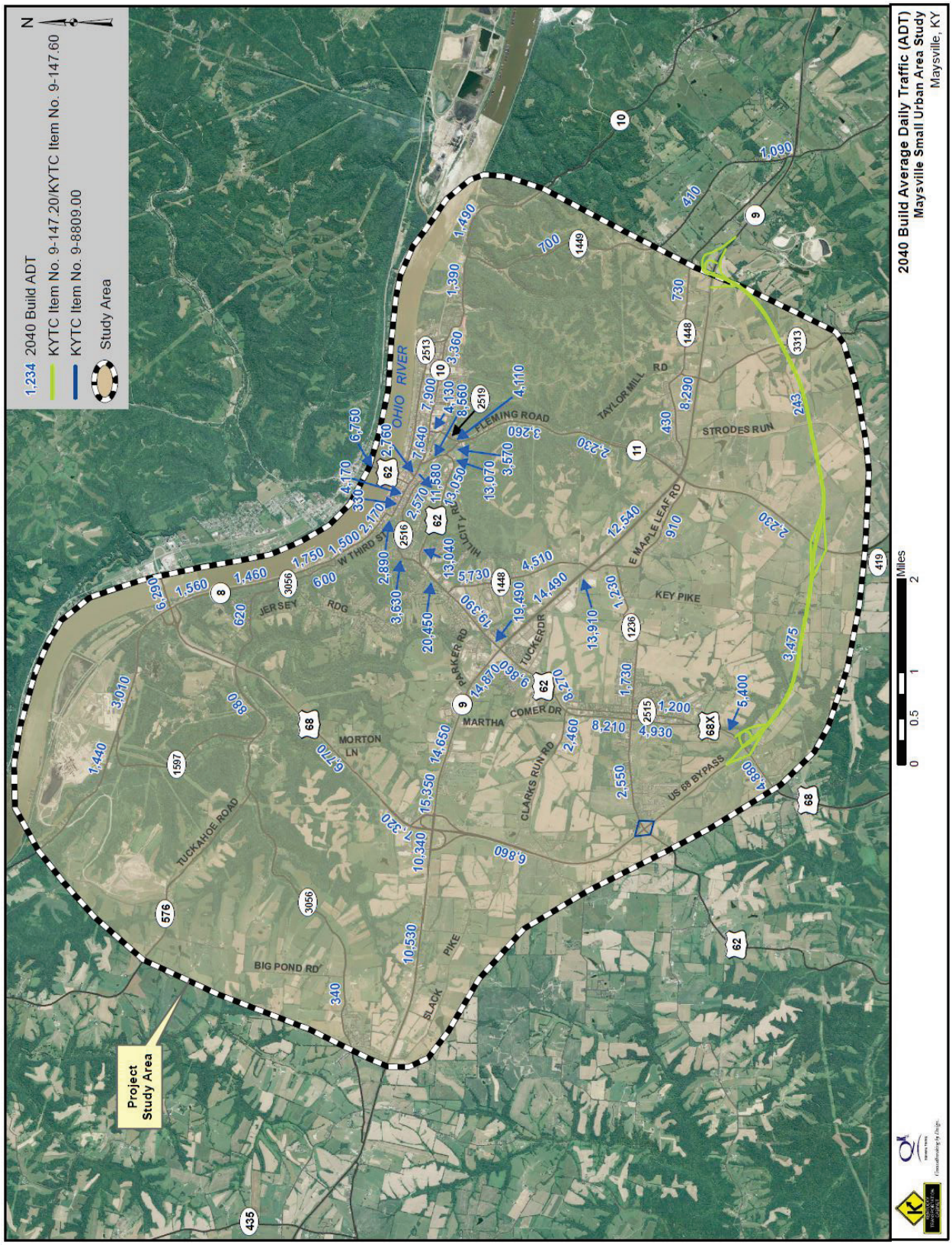


Figure 27: 2040 Build Average Daily Traffic (ADT)

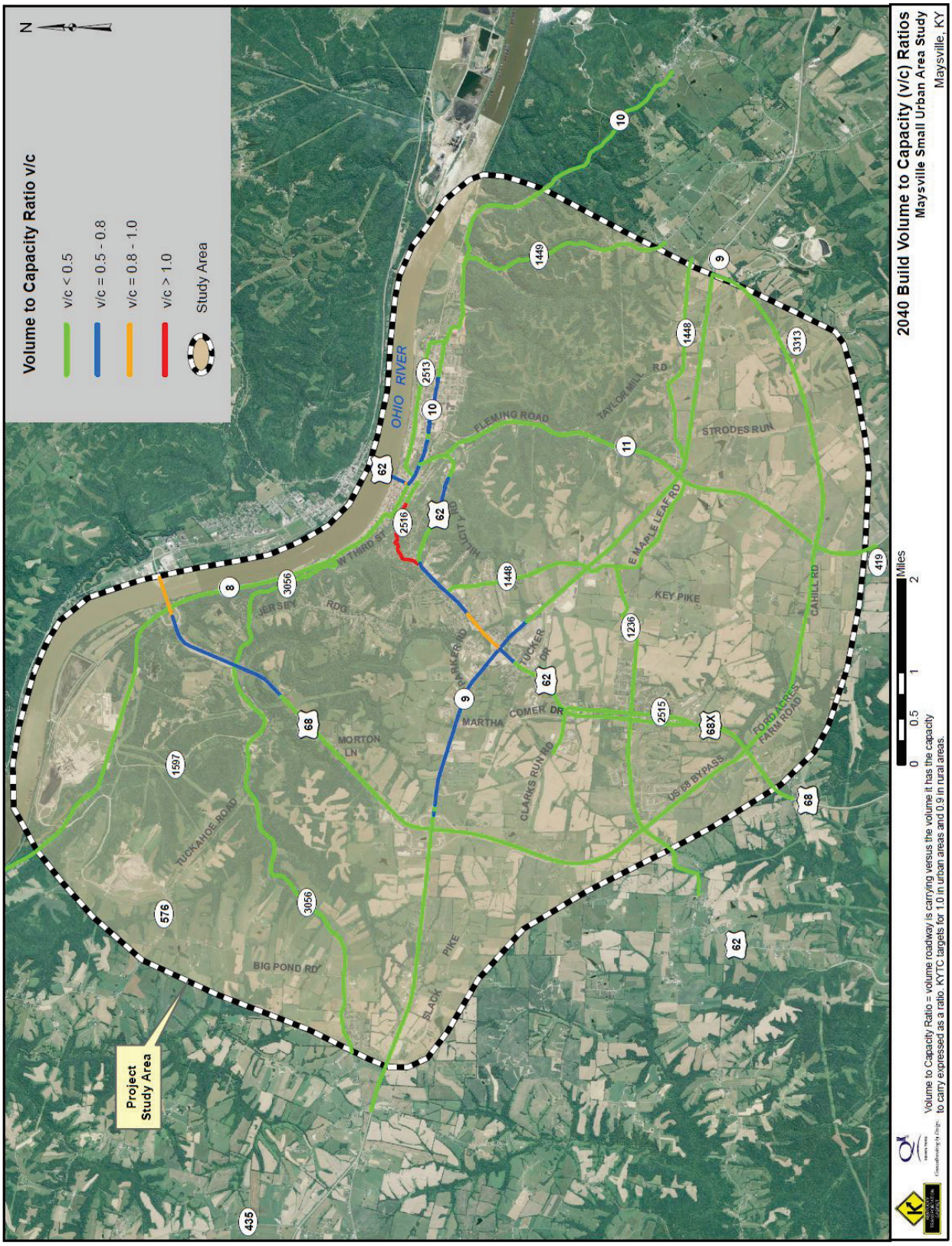


Figure 28: 2040 Build Volume to Capacity (v/c) Ratios

6.4 Project Descriptions

The final list of individual project sheets including descriptions, project concepts, and photos follow. As stated previously, if an identified PIF or current Highway Plan project existed to address safety or congestion, a new project was not developed to reassess that need. All project total costs and associated concepts or alignments are preliminary and subject to change as each project progresses through the development process. **Figure 29** shows the general location of each project.

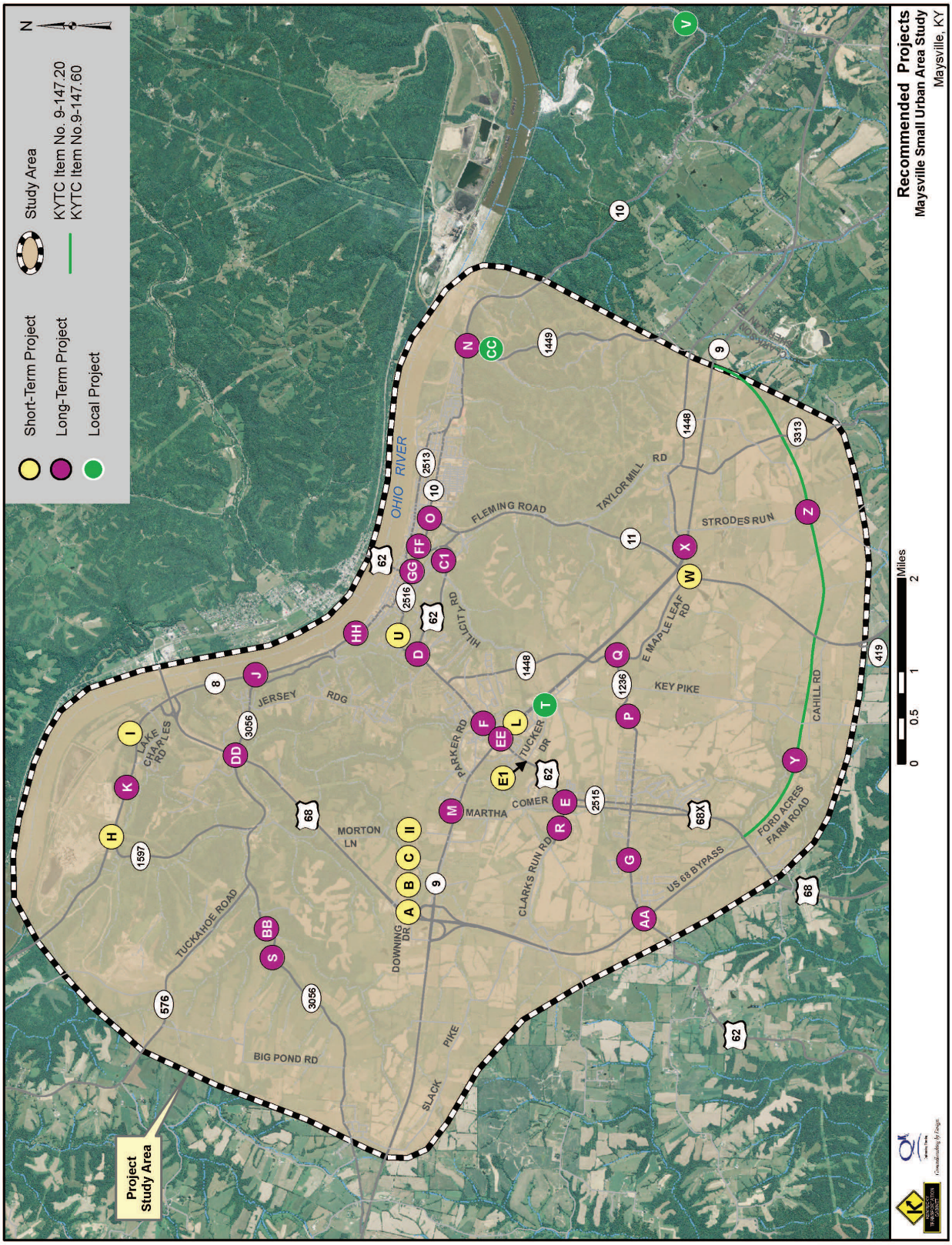


Figure 29: Recommended Projects

A, B, C Short-Term	**LOCATION** US 68 (MP 14.413 – MP 14.603)	**PROJECT PRIORITY** LOW
	Description Install barrier for positive seperation on US 68 at Downing Drive to prevent left turns. • Project A proposes barrier wall (1,000 feet). • Project B proposes cable median barrier. • Project C proposes Qwick Kurb® modular raised curb sections and traffic channelization posts.	**Cost Estimate: A/B/C** Planning: $0/$0/$0 Design: $0/$0/$0 Right of Way: $0/$0/$0 Utilities: $0/$0/$0 Construction: $100K/$20K/$130K Total: $100K/$20K/$130K

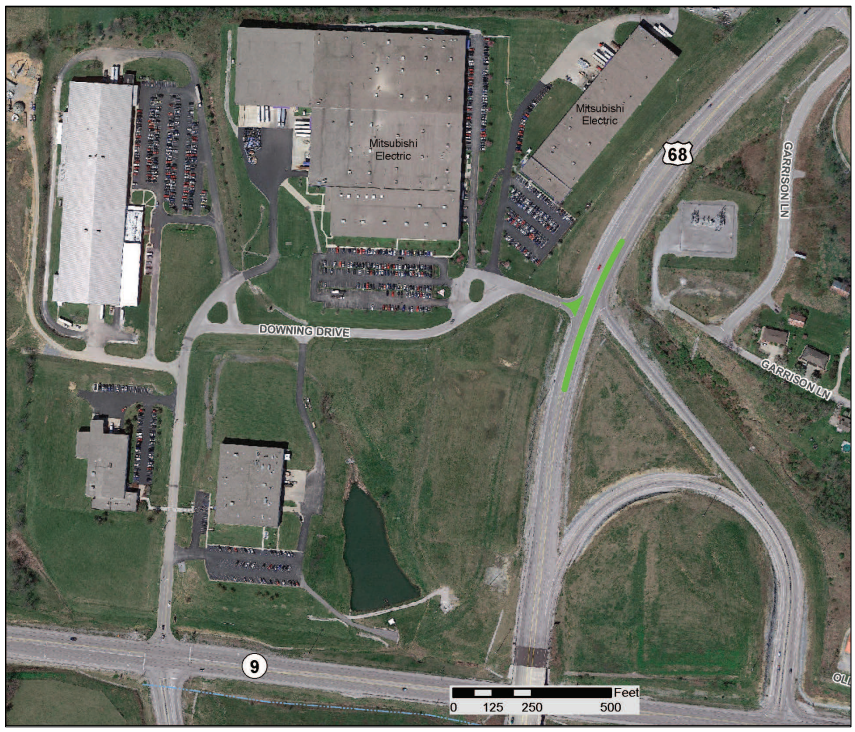
Problem Statement: The turn from Downing Drive onto US 68 is restricted to right-in/right-out, but vehicles disregard this restriction and turn left onto US 68. According to local officials and stakeholders approximately 700 employees use Downing Drive. Although, this location does not have a statistically significant three-year crash history, stakeholders believe it to be an issue, with potential for crashes.

At the second LO/S meeting, it was requested left turns be allowed at this intersection; therefore, these options were ranked low in lieu of a new Project II that would examine allowing left turns at this intersection. Project II was ranked high.


Project A


Project B


Project C

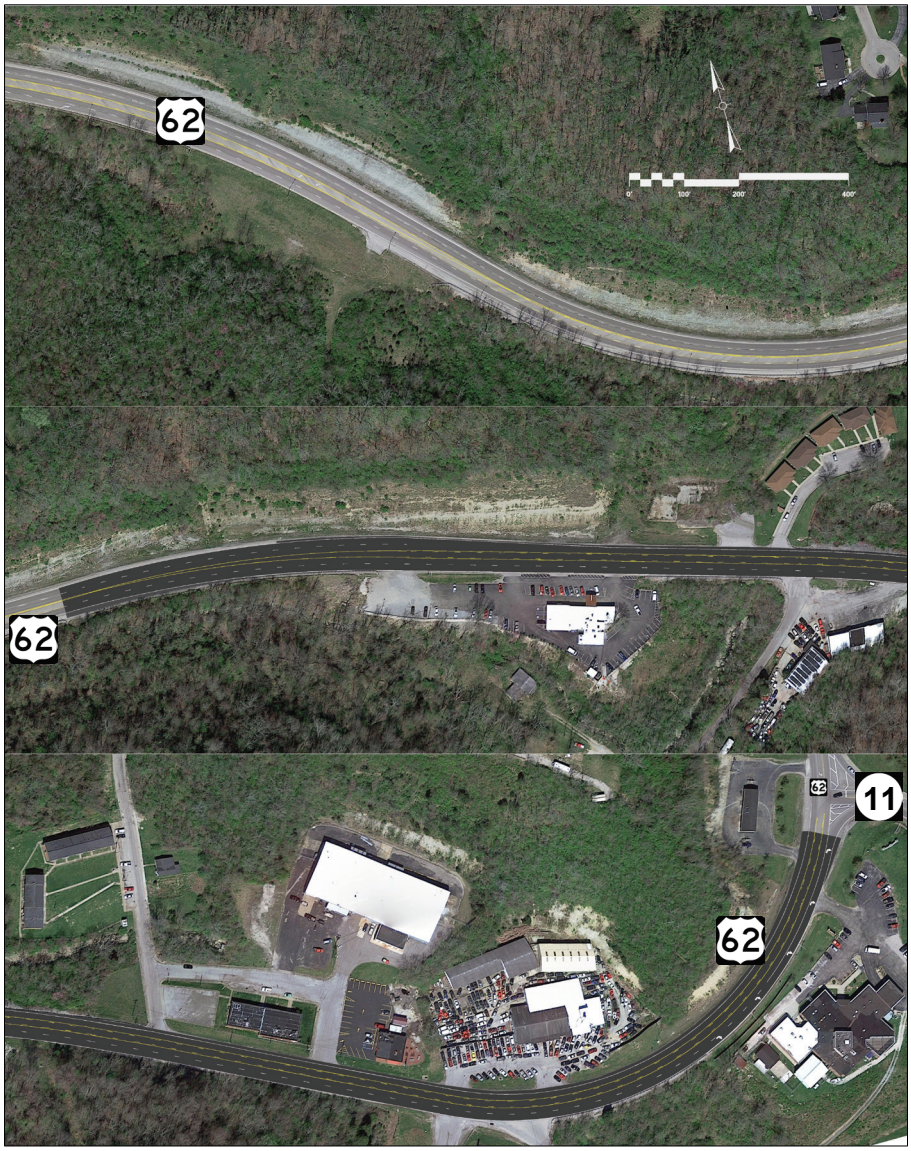


II Short-Term	LOCATION US 68 (MP 14.503 – MP 14.513)	PROJECT PRIORITY HIGH
	Description The KYTC to study improvements to allow left- and/or right-turn movements on Downing Drive at US 68.	**Cost Estimate:** Planning: $0 Design: $10,000 Right of Way: $0 Utilities: $0 Construction: $20,000 Total: $30,000

Problem Statement: At the final local officials/stakeholders meeting, Projects A, B and C scored unfavorably as each related to restricting left turns on Downing Drive at US 68. Six LO/S added comments requesting consideration for allowing left turns from Downing Drive to northbound US 68, and an additional comment asked to further study Downing Drive. As a result, the Project Team added a new high priority short-term project, identified as Project II, to address new improvements to allow left and/or right turn movements on Downing Drive at US 68. A "placeholder" cost estimate for the KYTC study and implementation (signs) was added to recognize a cost for this effort.

C1 Long-Term	**LOCATION** **US 62** **(MP 16.025 – MP 17.000)**	**PROJECT PRIORITY** **LOW**
	Description Extend existing US 62 two-lane eastbound section to KY 11. Eliminate Two-Way-Left-Turn-Lane (TWLTL) in part, convert shoulders to full depth pavement, and widen for minimal shoulders.	**Cost Estimate:** Planning: $0 Design: $130,000 Right of Way: $0 Utilities: $100,000 Construction: $1,270,000 Total: $1,500,000

Problem Statement: US 62 from KY 2516 to KY 11 currently carries approximately 11,320 vpd. US 62 is a five-lane roadway east of KY 2516 before transitioning to four-lanes (two westbound, TWLTL, and one eastbound) at MP 16.025 and then to three-lanes (one each direction with TWLTL) at MP 16.328. Local officials/stakeholders identified congestion on the one-lane eastbound movement from MP 16.025 to KY 11. This section of KY 11 currently operates at LOS C/D in 2016 and falls to LOS D in 2040. The US 62/KY 11 unsignalized intersection also currently operates at LOS E, and is projected to fall to LOS F in 2040. The control delay is westbound KY 11 and the queue is a maximum of only six vehicles in 2040.

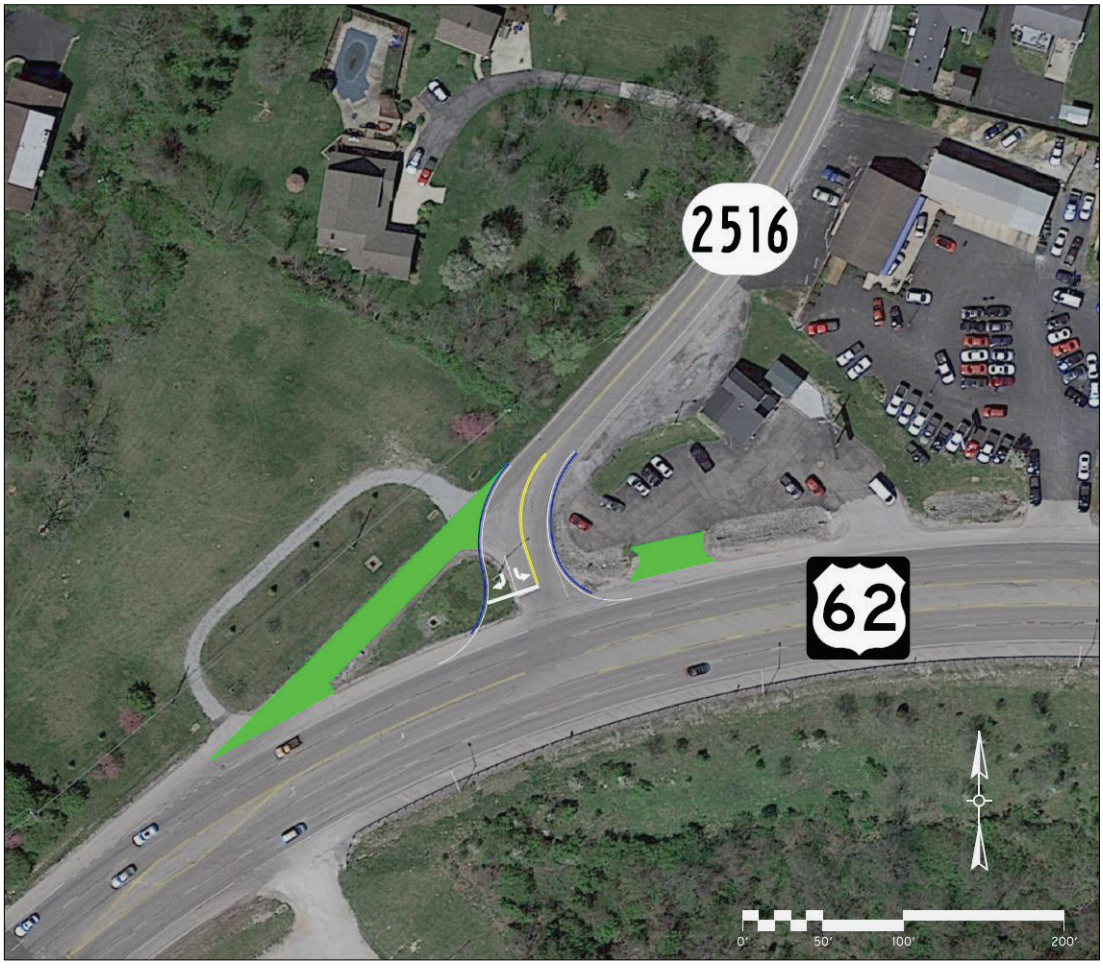


Project C1 extends a two-lane eastbound movement from MP 16.025 to KY 11. This would improve the LOS for the eastbound traffic but not the westbound traffic.

D Long-Term	**LOCATION** **US 62 (MP 15.668)** **KY 2516 (MP 0.000 – MP 0.035)**	**PROJECT PRIORITY** **MEDIUM**
	Description Realign US 62/KY 2516 intersection.	**Cost Estimate:** Planning: $0 Design: $ 50,000 Right of Way: $ 50,000 Utilities: $150,000 Construction: $ 50,000 Total: $300,000

Problem Statement: The US 62/KY 2516 unsignalized intersection identified as a safety issue with a CCRF of 1.25. Left turning motorists from KY 2516 have difficulty looking right before turning eastbound onto US 62. In addition, right turning vehicles from KY 2516 have a short merge onto US 62 westbound. Development of vacant parcels on KY 2516 near US 62 could worsen this problem. Issue is complicated by the corner business encroaching in the functional area of the intersection.

Project D focuses all movements to one access point. In addition, closure of the US 62 business entrance at KY 2516, and channelization of the first two business access points on KY 2516 at US 62 is recommended.



E Long-Term	**LOCATION** **US 62 (MP 13.381)** **KY 2515 (MP 1.391 - MP 1.550)**	**PROJECT PRIORITY** **HIGH**
	Description Widen KY 2515 (Clarks Run Road) to three lanes between Mason County Intermediate School and US 62 adding left- and right-turn lanes at US 62. Widen right-turn radius between US 62 and Clarks Run Road and between Clarks Run Road and Martha Comer Drive.	**Cost Estimate:** Planning: $0 Design: $100,000 Right of Way: $75,000 Utilities: $200,000 Construction: $985,000 Total: $1,360,000

Problem Statement: Turning radii on KY 2515 (Clarks Run Road) at the intersections with US 62 and Martha Comer Drive are problematic for school buses. KY 2515 has seen an increase in school-related traffic due to two new schools on Martha Comer Drive. Currently buses avoid Martha Comer Drive due to difficulty turning. KY 2515 is a two-lane road that widens to add a left-turn lane at two Mason County Intermediate School entrances.

Project E widens KY 2515 to three lanes between the school and US 62 providing left- and right-turn lanes at US 62. The project also widens the right-turn radius between US 62 and Clarks Run Road and between Clarks Run Road and Martha Comer Drive. The road improvements include the widening of a 16x18-foot reinforced concrete culvert.

E1 Short-Term	**LOCATION** **US 62** **(MP 14.008)**	**PROJECT PRIORITY** **HIGH**
	Description Evaluate US 62 at Tucker Drive for a "green left-turn arrow (protected) phase."	**Cost Estimate:** Planning: $0 Design: $0 Right of Way: $0 Utilities: $0 Construction: $30,000 Total: $30,000

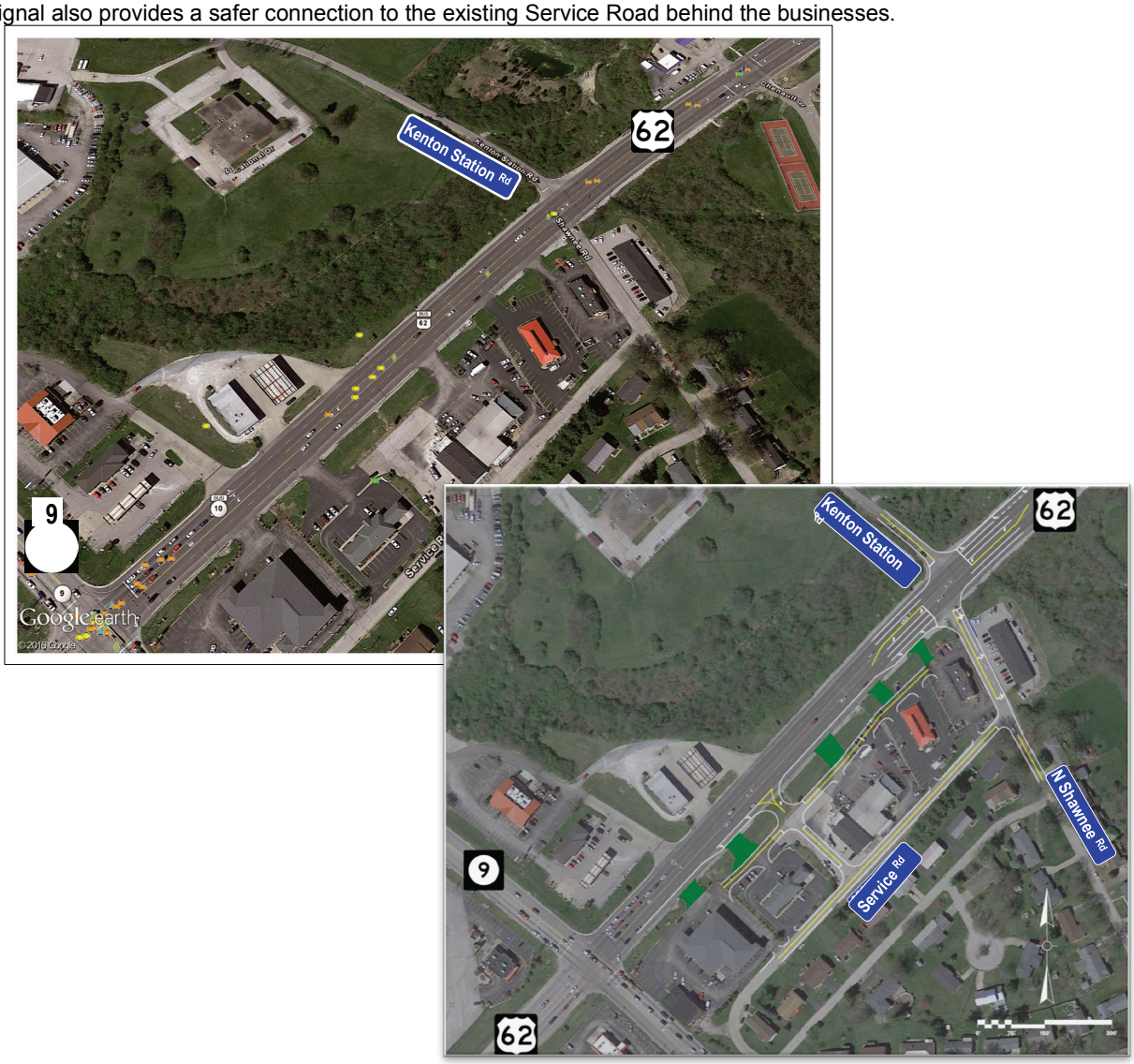
Problem Statement: US 62 in the vicinity of Tucker Drive carries 10,380 vpd, with a CCRF of 1.0 (12 crashes). Crash reports indicated four angle (yellow) and four opposing left-turn crashes (blue) with several citing a failure to yield to oncoming traffic when a “green ball” was present. The recurrence of crashes may imply the need for a "green left-turn arrow (protected) phase" on US 62.

Project E1 proposes a protected signal phase at Tucker Drive.

F Long-Term	**LOCATION** **US 62** **(MP 14.390 – MP 14.620)**	**PROJECT PRIORITY** **MEDIUM**
	Description Access management on US 62 between KY 9 and Kenton Station Road. Install a new traffic signal at the US 62/Tucker Drive intersection.	**Cost Estimate:** Planning: $0 Design: $30,000 Right of Way: $0 Utilities: $0 Construction: $285,000 Total: $315,000

Problem Statement: US 62 between KY 9 and Kenton Station/N. Shawnee Road is a five-lane facility with 16,650 vpd with a high amount of crashes. This 0.2-mile stretch has five access points to seven businesses on the east side of US 62 between the two intersections. The majority of crashes were associated with turns in and out of these entrances.

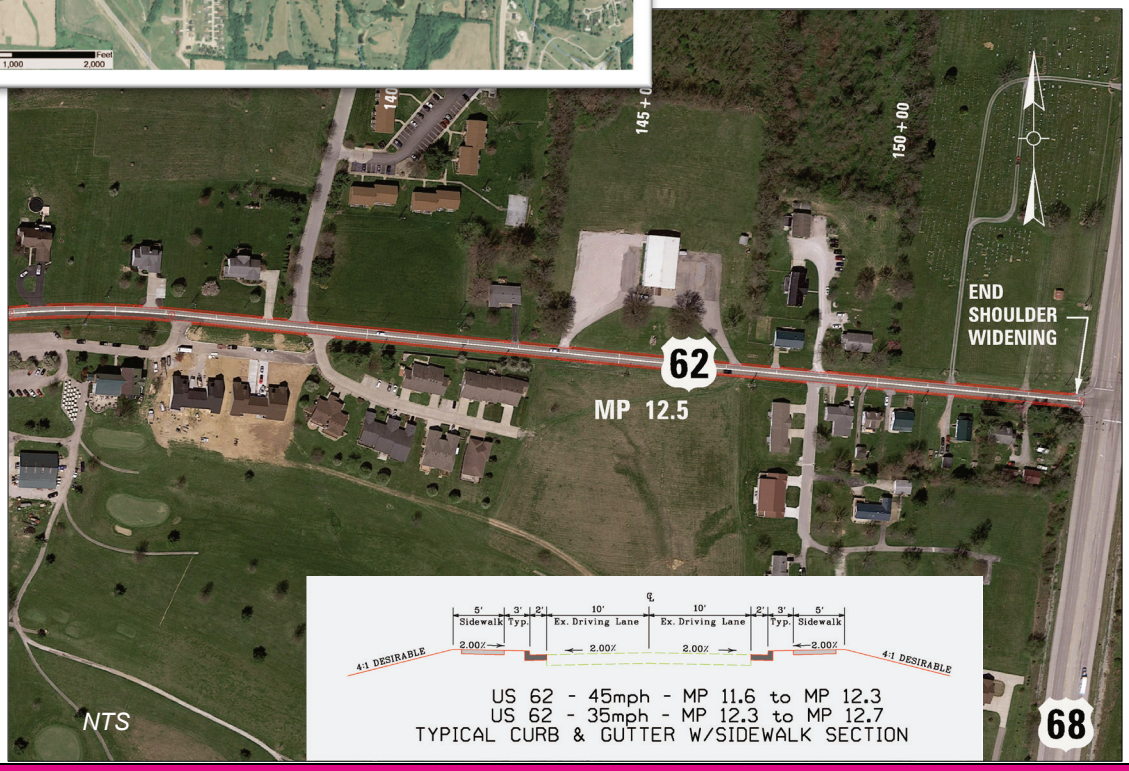
Project F consolidates multiple business entrances to one right-in/right-out connection to US 62 and constructs a new frontage road. Install a new traffic signal at US 62/Tucker Drive to safely facilitate left turning vehicles. The new signal also provides a safer connection to the existing Service Road behind the businesses.



G Long-Term	LOCATION US 62 (MP 11.450 – MP 12.672)	PROJECT PRIORITY LOW
	Description Install curb, gutter, and sidewalk on US 62 between the US 68 Bypass and US 68X/US 62 intersection.	**Cost Estimate:** Planning: $0 Design: $750,000 Right of Way: $1,000,000 Utilities: $1,000,000 Construction: $4,540,000 Total: $7,290,000

Problem Statement: US 62 from the US 68 Bypass to the US 68X/US 62 intersection is a 1.2-mile two-lane road with 10-foot-wide driving lanes, little or no paved shoulders, and grass shoulders. The road accesses a number of residential communities as well as a country club/golf course, church, and cemetery. Item No. 9-8809.00 would construct an interchange at the US 68 Bypass with US 62, which may increase traffic along this corridor.

Project G improves this segment of US 62 with the addition of curb, gutter, and sidewalks on both sides.



H Short-Term	**LOCATION** **KY 8** **(MP 7.000 – MP 7.300)**	**PROJECT PRIORITY** **MEDIUM**
	Description Clear trees in the northwest quadrant of Spurlock Power Station truck entrance to improve sight distance for KY 8 motorists.	**Cost Estimate:** Planning: $0 Design: $0 Right of Way: $0 Utilities: $0 Construction: $40,000 Total: $40,000

Problem Statement: New job growth was identified along KY 8 near the Spurlock Power Station (Spurlock). Currently KY 8 near Spurlock carries 1,200 vpd (18.1% trucks) and is projected to carry 1,400 vpd in 2040. A sight distance issue exists at the Spurlock Power Station construction/truck entrance due to the curve, bridge, guardrail, and trees along KY 8 when approaching from the west. Large trucks slowly exit the plant and sight distance prevents those drivers from seeing vehicles traveling at a higher speed.

Project H proposes tree removal/clearing at the Spurlock truck entrance to improve sight lines for motorists traveling KY 8. A truck crossing advance warning sign is present.

I Short-Term	**LOCATION** **KY 8** **(MP 8.320 – MP 8.950)**	**PROJECT PRIORITY** **MEDIUM**
	Description Clear trees in northwest quadrant of KY 8 and Lake Charles Road intersection, channelize business entrance on KY 8, and add "intersection ahead" signs.	**Cost Estimate:** Planning: $0 Design: $0 Right of Way: $0 Utilities: $0 Construction: $40,000 Total: $40,000

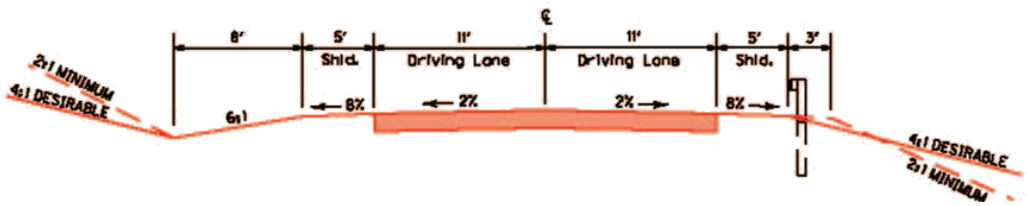
Problem Statement: There are two intersections of KY 8 and Lake Charles Road – eastern and western – as it is a "loop road." The western intersection has poor sight distance and heavy truck volume concerns. KYTC District 9 staff stated the eastern KY 8/Lake Charles Road intersection (Photo 1) has previously been investigated and this site meets current sight distance design criteria (green box in map below). However, overgrown trees and business equipment obstruct the western intersection (Photo 2). In addition, the business entrance is wide.

Project I removes trees in the southeast quadrant of the western KY 8/Lake Charles Road intersection, installs "intersection ahead" signs in both directions, and channelizes of the business entrance to provide separation from Lake Charles Road.

J Long-Term PIF No. 09 081 D0008 83.0	LOCATION KY 8 (MP 9.200 – MP 11.035)	PROJECT PRIORITY LOW
	Description Widen KY 8 between KY 3056 and the US 68 Bypass.	**Cost Estimate:** Planning: $0 Design: $980,000 Right of Way: $2,000,000 Utilities: $1,500,000 Construction: $9,720,000 Total: $14,200,000

Problem Statement: KY 8 is a two-lane road with 10-foot-wide travel lanes and variable shoulder widths between the US 68 Bypass and KY 3056. The road runs parallel to the railroad and the Ohio River in several segments with long stretches of guardrail. It is also experiencing roadway slippage and pavement failure throughout. The segment of road carries 1,340 vpd and 10% trucks. Multiple documented landslides have occurred along this section of KY 8. It is also signed as a bike route and has historic resources in proximity.

Project J, PIF No. 09 081 D0008 83.0, replaces and widens KY 8 to 11-foot-wide travel lanes with five-foot-wide earth shoulders to eliminate drop-offs and improve the long-term stability. Retaining wall is required in some areas.



K Long-Term	LOCATION KY 8 (MP 6.000 - MP 9.200)	PROJECT PRIORITY LOW
	Description Widen KY 8 to 11-foot-wide travel lanes between the US 68 Bypass and Spurlock/East Kentucky Power.	**Cost Estimate:** Planning: $0 Design: $1,700,000 Right of Way: $500,000 Utilities: $1,500,000 Construction: $9,100,000 Total: $12,800,000

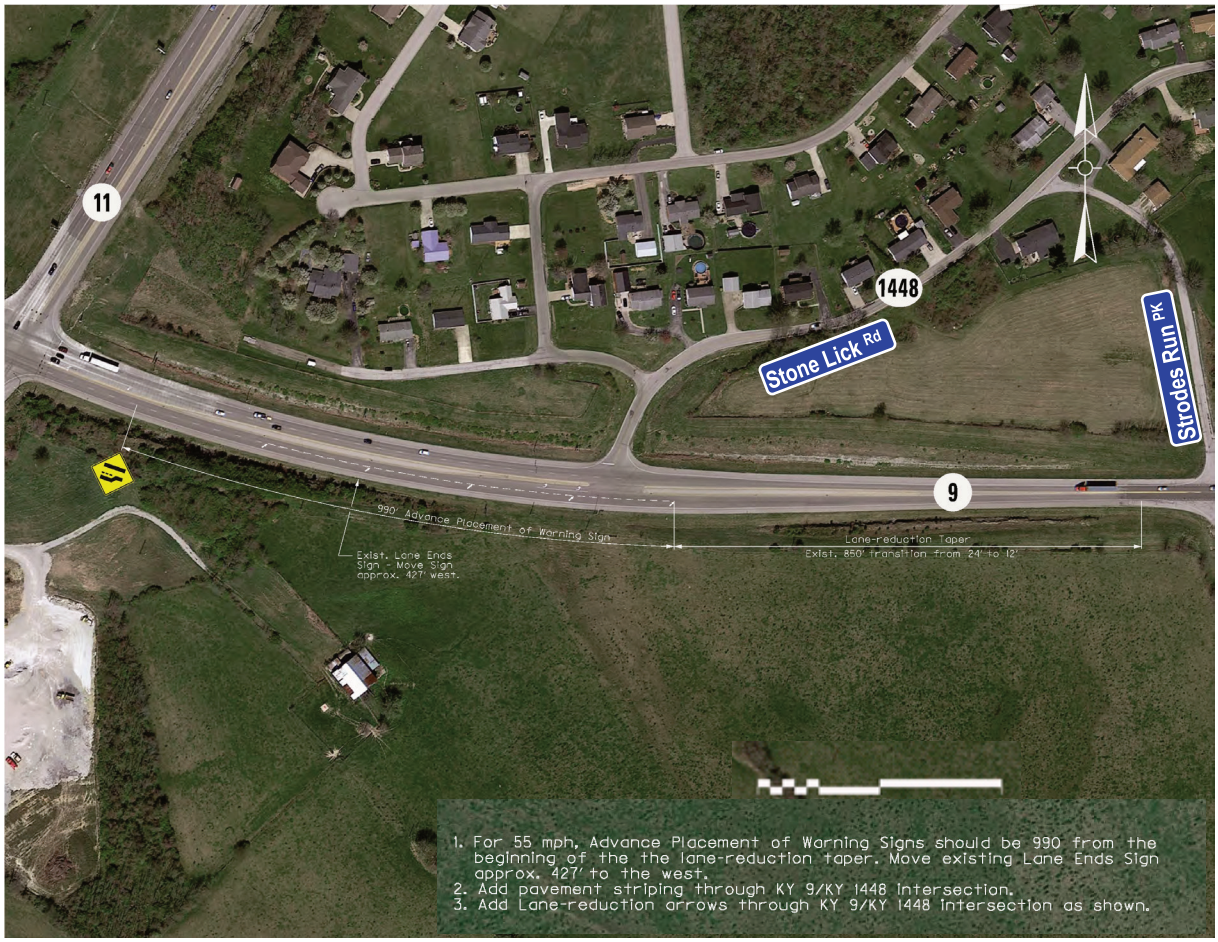
Problem Statement: This corridor is an area of concern due to the narrow road and high truck volumes. KY 8 from the Spurlock/East Kentucky Power Plant to US 68 is a two-lane road with 10-foot-wide travel lanes and variable six- to 10-foot-wide shoulders. This segment of KY 8 carries 2,580 vpd and 18% trucks.

Project K reconstructs and widens KY 8 to 11-foot-wide travel lanes and six-foot-wide shoulders.

L Short-Term	**LOCATION** **KY 9** **(MP 7.140 – MP 7.430)**	**PROJECT PRIORITY** **HIGH**
	Description Improve KY 9 transition from four lanes to two lanes between KY 11 and Strodes Run Pike.	**Cost Estimate:** Planning: $0 Design: $0 Right of Way: $0 Utilities: $0 Construction: $20,000 Total: $20,000

Problem Statement: This section of KY 9 carries 7,890 vpd, operates at LOS D, and is to be widened in the 2016 Highway Plan as Item No. 9-8908.00. Additional fixes are planned—conflict point reduction, sight distance improvements, improvements to intersection safety, and a reduction in speed differentials. Southeast of KY 11, southbound KY 9 transitions from four lanes to two lanes between KY 11 and Strodes Run Pike. The transition occurs near a left-turn lane and entrances to Stone Lick Road and Strodes Run Pike. Although there is not a statistically significant crash history, local officials/stakeholders and the KYTC District 9 staff identified this location as a concern.

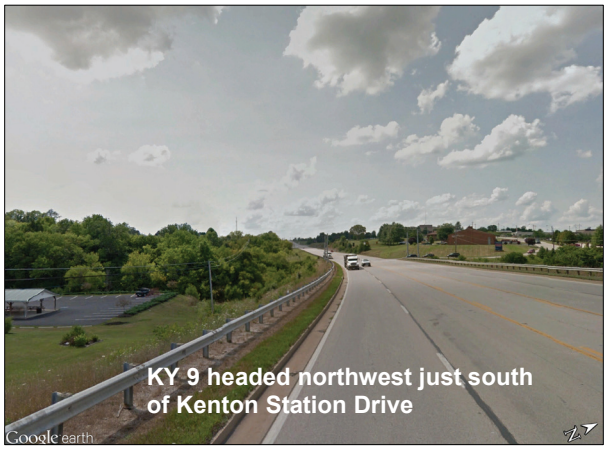
Project L improves the existing transition by adding definitive striping, pavement arrows, and signing to better direct motorists through the transition area.

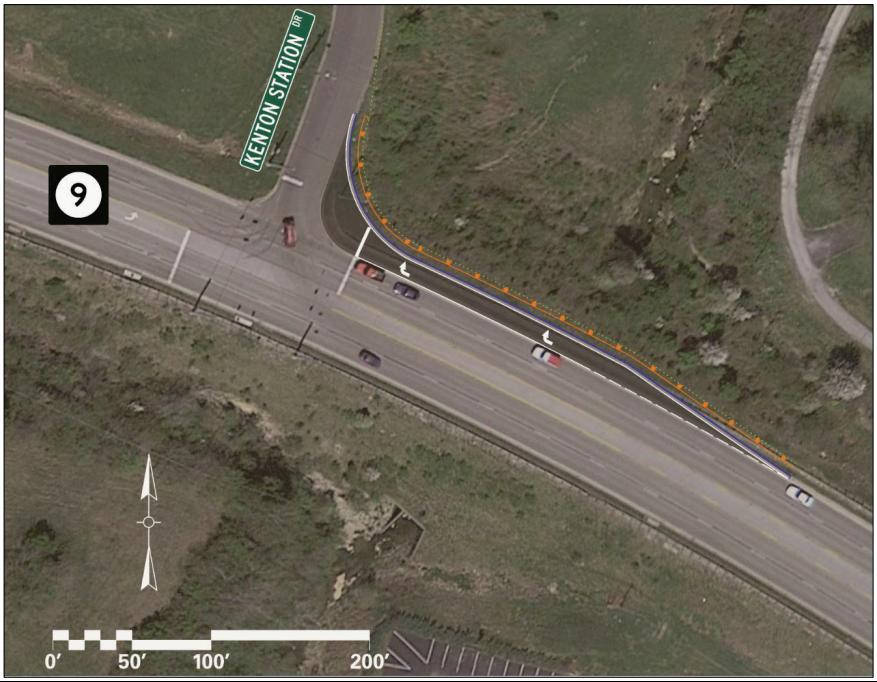


M Long-Term	**LOCATION** **KY 9** **(MP 10.861 – MP 10.918)**	**PROJECT PRIORITY** **HIGH**
	Description 1. Add right-turn lane on KY 9 at hospital entrance, and /or 2. Extend 45 mph speed limit	**Cost Estimate:** Planning: $0 Design: $200,000 Right of Way: $50,000 Utilities: $150,000 Construction: $790,000 Total: $1,190,000

Problem Statement: The Meadowview Regional Medical Center is located on Kenton Station Drive off KY 9 (MP 10.861) about 0.5 mile west of the KY 9/US 62 intersection. This location is the main hospital entrance and a westbound right-turn lane would be beneficial. This section of KY 9 carries approximately 13,300 vpd of which 25% are trucks. Vehicles traveling northwest on KY 9 pass through the US 62 intersection, KY 9 is signed 45 mph through and 0.25 mile beyond the intersection before changing to 55 mph. Often, motorists begin accelerating then encounter motorists ahead who have slowed or stopped to turn into the hospital entrance. Consequently, the entrance location is prone to rear-end crashes.

Project M provides either a (1) 300-foot-long right-turn lane for decelerating vehicles (the exact length will be determined in final design) and widen a double 7x16-foot culvert due to additional fill material needed for the turn lane or (2) low cost option is to extend the 45 mph speed limit west to Kenton Station Drive.

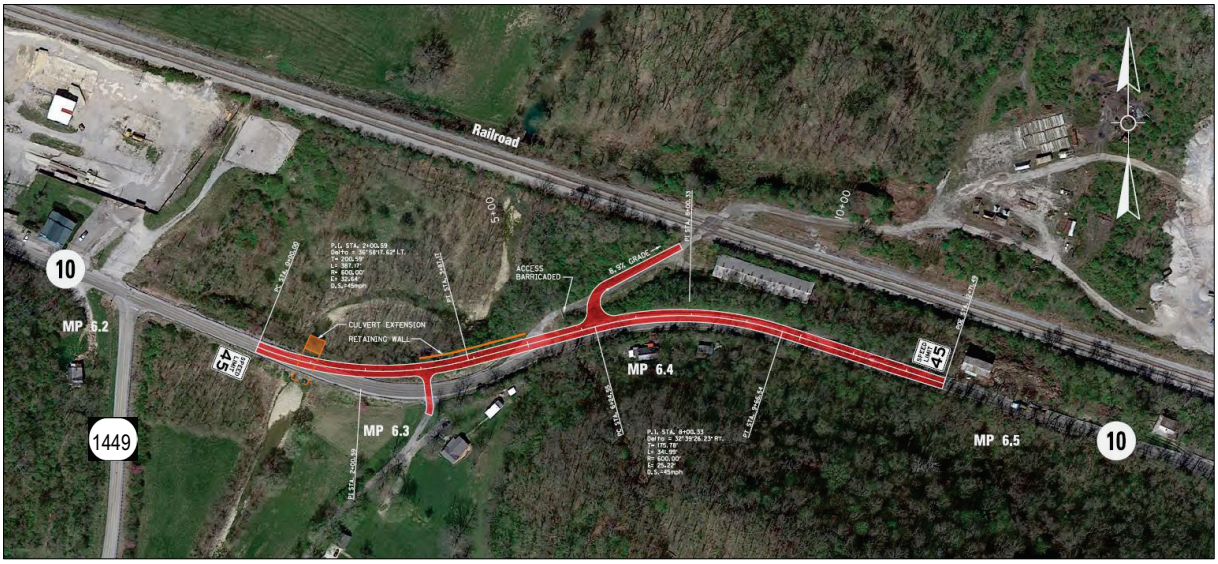




N Long-Term	**LOCATION** **KY 10** **(MP 6.260 – MP 6.500)**	**PROJECT PRIORITY** **HIGH**
	Description Realign KY 10 east of the KY 1449 intersection to improve curves and sight distance.	**Cost Estimate:** Planning: $0 Design: $350,000 Right of Way: $200,000 Utilities: $250,000 Construction: $1,600,000 Total: $2,400,000

Problem Statement: This section of KY 10 carries 1,120 vpd with 10% trucks, has 10- to 12-foot-wide lanes and two- to four-foot-wide shoulders, and a CCRF of 1.33. The speed limit is 45 mph west of KY 1449, but increases to 55 mph east of the intersection. An advanced warning sign for reverse curves ahead is present with an advisory speed of 35 mph.

Project N realigns KY 10 east of the KY 1449 intersection to improve curves to a 45 mph design speed with 11-foot-wide lanes and five-foot-wide paved shoulders, provides a longer tangent section between curves, and improves sight distance. The roadway improvements necessitate extending a culvert and providing a retaining wall to avoid Kennedy Creek.



O Long-Term	**LOCATION** **KY 10** **(MP 3.950 – MP 5.200)**	**PROJECT PRIORITY** **LOW**
	Description Construct bike lanes on KY 10 (Forrest Avenue) between Commerce Street and KY 2513 (Carmel Street).	**Cost Estimate:** Planning: $0 Design: $150,000 Right of Way: $0 Utilities: $250,000 Construction: $400,000 Total: $800,000

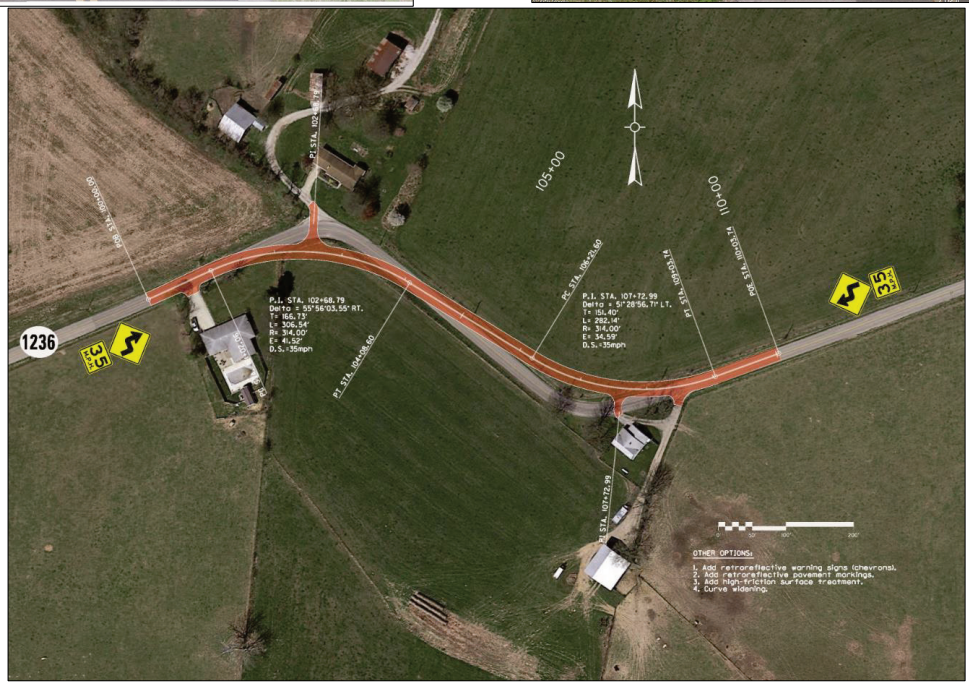
Problem Statement: KY 10 (Forest Avenue) between Commerce Street and KY 2513 (Carmel Street) is part of the historic downtown area that could benefit from pedestrian and bicycle improvements for better connectivity. The road is two lanes with parking on both sides carrying 1,120 vpd. Inadequate sidewalks are present on both sides in various stages of disrepair. A road diet was dismissed.

Project O installs bike lanes on both sides of KY 10 by eliminating most of the parking on one side of the road. Widen and repair sidewalks where needed.

P Long-Term	**LOCATION** **KY 1236** **(MP 1.100 – MP 1.300)**	**PROJECT PRIORITY** **HIGH**
	Description Realign roadway, and add signage and high friction pavement.	**Cost Estimate:** Planning: $0 Design: $100,000 Right of Way: $250,000 Utilities: $300,000 Construction: $350,000 Total: $1,000,000

Problem Statement: KY 1236 is a relatively straight roadway except between MPs 1.1 and 1.3. In this section, KY 1236 carries 1,640 vpd, with 10-foot-wide or less lanes, two- to four-foot-wide shoulders, and a CCRF of 1.81. All seven crashes were in curves, and five of the seven were on wet pavement. The speed limit of the corridor is 55 mph; however this section has an advanced warning sign for 20 mph.

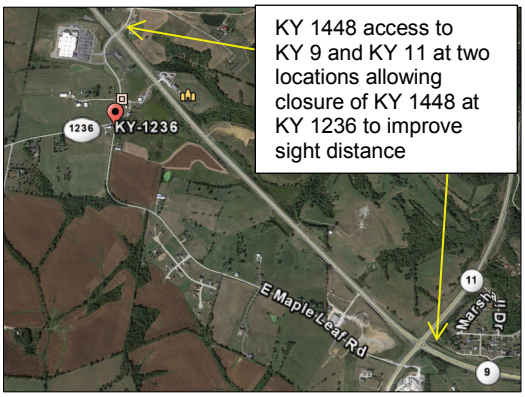
Project P realigns this section of KY 1236 to improve curves to a 35 mph design speed and improves sight distance. Install retroreflective warning signs, high friction pavement, and pavement markings to further improve safety.



Q Long-Term	**LOCATION** **KY 1448** **(MP 4.906 – MP 5.096)**	**PROJECT PRIORITY** **MEDIUM**
	Description Reconstruct KY 1448 southeast to KY 1236 to improve sight distance.	**Cost Estimate:** Planning: $0 Design: $50,000 Right of Way: $20,000 Utilities: $100,000 Construction: $260,000 Total: $430,000

Problem Statement: The intersection of KY 1236 with KY 1448 (green highlight in bottom picture) has poor sight distance for drivers turning left from KY 1236 due to a crest curve and hillside on KY 1448 (top right). This section of KY 1236 carries 1,640 vpd with KY 1448 carrying 1,520 vpd.

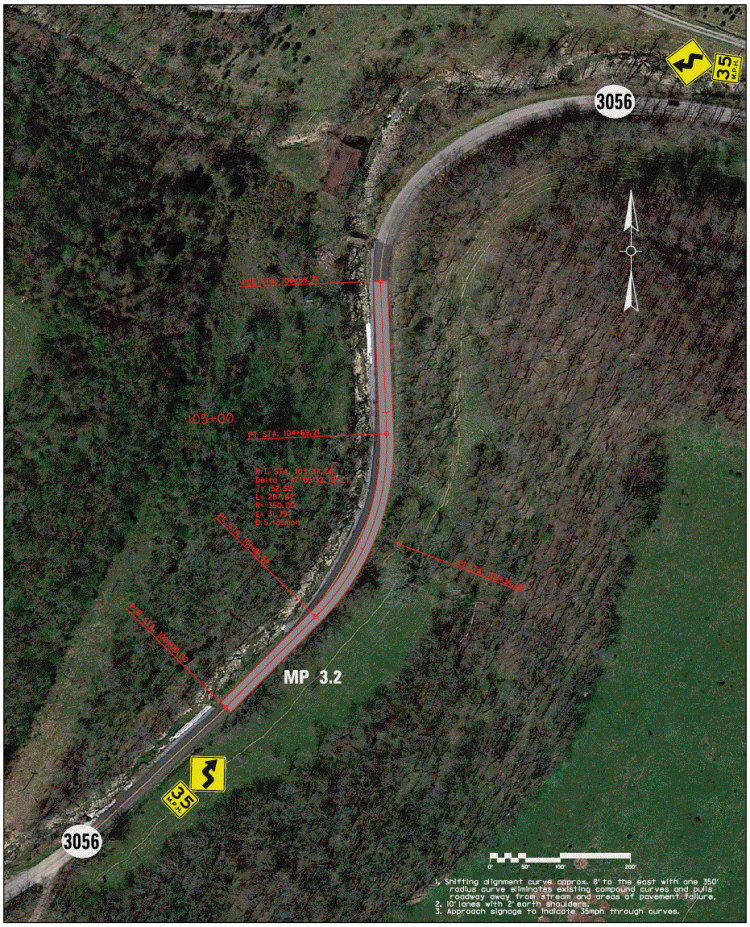
Project Q temporarily closes KY 1448 in the project area (bottom picture highlighted green) during the construction phase. Improvements include lowering the vertical alignment of KY 1448 southeast of KY 1236, cutting back the southern hillside approximately five feet to improve sight distance, constructing a five-foot-high gravity wall for 150 feet, and flattening remaining slopes at 2H: 1V. If the road remains open during construction, the cost estimate would double.



S Long-Term	**LOCATION** **(MP 3.200 – MP 3.300)**	**PROJECT PRIORITY** **MEDIUM**
	Description Realign KY 3056 east to flatten the curve.	**Cost Estimate:** Planning: $0 Design: $125,000 Right of Way: $75,000 Utilities: $150,000 Construction: $530,000 Total: $880,000

Problem Statement: KY 3056 is a 7.8-mile narrow, curvy road with pavement failure, shoulder drop-offs, 10-foot-wide lanes and three-foot-wide shoulders. The corridor carries between 300 and 740 vpd. Widening, repairing, and realigning the entire corridor would be expensive and have a low benefit-cost ratio. KY 3056 yielded five high crash spots, however, four of those had only two crashes each. Therefore, the Project Team identified only the 0.1-mile spot between MP 3.2 and MP 3.3 with CCRF of 3.82 (bottom left picture, with blue dots illustrating single vehicle run off the road crashes) as a spot improvement. District 9 maintenance staff stated motorists tend to run off the compound curve and into the creek.

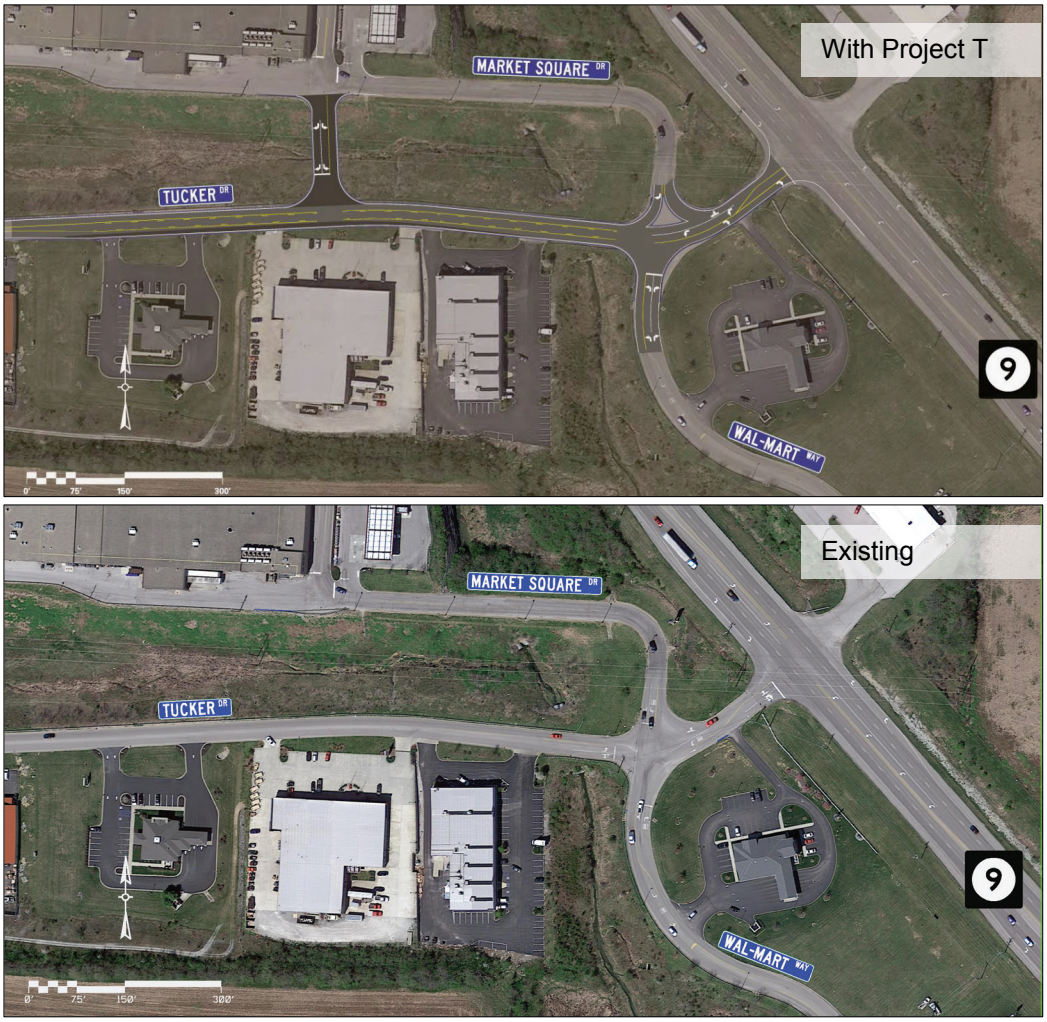
Project S shifts and realigns the existing compound curve to a single curve, and shifts the road away from the adjacent stream and areas of pavement failure. The project installs advanced warning signage indicating 35 mph through curves.



T Local	**LOCATION** **Tucker Drive (CS 1054)** **(MP 0.547 – MP 0.699)** **Market Square Drive (CS 1058)** **(MP 0.460 – MP 0.664)**	**PROJECT PRIORITY** **LOW**
	Description Reconfigure Market Square Drive/Tucker Drive/Walmart Way intersection, eliminate left turns from Tucker Drive to KY 9, and relocate Market Square Drive 500 feet west.	**Cost Estimate:** Planning: $0 Design: $ 75,000 Right of Way: $ 50,000 Utilities: $ 75,000 Construction: $630,000 Total: $830,000

Problem Statement: Tucker Drive is a local road that connects US 62 to KY 9 and is used as a "cut-through" to bypass the US 62/KY 9 intersection. To compound the problem, westbound motorists from KY 9 have a free flow movement, therefore eastbound Tucker Drive motorists must yield.

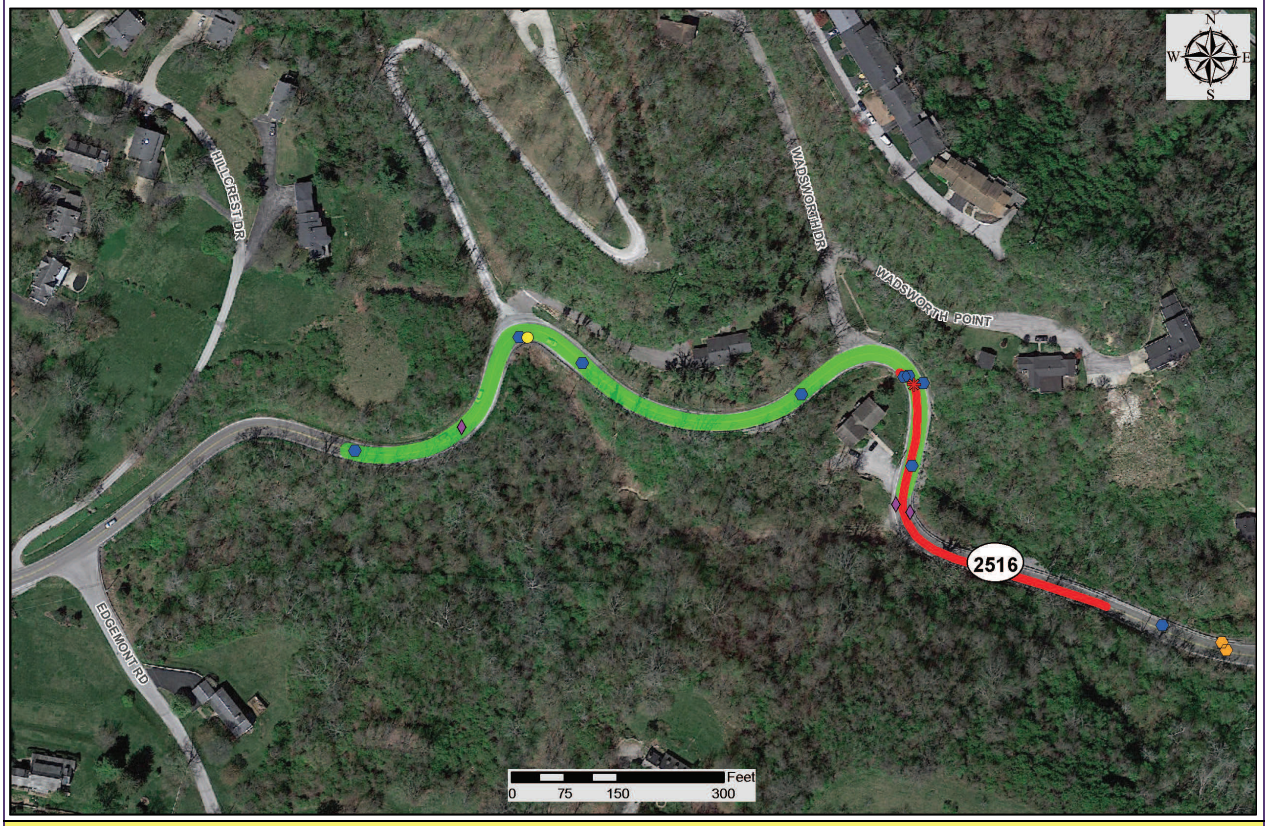
Project T realigns the intersection to make Tucker Drive the through movement, realigns and closes a portion of Market Square Drive, and prohibits left turns onto KY 9 from Tucker Drive. These changes simplify the Tucker Drive/ Walmart Way intersection while eliminating the difficult left turn movement from Tucker Drive to KY 9 and the conflict with left turning motorists from KY 9 to Tucker Drive.



U Short-Term	**LOCATION** **KY 2516** **(MP 0.344 – MP 0.510)**	**PROJECT PRIORITY** **MEDIUM**
	Description Install high friction pavement on KY 2516 in sharp curves.	**Cost Estimate:** Planning: $0 Design: $20,000 Right of Way: $0 Utilities: $0 Construction: $210,000 Total: $230,000

Problem Statement: KY 2516 is a winding, 25 mph roadway connecting US 62 with downtown Maysville with 11-foot-wide lanes and shoulders ranging from zero to two feet. Curves are marked with chevrons and curve warning signs. This section has a CCRF of 1.47 with eight crashes in a three-year period (inset red line). All were cited as occurring in a curve (see blue and pink crash symbols) and on a grade. Four were on wet pavement.

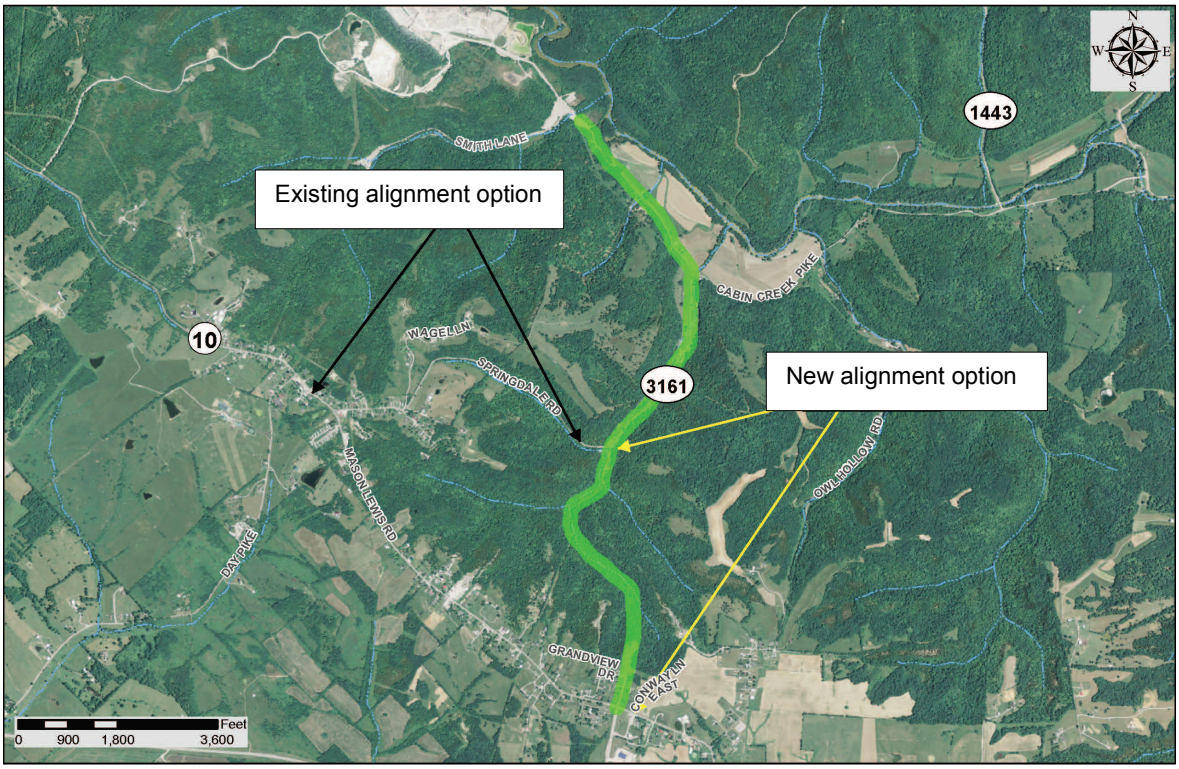
Project U applies high friction pavement to the highlighted green area.



V Local	**LOCATION** **Springdale Road (CR 1012)** **(MP 0.000 – MP 2.502)**	**PROJECT PRIORITY** **LOW**
	Description Improve existing Springdale Road, and connect to KY 3161 or improve part of Springdale Road and build a new connection between KY 3181 and KY 10.	**Cost Estimate:** Planning: $0 Design: $1,750,000 Right of Way: $1,000,000 Utilities: $1,500,000 Construction: $15,250,000 Total: $19,500,000

Problem Statement: Located along the Ohio River on Springdale Road, Carmeuse Lime and Stone produces limestone aggregate products. Large trucks heading to/from the facility use Springdale Road (CR 1012) to KY 10, then to improved KY 3161 before reaching KY 9. Carmeuse representatives state the need for better access to KY 10 as Springdale Road is the only access to the plant. Currently this facility generates 80 trucks/day with expectations to reach 150 trucks/day in 2040. Also noted by LO/S, Springdale Road is used by Eaton Asphalt Plant, and a Fleming County Water Plant. The KYTC has completed several maintenance projects on the roadway in past years: trenching, widening, replacing a beam on a box beam bridge, and installing drilled rail to stabilize the roadway and creek embankment. Springdale Road is too narrow for the volume of truck traffic it carries. If Springdale Road is closed, trucks use one-lane Owl Hollow Road to travel to KY 10. Although Springdale Road is outside the study area, due to the importance of Carmeuse to the city, a concept was developed.

Project V reconstructs Springdale Road to 11-foot-wide lanes and five-foot-wide shoulders either by widening the existing alignment in full or widening in part with a new cross country connection between KY 10 and KY 3161. A representative mile was used to obtain cost estimates. Much of the cost is due to the expanse of disturb limits. Both options are similar in cost.



W Short-Term	**LOCATION** **KY 9** **(MP 7.560 – MP 7.650)**	**PROJECT PRIORITY** **HIGH**
	Description Add right-turn lane on KY 9 eastbound to KY 11 southbound.	**Cost Estimate:** Planning: $0 Design: $35,000 Right of Way: $0 Utilities: $50,000 Construction: $200,000 Total: $285,000

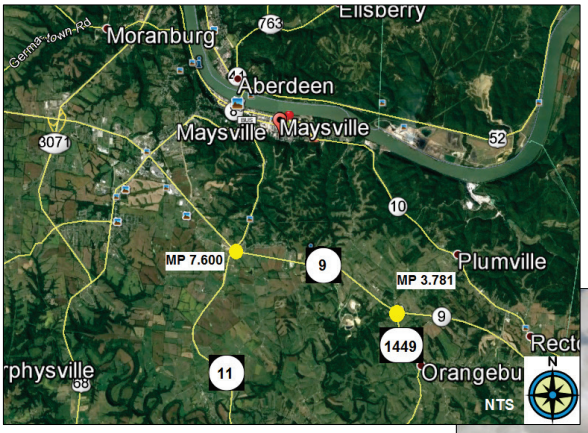
Problem Statement: The KY 9/KY 11 intersection is a high crash location. On KY 9 at KY 11, 10 of 17 crashes (CCRF 1.84) were rear-end. On KY 11, seven out of eight crashes were rear-end (CCRF 1.73). District 9 staff recommended a right-turn lane on KY 9 to separate right turning vehicles from the through traffic.

Project W adds a 445-foot (including taper) right-turn lane for southbound motorists on KY 9 onto KY 11. Current and future 2040 LOS is C.

X Long-Term Item No. 9-8908.00 SP (State) Funds. 2017 Design funds on hold.	LOCATION KY 9 (MP 3.781 – MP 7.600)	PROJECT PRIORITY MEDIUM
	Description Widen KY 9 to four lanes from KY 1449 to KY 11.	**Cost Estimate:** Planning: $0 Design: $2,500,000 Right of Way: $1,600,000 Utilities: $3,500,000 Construction: $24,000,000 Total: $31,600,000

Problem Statement: This segment of KY 9 is a two-lane roadway with truck climbing lanes, and carries 7,890 vpd with 22.6% trucks. The traffic volume is expected to reach 9,220 vpd in 2040 with 22.6% trucks. This section of KY 9 in the study area is LOS D with a v/c ratio less than 1.0. The roadway is becoming congested with a larger share of truck traffic.

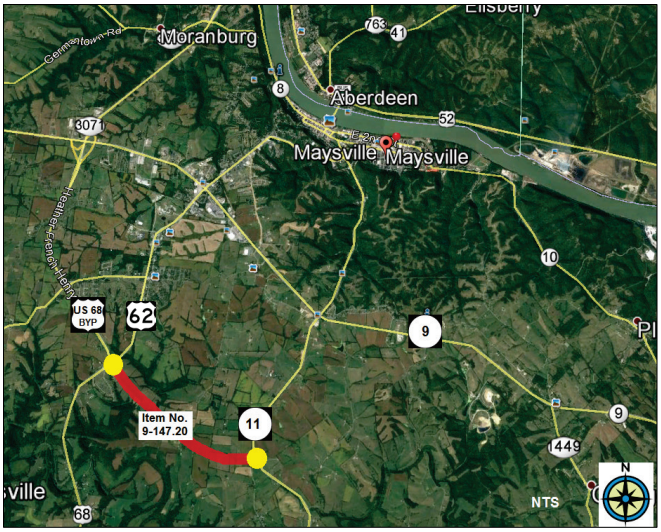
PIF 09 081 D0009 1.00 states KY 9 from the Lewis County Line (MP 0.00) to existing four lanes near KY 11 (MP 7.60), will not provide adequate capacity for future traffic volumes. The number of vehicle crashes at intersections is high; roadway geometry restricts sight distance in numerous locations; and speed differentials are a problem along the corridor, especially at truck climbing lane divergence and convergence points. Project X, Item No. 9-8908.00, will widen the road to two lanes. It increases capacity and decreases conflict points on KY 9 from KY 1449 (MP 3.781) to the existing four lanes near KY 11 (MP 7.60). The project supports 2040 traffic volumes, addresses sight distance concerns, improves intersection safety, and reduces speed differentials. With this project, this segment of KY 9 would improve to LOS A. It would also provide for route continuity from KY 1449 to KY 435 west of Maysville.



Y **Long-Term** **Item No. 9-147.20** **SP (State) funds.** **No Build FONSI due to funding availability.**	**LOCATION** **US 68**	**PROJECT PRIORITY** **HIGH**
	Description Continuation of existing bypass: Construct new, fully controlled access route from US 68 near Washington east to KY 11 including a new interchange at KY 11.	**Cost Estimate:** Planning: $0 Design: $5,000,000* Right of Way: $1,580,000 Utilities: $1,820,000 Construction: $32,450,000 Total: $40,850,000*

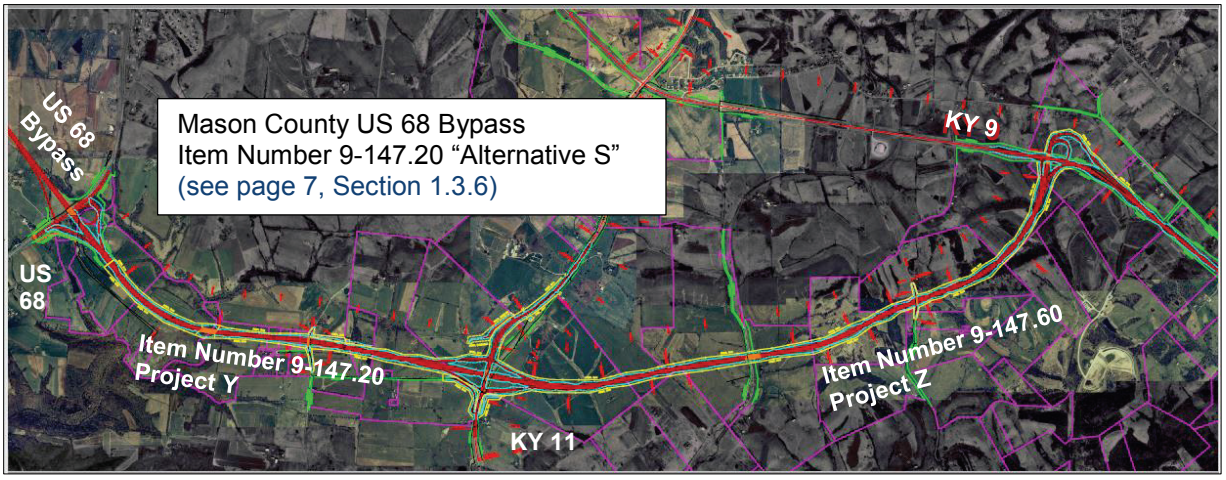
Problem Statement: Project Y, Item No. 9-147.20, continues the US 68 Bypass (east quadrant of Maysville) and constructs a new fully controlled access route from the current US 68 Bypass/US 68 intersection to KY 11, including a new interchange at the current US 68 Bypass/US 68 intersection and KY 11 (see below). This bypass would move through-traffic and especially trucks out of the downtown area.

This section of the bypass is projected to carry 3,475 vpd in the year 2040 based on the District 9 Area Travel Demand Model. With this project, the 2040 Build traffic restricts some trucks into downtown Maysville. The bypass extension will increase 2040 ADT on the existing bypass from 1,000 to 5,100 vpd. The largest decrease in 2040 ADT is expected to be on KY 11 with a percent decrease/change of 56% (2,230 vpd). If this section of the bypass is constructed, it will also reduce traffic associated with Project X by nearly 1,000 vpd.



Continuation of the bypass to KY 11 (Project Y, Item No. 9-147.20) was the top priority at the second LO/S meeting.

At the final Project Team meeting, District 9 staff noted modeled KY 11 2040 Build traffic is projected to decrease as a result of this project and the new interchange at US 62 (Project AA, Item No. 9-8809.00). A KY 9 truck acceleration lane east of KY 11 may be necessary if KY 9 widening to the Lewis County line (Project X, Item No. 9-8908.00) does not receive funding.

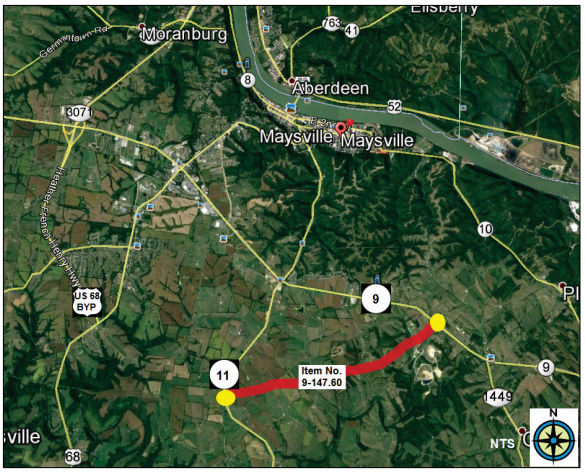


Source: KYTC

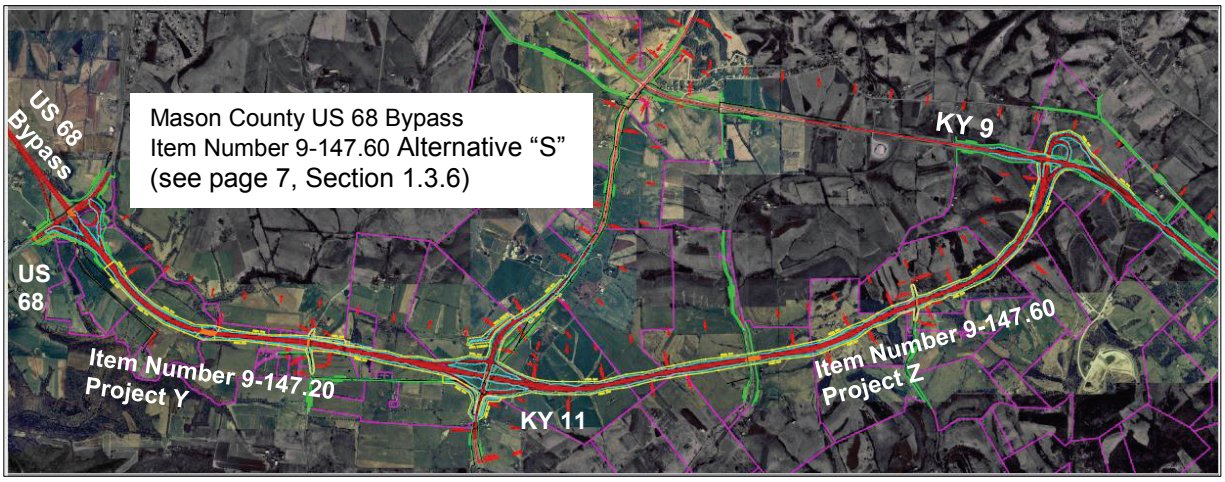
* modified following final LO/S meeting

Z **Long-Term** **Item No. 9-147.60** **SP (State) funds: No Build FONSI due to funding availability.**	**LOCATION** **US 68**	**PROJECT PRIORITY** **LOW**
	Description Continuation of existing US 68 Bypass: Construct new, fully controlled access route between KY 11 and KY 9, including a new interchange at KY 9.	**Cost Estimate:** Planning: $0 Design: $5,000,000* Right of Way: $1,580,000 Utilities: $1,820,000 Construction: $33,750,000 Total: $42,150,000*

Problem Statement: Project Z, Item No. 9-147.60, constructs a new, fully controlled access route between KY 11 and KY 9, including a new interchange at KY 9 (see below). This bypass moves through-traffic and especially trucks away from downtown. Using the District 9 Area Travel Demand Model, this section of the bypass is projected to carry 243 vpd in 2040.



Because of the high cost and lack of funding a "No Build" decision is anticipated for Projects Y and Z.



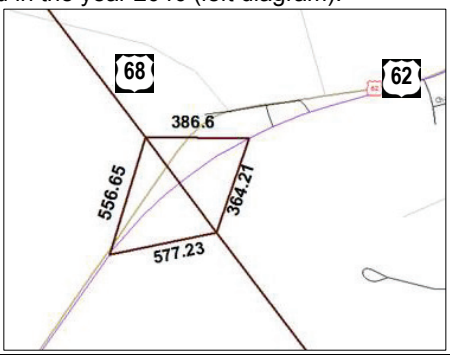
Source: KYTC

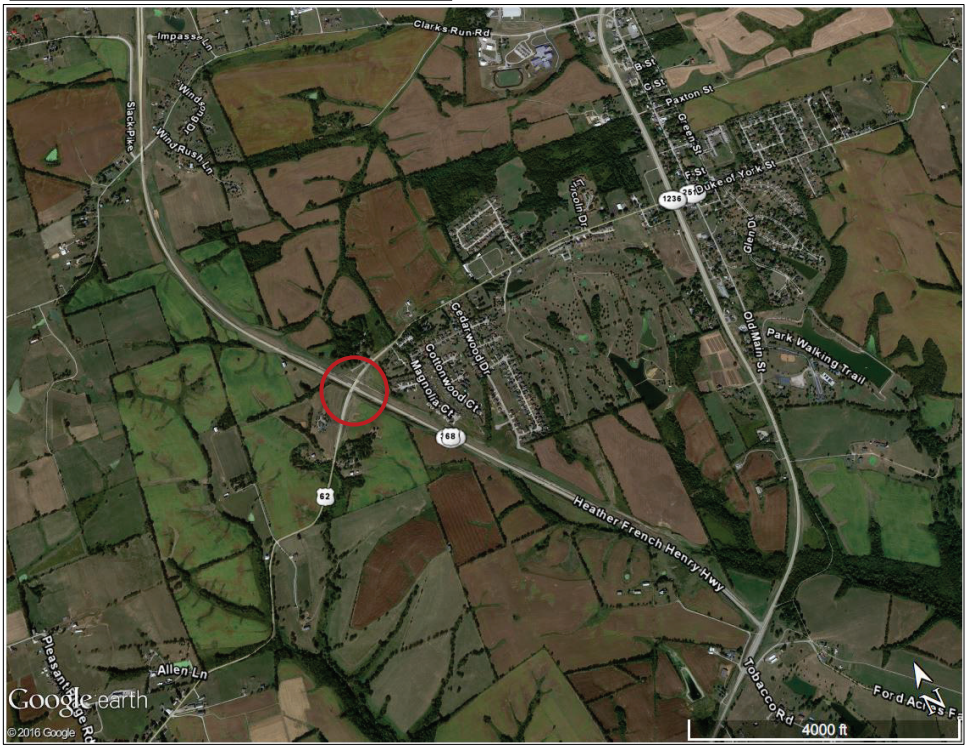
*modified following final LO/S meeting

AA Long-Term Item No. 9-8809.00 STP (Federal) funds not yet authorized. Design phase not yet authorized.	LOCATION US 68 (MP 11.750 – MP 11.900)	PROJECT PRIORITY HIGH
	Description Improve access/connectivity via the addition of an interchange on the Heather French Henry Southern Loop (US 62 and US 68).	**Cost Estimate:** Planning: $0 Design: $750,000 Right of Way: $750,000 Utilities: $500,000 Construction: $8,000,000 Total: $10,000,000

Problem Statement: Due to growth along US 62, and adverse travel to reach the controlled access US 68 Bypass, the desire is to improve access and connectivity to Heather French Henry (US 68) Southern Loop.

Project AA, Item No. 9-8809.00, constructs a new interchange on the Heather French Henry (US 68) Southern Loop at US 62 (red circle on map below) to improve access/connectivity to the existing bypass. The District 9 Area Travel Demand Model projects US 68 southbound on/off ramps to carry 550–580 vpd and northbound on/off ramps 360–390 vpd in the year 2040 (left diagram).

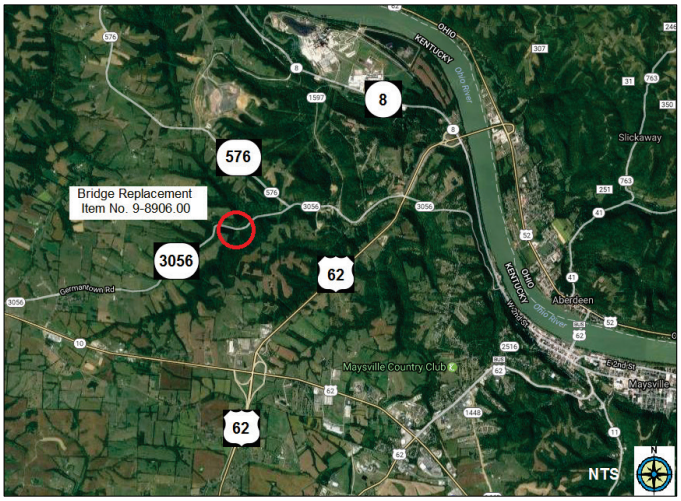


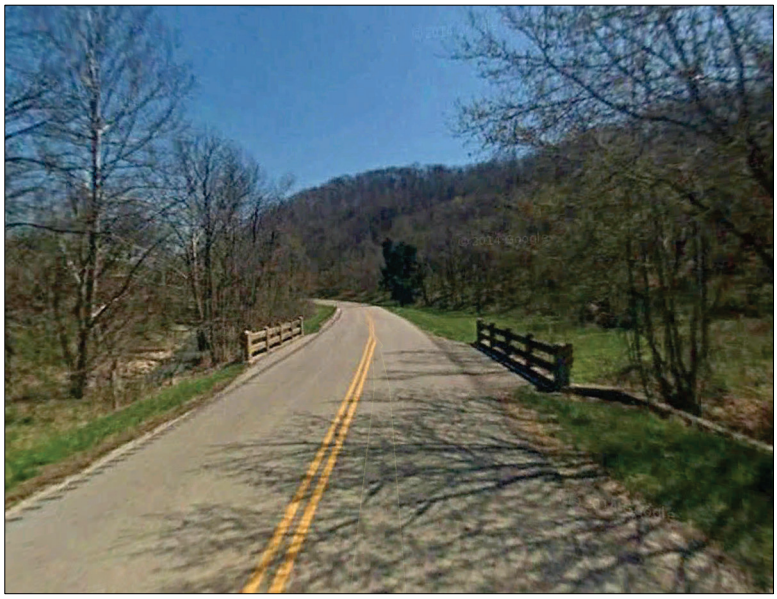


BB Long-Term Item No. 9-8906.00 Design phase authorized.	**LOCATION** KY 3056 (MP 3.682)	**PROJECT PRIORITY** HIGH
	Description Replace bridge on KY 3056 over South Fork Lawrence Creek (081B00020N).	**Cost Estimate:** Planning: $0 Design: $400,000 Right of Way: $175,000 Utilities: $175,000 Construction: $1,250,000 Total: $2,000,000

Problem Statement: The bridge over S. Fork Lawrence Creek was built in 1947, is identified by the KYTC as structurally deficient, and has a posted weight limit of 10 tons.

Project BB, Item No, 9-8906.00, improves the safety and reliability of KY 3056 with the replacement of a 1947 structurally deficient bridge (Sufficiency Rating 36.4) over South Fork Lawrence Creek at MP 3.682.

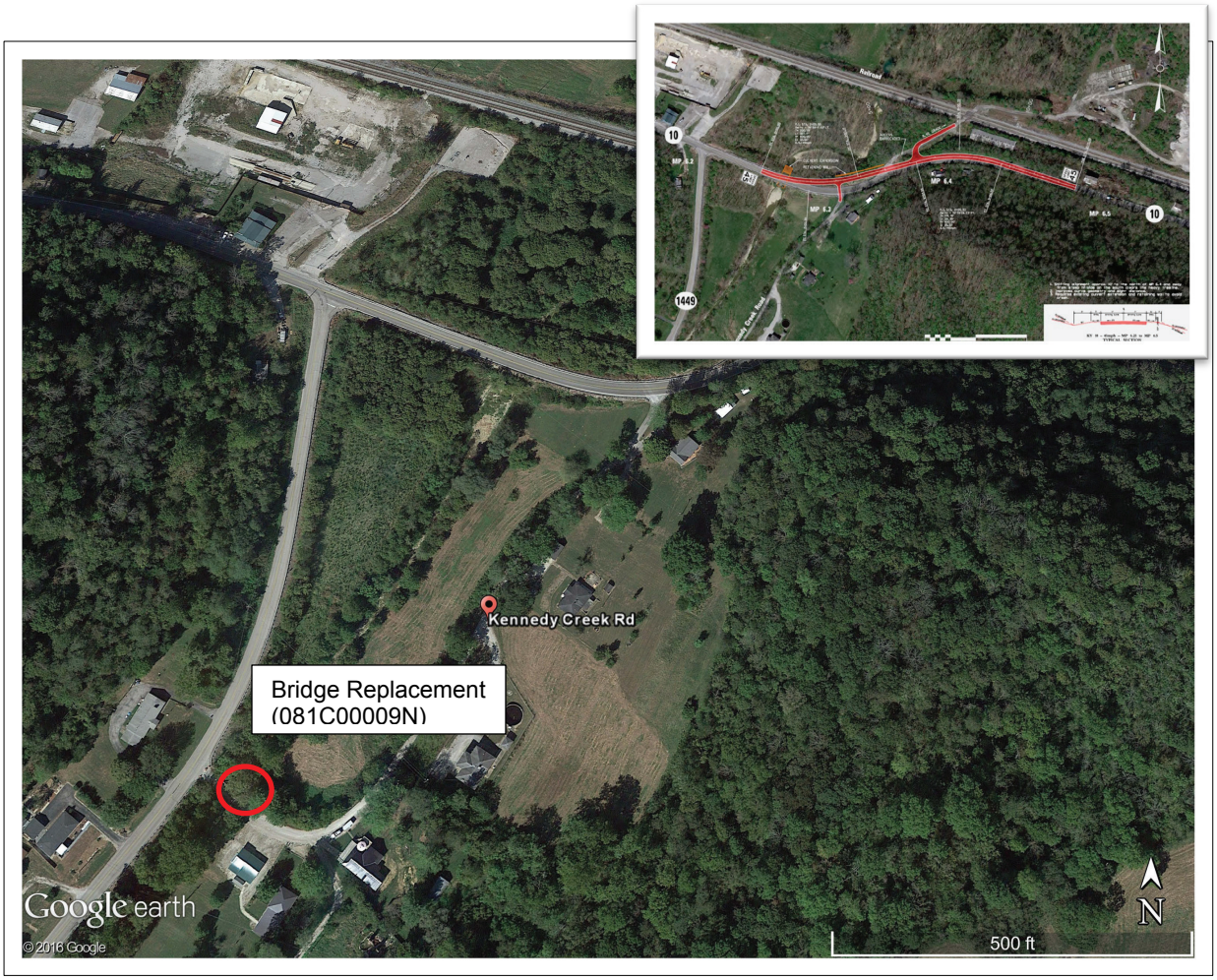




CC Local Item No. 9-8911.00	**LOCATION** Kennedy Creek Road (CR 1019) (MP 0.000)	**PROJECT PRIORITY** LOW
	Description Replace structurally deficient bridge on Kennedy Creek Road.	**Cost Estimate:** Planning: $0 Design: $300,000 Right of Way: $150,000 Utilities: $100,000 Construction: $ 550,000 Total: $1,100,000

Problem Statement: A Kennedy Creek Road bridge (CR 1019) an MP 0.000 was built in 1940 and is identified by the KYTC as structurally deficient over Kennedy Creek. The KYTC map Dataminer shows an ADT of 31 for Kennedy Creek Road. The project is scheduled using BRZ funds with the following phases: Design 2017, Right-of-Way 2018, Utilities 2019, and Construction 2020.

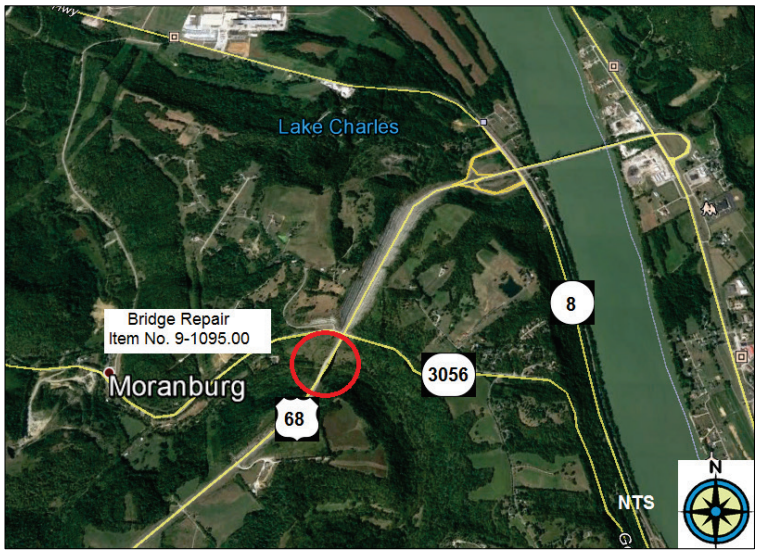
Project CC current Highway Plan project (Item No. 9-8911.00) replaces the structurally deficient bridge (081C00009N). It is worth noting, if Project N (top right) is funded and curves are improved on KY 10 with improved sight distance from Kennedy Creek Road, this bridge may be closed as residents would have an improved connection north to KY 10 and then west to US 62.



DD Long-Term Item No. 9-1095.00 Design phase authorized.	**LOCATION** US 68 (MP 16.800 – MP 17.200)	**PROJECT PRIORITY** HIGH
	Description Repair bridge on US 68 (081B00067N) over Lawrence Creek.	**Cost Estimate:** Planning: $0 Design: $550,000 Right of Way: $0 Utilities: $0 Construction: $2,000,000 Total: $2,550,000

Problem Statement: The US 68 Bridge between MPs 16.8 and 17.2 over Lawrence Creek is located 1.3 miles from the Harsha Bridge over the Ohio River. The US 68 Bridge currently carries nearly 5,000 vpd, and has experienced fill/settlement and subsequent substructure/superstructure issues since construction.

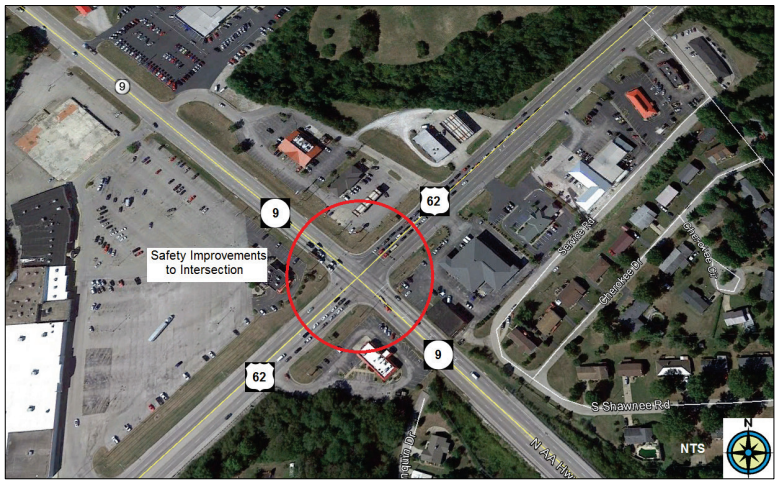
Project DD will identify the problems and recommend solutions that can be implemented before more serious damage occurs. Problems have been identified and the first potential solutions reviewed. The next review will be late summer. Following agreement of the solution, design will be initiated and a project let to construction.



EE Long-Term PIF No. 09 081 B0062 1.00	LOCATION US 62 (MP 14.387) KY 9 (MP 10.256)	PROJECT PRIORITY HIGH
	Description Safety improvements to the intersection of KY 9 and US 62.	**Cost Estimate:** Planning: $0 Design: $182,000 Right of Way: $610,000 Utilities: $426,000 Construction: $1,350,000 Total: $2,568,000

Problem Statement: According to PIF No. 09 081 B0062 1.00, the KY 9/US 62 intersection operates at a very low LOS. The intersection has shared through/right lanes on all legs. An updated 2016 capacity analysis (using current signal timings) shows overall intersection traffic operation at LOS B. However, the westbound right from KY 9 to US 62 operates at LOS C in 2016 and is expected to operate at LOS D in 2040. A long queue forms but, as observed on a field visit, all vehicles clear the signal in one cycle. Adding a right-turn lane for this leg would necessitate the purchase of a business located on the corner of KY 9 and US 62. This intersection is a high crash spot with a CCRF of 2.31, including 14 rear-end crashes.

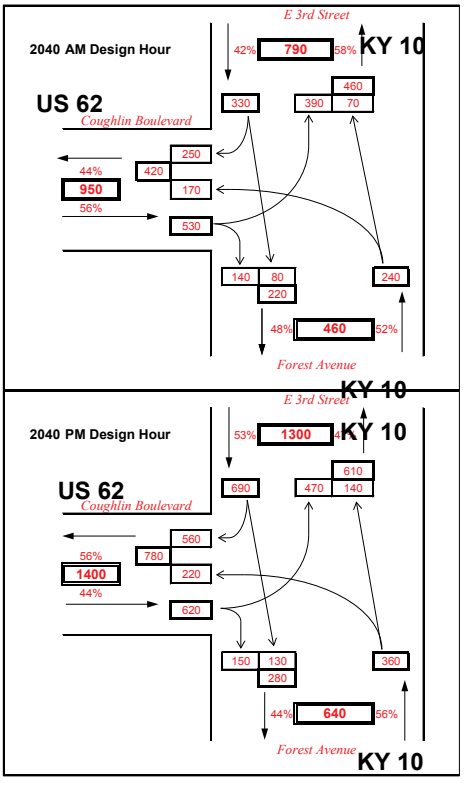
Project EE, PIF No. 09 081 B0062 1.00, reduces current lane widths to gain widths/tapers needed for exclusive right-turn lanes, and adds curb and gutter. According to the Highway Safety Manual, adding right-turn lanes on all four approaches reduces expected crashes by 15% (approximately 67 crashes were documented at this intersection from 2013–2015).



FF Long-Term PIF No. 09 081 B0062 17.00	**LOCATION** US 62 (MP 17.000 – MP 17.300)	**PROJECT PRIORITY** LOW
	Description Reconstruct US 62/KY 10 intersection to improve safety, congestion, and intersection function.	**Cost Estimate:** Planning: $30,000 Design: $1,700,000 Right of Way: $2,810,000 Utilities: $844,000 Construction: $1,032,000 Total: $6,416,000

Problem Statement: The US 62/KY 10 intersection is skewed (top and bottom picture) and difficult for trucks turning right from US 62 in the presence of other vehicles on KY 10 westbound. The intersection has a 2016 AM and PM peak hour LOS of D and E, respectively, primarily attributable to the US 62 approach, which operates at LOS of E (AM) and F (PM). In 2040, the condition is expected to worsen. As can be seen in the AM and PM peak hour turning movements (right), the heaviest movement is left turns from US 62 (Coughlin Boulevard) to KY 10 (East Third Street).

Project FF, PIF No. 09 081 B0062 17.00, reconstructs the US 62 and KY 10 intersection to improve safety, congestion, and intersection function. Preliminary analysis shows if the intersection is realigned to make US 62 (Coughlin Boulevard) to KY 10 (East Third Street) the through movement while teeing KY 10 (Forest Avenue), the 2040 AM KY 10 (Forest Avenue) LOS is D and the overall intersection improves to LOS B. In the PM peak hour, the KY 10 (Forest Avenue) LOS is projected to be LOS E and the overall intersection LOS B.



GG Long-Term PIF No. 09 081 B0062 3.00	**LOCATION** US 62 (MP 17.000 – MP 17.600)	**PROJECT PRIORITY** LOW
	Description Spot improvements/safety enhancements along US 62 and the intersection of KY 10 (Forest Avenue) continuing past Mulberry Alley.	**Cost Estimate:** Planning: $18,000 Design: $274,000 Right of Way: $400,000 Utilities: $335,000 Construction: $1,350,000 Total: $2,377,000

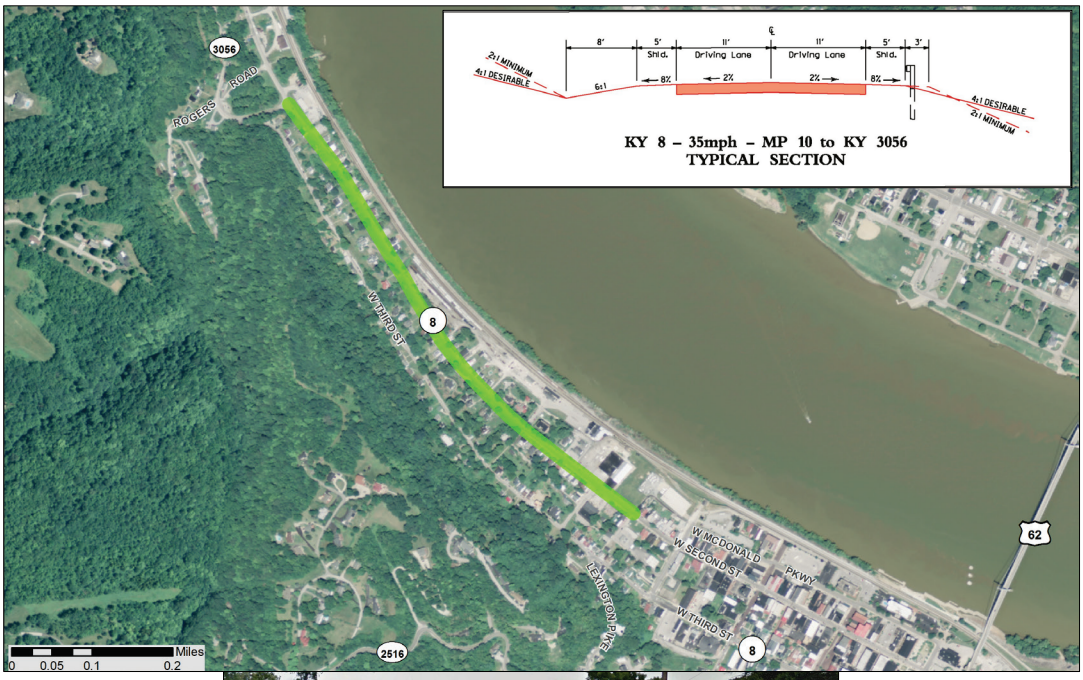
Problem Statement: This intersection has had signal improvements and needs reevaluation to improve efficiency and safety for motorists and pedestrians. The lanes and striping are not visible at dark and in wet conditions, which pose safety issues. Trucks have difficulty making turns from US 62 and from KY 10 in the presence of other vehicles at the intersection.

Project GG continues the improvements for Project FF (top intersection). According to the PIF, spot improvement/safety enhancements are needed along US 62 (Coughlin Boulevard) and the intersection of KY 10 (Forest Avenue) continuing past Mulberry Alley (bottom picture).

HH Long-Term	LOCATION KY 8 (MP 11.035 – MP 11.719)	PROJECT PRIORITY LOW
	Description Correct geometric and width deficiencies and improve long-term stability of KY 8 between Cox Alley and KY 3056.	**Cost Estimate:** Planning: $0 Design: $750,000 Right of Way: $2,000,000 Utilities: $1,500,000 Construction: $3,750,000 Total: $8,000,000

Problem Statement: This section of KY 8 is developed on both sides exiting downtown Maysville traveling west. The lane widths vary from nine to 12 feet, with the majority having curb and gutter with parking (north side between MP 11.543 and MP 11.895), and sidewalks.

Project HH combined with Projects J and K, completes improvements to KY 8 between Spurlock/KY East Power and downtown Maysville. As with Projects J and K, the cost estimate was estimated on a per-mile basis (rural template widening to the south) to estimate earthwork quantities. However, due to development close to the roadway, potential historic resources, existing curb, gutter, and sidewalks, it may be necessary to install curb and gutter through a portion of this project.



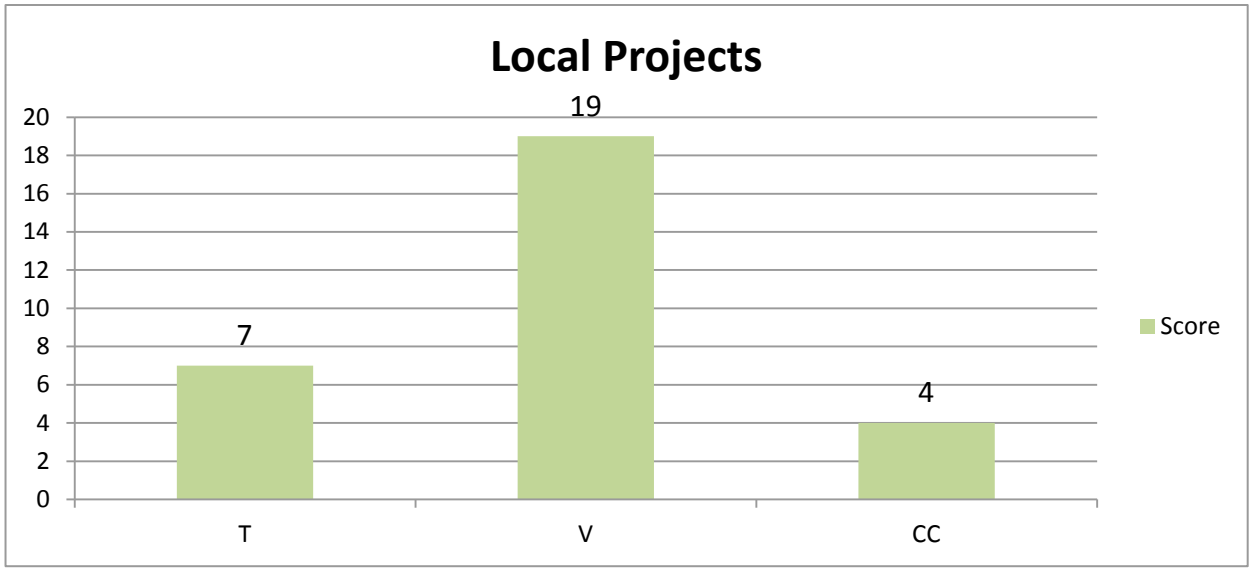
6.5 Local Officials/Stakeholders Meeting No. 2

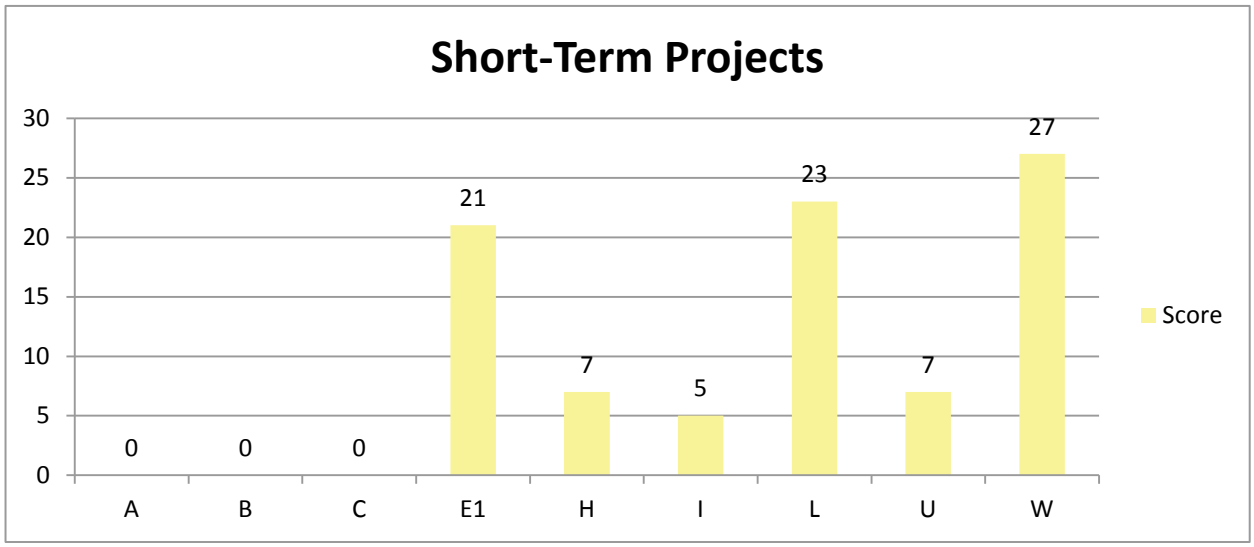
A second LO/S meeting was held December 8, 2016, at the Buffalo Trace ADD Conference Room in Maysville. At this meeting, a brief overview and review of the SUA Study's purpose and goals were provided with a presentation of projects. Attendees were given a map identifying recommended project locations, and project evaluation worksheets organized by local, short-term and long-term projects to garner their level of support for each project.

An explanation of the overall scoring system was provided with each project group (local, short-term, and long-term). For example, local projects included three projects for a total of three points (one point possible for each project). Each LO/S was asked to support at least two projects, keeping all three points from being allocated for just one project. It was also explained that giving each project a score of one would not provide the Project Team with discernible differences among LO/S priorities; therefore, careful thought should be given when applying scores to priorities. The Project Team emphasized the projects were conceptual in nature and could change in future project development phases.

Thirty-five projects were presented for scoring including three local, nine short-term and 23 long-term projects. Although shown, long-term Project R was unable to be scored as the improvement was included with Project E. The scoring results are summarized in **Figure 30.**

Meeting minutes are located in **Appendix H**.





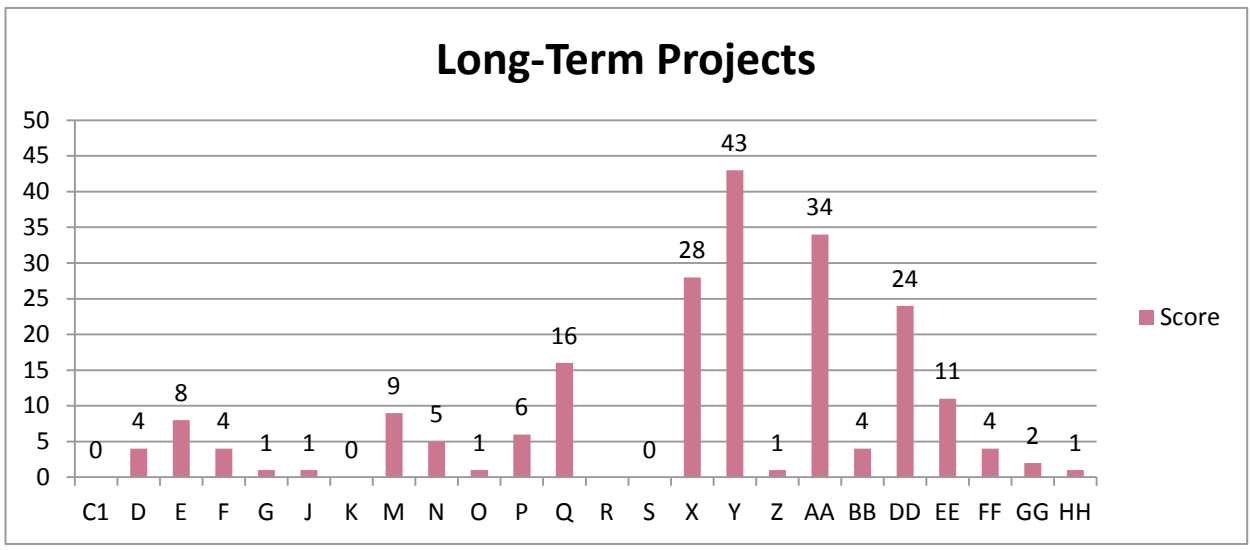


Figure 30: Local Official/Stakeholder Recommended Project Scores

7.0 RECOMMENDATIONS

Directly following the second LO/S meeting, the final Project Team meeting was held to review the LO/S scores shown in **Figure 30** and prioritize projects.

Local Projects

Because local projects are on city streets or county roads that are the responsibility of local government, they were prioritized using only the scores of the LO/S **(Table 10)** as shown in **Figure 31 (p. 100)**. One ranked high, with one medium, and one low.

Short- and Long-Term Projects

Based on project scores, crash data, current and future traffic, recent improvements, cost, benefit, and status of the Highway Plan and previously identified PIFs, the Project Team prioritized short- and long-term projects as high, medium, or low. These priorities are shown in **Tables 11–13 (pp. 101, 103, and 105)**. Additional information on specific projects follows:

- Projects A, B, and C scored unfavorably by LO/S as each related to restricting the left-turn movement on Downing Drive at US 68. As a result, the Project Team added a new high priority short-term project, Project II, to address any new improvements to allow left- and/or right-turn movements on Downing Drive at US 68 **(included in Table 11)**.
- District 9 ATDM 2040 Build traffic for KY 11 between the US 68 Bypass and KY 9 is projected to decrease with the proposed bypass extension to KY 11 (Item No. 9-147.20, Project Y) and the new interchange at US 62 (Item No. 9-8809.00, Project AA). A KY 9 truck acceleration lane east of KY 11 may be necessary if widening KY 9 from KY 1449 to KY 11 (Item No. 9-8908.00, Project X) does not receive funding.

As listed in **Table 11** and illustrated on **Figure 32 (p. 102)**, 13 projects are recommended as high priority. Four projects (E1, L, W, and II) are short-term while the others are long-term.

Eight projects are classified as medium priority as listed in **Table 12** and shown on **Figure 33 (p. 104)**. Three of these (H, I, and U) are short-term maintenance improvements while the other five are long-term.

Twelve low priority projects are listed in **Table 13** and shown on **Figure 34 (p. 106)**. Three of these are short-term, each involving the Downing Drive/US 68 intersection corresponding to a later developed high priority project (Project II). The remaining eight are long-term projects.

The next phase for recommended projects in the SUA not associated with a KYTC Item Number would be Phase 1 Design (Preliminary Engineering and Environmental Analysis). Funding will be necessary to advance a project to the next development phase.

Table 10: Recommended Local Projects

Project ID	Route	Begin MP	End MP	Length	Project Type	Project Description	Local, Short-Term, or Long-Term	Cost Estimate (2016 Dollars)	Priority
V	Springdale Road (CR 1012)	N/A	N/A	2.500	Widening and Partial New Alignment	Improve existing Springdale Road and connect to KY 3161.	Local	$19,500,000	**High**
T	Tucker Drive (CS 1054) Market Square Drive (CS 1058)	0.547 0.460	0.699 0.664	0.356	Intersection Realignment	Reconfigure Market Square Drive/Tucker Drive/Walmart Way intersection. Eliminate left turns from Tucker Drive to KY 9, and relocate Market Square Drive 500 feet west.	Local	$830,000	**Medium**
CC*	Kennedy Creek Road (CR 1019)	0.000	0.000	0.000	Bridge Replacement	Replace structurally deficient bridge on Kennedy Creek Road. Item No. 9-8911.00	Local	$1,100,000	**Low**

* May not be needed if KY 10 (High Priority Project N) is realigned. Kennedy Creek Road at KY 1449 could be closed.

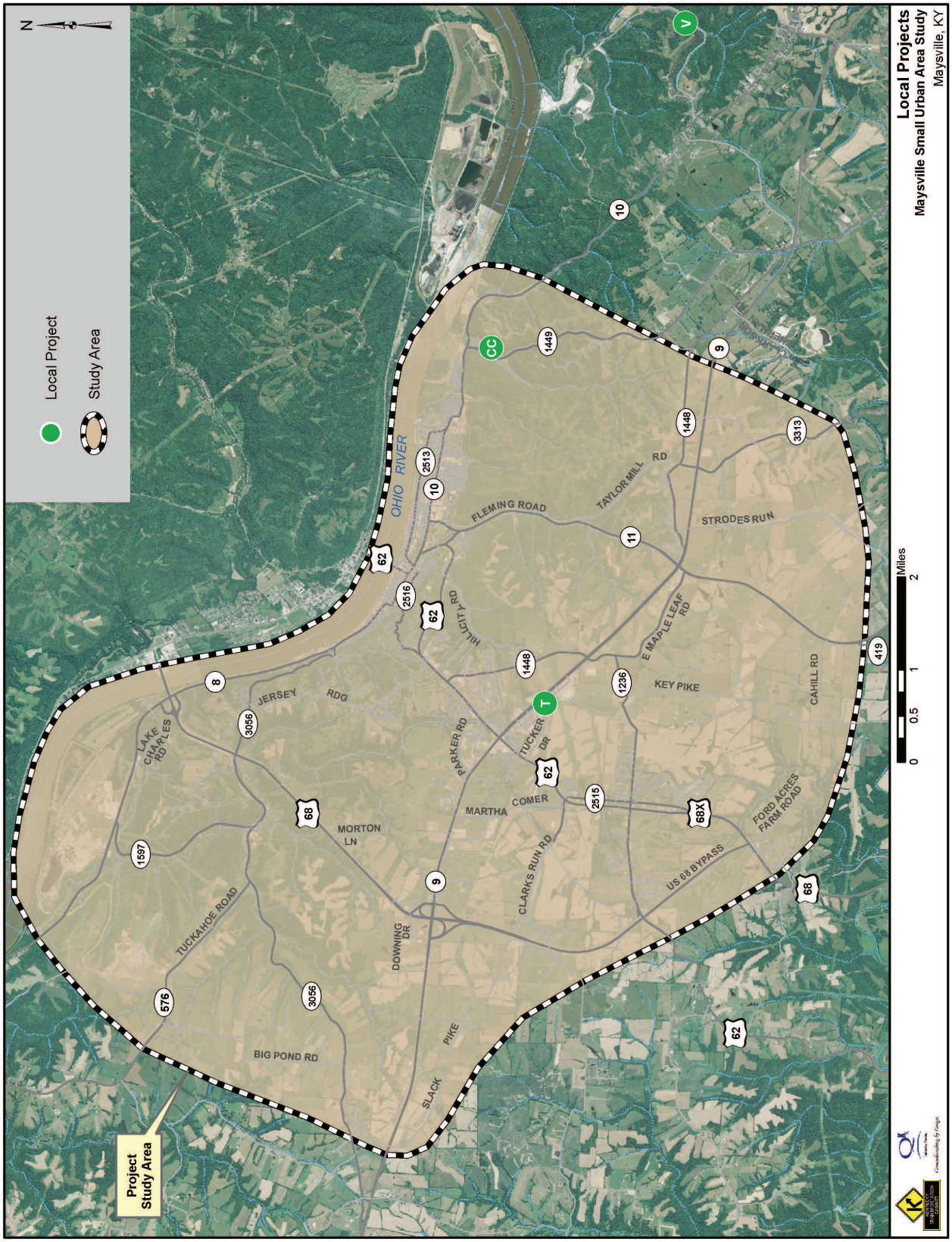


Figure 31: Local Projects

Table 11: Recommended High Priority Projects

Project ID	Route	Begin MP	End MP	Length	Project Type	Project Description	Local, Short-Term or Long-Term	Cost Estimate (2016 Dollars)	Priority
E1	US 62	14.008	14.008	0.000	Signal Improvement	Evaluate US 62 at Tucker Drive for a "green left-turn arrow (protected) phase."	Short-Term	$30,000	**High**
L	KY 9	7.140	7.430	0.290	Restriping and Signing	Improve KY 9 transition from four lanes to two lanes between KY 11 and Strodes Run Pike.	Short-Term	$20,000	**High**
W	KY 9	7.560	7.650	0.090	Right-Turn Lane	Add right-turn lane on KY 9 eastbound to KY 11 southbound.	Short-Term	$285,000	**High**
II*	US 68	14.503	14.513	0.010	Study Allowing Left Turns	The KYTC to study improvements to allow left- and/or right-turn movements on Downing Drive at US 68.	Short-Term	$30,000	**High**
E	US 62 KY 2515	13.381 1.391	13.381 1.550	0.159	Safety Improvements and Left- and Right-Turn Lanes	Widen KY 2515 (Clarks Run Road) to three lanes between Mason County Intermediate School and US 62 adding left- and right-turn lanes at US 62. Widen right-turn radius between US 62 and KY 2515 and between KY 2515 and Martha Comer Drive.	Long-Term	$1,360,000	**High**
M	KY 9	10.861	10.918	0.057	Right-Turn Lane	1. Add right-turn lane on KY 9 at hospital entrance, and /or 2. Extend 45 mph speed limit.	Long-Term	$1,190,000	**High**
N	KY 10	6.260	6.500	0.240	Realign Intersection	Realign KY 10 east of the KY 1449 intersection to improve curves and sight distance.	Long-Term	$2,400,000	**High**
P	KY 1236	1.100	1.300	0.200	Realignment, Signage and High Friction Pavement	Realign KY 1236, and add signage and high friction pavement	Long-Term	$1,000,000	**High**
Y	US 68	New Route	New Route	2.840	New Route	Construct a new, fully controlled access road from US 68 near Washington east to KY 11 including a new interchange at KY 11. SP (State) funds: No Build FONSI due to funding availability. Item No. 9-147.20	Long-Term	$40,850,000 **	**High**
AA	US 68 US 62	11.750	11.900	0.150	New Interchange	Improve access/connectivity via the addition of an interchange on the Heather French Henry Southern Loop (US 62 and US 68). STP (Federal) funds not yet authorized. Design phase not yet authorized. Item No. 9-8809.00	Long-Term	$10,000,000	**High**
BB	KY 3056	3.682	3.682	0.000	Bridge Replacement	Replace bridge on KY 3056 over S. Fork Lawrence Creek (081B00020N). Design phase authorized. Item No. 9-8906.00	Long-Term	$2,000,000	**High**
DD	US 68	16.800	17.200	0.400	Bridge Repair	Repair bridge on US 68 (081B00067N) over Lawrence Creek. Design phase authorized. Item No. 9-1095.00	Long-Term	$2,550,000	**High**
EE	US 62 KY 9	14.387 10.256	14.387 10.256	0.000	Right-Turn Lanes	Reduce lane widths and add turn lanes where possible at the intersection of KY 9 and US 62. PIF 09 081 B0062 1.00	Long-Term	$2,568,000	**High**

* *Added at final Project Team meeting due to input from second LO/S Meeting. If implemented, Projects A, B, and C would be removed from consideration.*

****Updated following final LO/S meeting.*

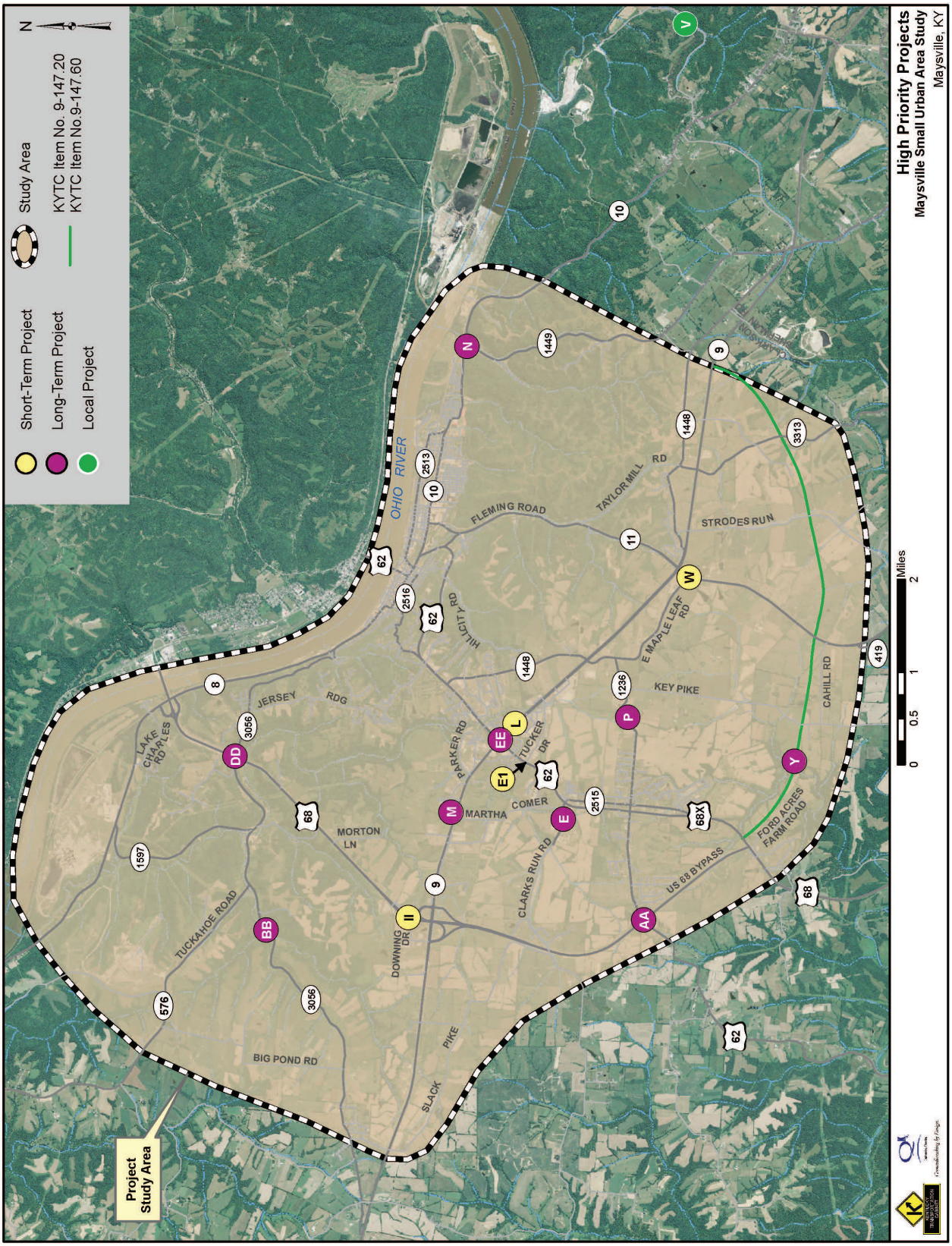


Figure 32: High Priority Projects

Table 12: Recommended Medium Priority Projects

Project ID	Route	Begin MP	End MP	Length	Project Type	Project Description	Local, Short-Term or Long-Term	Cost Estimate (2016 Dollars)	Priority
H	KY 8	7.000	7.300	0.300	Clearing /Maintenance	Clear trees in the northwest quadrant of Spurlock Power Station Entrance to improve sight distance for KY 8 motorists.	Short-Term	$40,000	**Medium**
I	KY 8	8.320	8.950	0.630	Clearing and Signing / Maintenance	Clear trees in southeast quadrant of KY 8 and the westernmost Lake Charles Road intersection, channelize business entrance on KY 8, and add “intersection ahead” signs.	Short-Term	$40,000	**Medium**
U	KY 2516	0.344	0.510	0.166	High Friction Pavement	Install high friction pavement on KY 2516 in sharp curves.	Short-Term	$230,000	**Medium**
D	US 62 KY 2516	15.668 0.000	15.668 0.035	0.035	Intersection Realignment	Realign US 62/KY 2516 intersection.	Long-Term	$300,000	**Medium**
F	US 62	14.390	14.620	0.230	Access Management and New Traffic Signal	Access management on US 62 between KY 9 and Kenton Station Road. Install a new traffic signal at the US 62/Tucker Drive intersection.	Long-Term	$315,000	**Medium**
Q	KY 1448	4.906	5.096	0.190	Safety Improvement	Reconstruct KY 1448 southeast of KY 1236 to improve sight distance.	Long-Term	$430,000	**Medium**
S	KY 3056	3.200	3.300	0.100	Widening and Realignment	Realign KY 3056 east to flatten the curve.	Long-Term	$880,000	**Medium**
X	KY 9	3.781	7.600	3.819	Widening	Widen KY 9 to four lanes from KY 1449 to KY 11. SP (State) Funds: 2017 Design funds on hold. Item No. 9-8908.00	Long-Term	$31,600,000	**Medium**

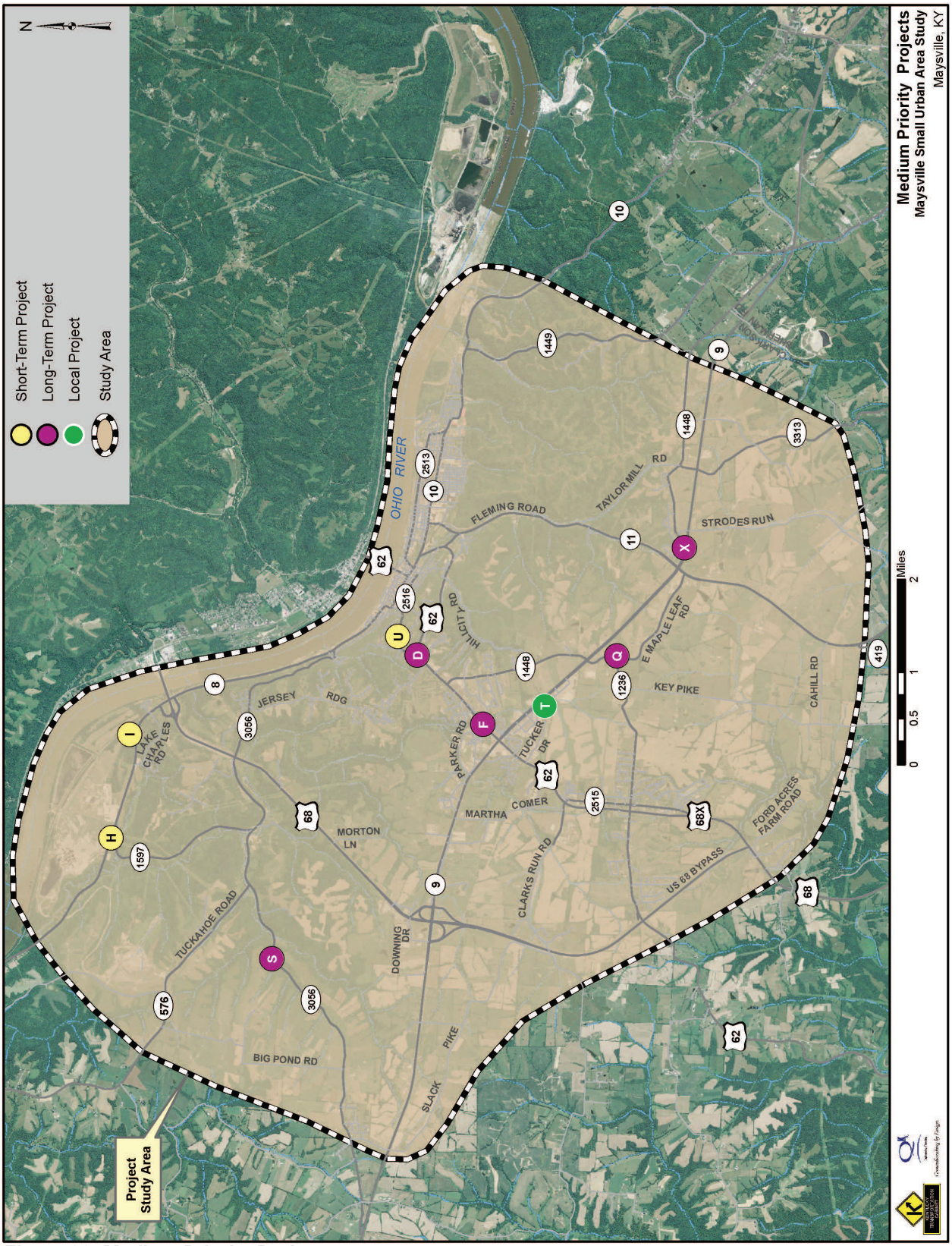


Figure 33: Medium Priority Projects

Table 13: Recommended Low Priority Projects

Project ID	Route	Begin MP	End MP	Length	Project Type	Project Description	Local, Short-Term or Long-Term	Cost Estimate (2016 Dollars)	Priority
A*	US 68	14.413	14.603	0.190	Barrier Wall	Install barrier wall on US 68 at Downing Drive.	Short-Term	$100,000	**Low**
B*	US 68	14.413	14.603	0.190	High Tension Cable Rope Barrier	Install high tension cable median barrier on US 68 at Downing Drive.	Short-Term	$20,000	**Low**
C*	US 68	14.413	14.603	0.190	Qwick Kurb®	Install Qwick Kurb® on US 68 at Downing Drive.	Short-Term	$130,000	**Low**
C1	US 62	16.025	17.000	0.975	Widening	Extend US 62 two-lane eastbound section to KY 11. Eliminate Two-Way-Left-Turn-Lane (TWLTL) in part, convert shoulders to full-depth, and widen for minimal shoulders.	Long-Term	$1,500,000	**Low**
G	US 62	11.450	12.672	1.222	Curb / Gutter / Sidewalk	Install curb, gutter, and sidewalk on US 62 between the US 68 Bypass and US 68X/US 62 intersection.	Long-Term	$7,290,000	**Low**
J	KY 8	9.200	11.035	1.835	Widen Lanes and Shoulders	Widen KY 8 between KY 3056 and the US 68 Bypass. PIF No. 09 081 D0008 83.0	Long-Term	$14,200,000	**Low**
K	KY 8	6.000	9.200	3.200	Widen Lanes and Shoulders	Widen KY 8 between the US 68 Bypass and Spurlock/East Kentucky Power.	Long-Term	$12,800,000	**Low**
O	KY 10	3.950	5.200	1.250	Bike Lanes	Construct bike lanes on KY 10 between Commerce Street and KY 2513 (Carmel Street).	Long-Term	$800,000	**Low**
Z	US 68	New Route	New Route	3.000	New Route	Construct a new, fully controlled access route between KY 11 and KY 9, including a new interchange at KY 9. SP (State) funds: No Build FONSI due to funding availability. Item No. 9-147.60	Long-Term	$42,150,000 **	**Low**
FF	US 62	17.000	17.300	0.300	Intersection Improvement	Reconstruct US 62/KY 10 intersection to improve safety, congestion, and intersection function. PIF No. 09 081 B0062 17.00	Long-Term	$6,416,000	**Low**
GG	US 62	17.000	17.600	0.600	Safety Improvements	Spot improvements to improve efficiency and safety enhancements along US 62 and the intersection of KY 10 (Forest Avenue) continuing past Mulberry Alley. PIF No. 09 081 B0062 3.00	Long-Term	$2,377,000	**Low**
HH	KY 8	11.035	11.719	0.684	Widen Lanes and Shoulders, Provide Slope Stability	Correct geometric and width deficiencies and improve long-term stability of KY 8 between Cox Alley and KY 3056.	Long-Term	$8,000,000	**Low**

* *Only one of these projects would be implemented. However, the LO/S preferred left turns be allowed at this intersection versus restricted. Project II was added at the final Project Team meeting to provide for the KYTC District 9 re-evaluation of the left-turn restriction at this intersection.*

** *Updated following final LO/S meeting.*

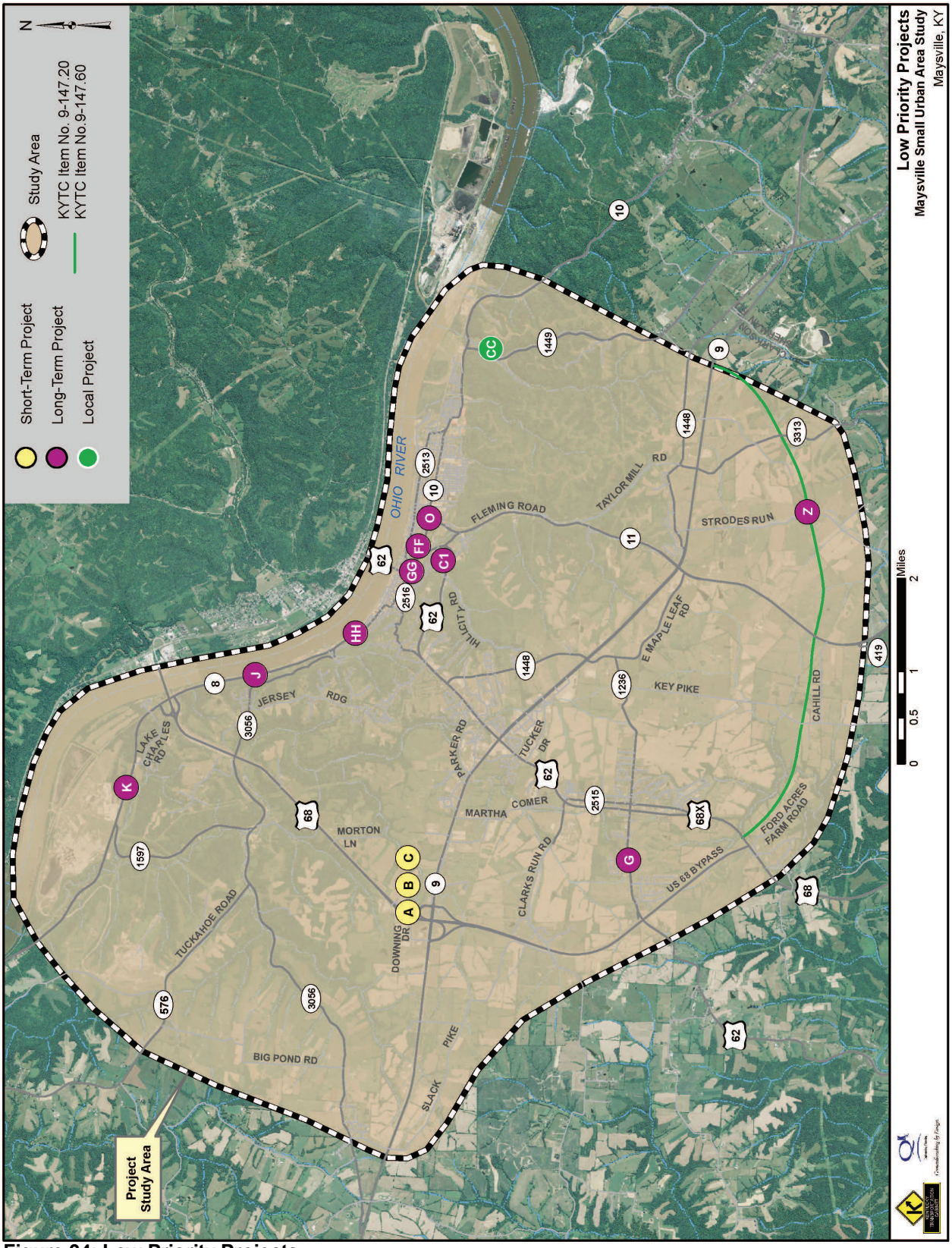


Figure 34: Low Priority Projects

8.0 CONTACT INFORMATION

Written requests for additional information should be sent to John Moore, Director, KYTC Division of Planning, 200 Mero Street, Frankfort, KY 40622. Additional information regarding this study can also be obtained from the KYTC District 9, Joe Callahan, at (606) 845-2551 (email at Joe.Callahan@ky.gov).