

Executive Summary

West Richmond Small Urban Area (SUA) Study

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The *West Richmond Small Urban Area (SUA) Study* was initiated by the Kentucky Transportation Cabinet (KYTC) to identify and analyze concepts to improve safety and congestion in the area west of I-75 in Madison County, Kentucky.

Existing Conditions

The West Richmond SUA study area, shown in **Figure ES-1**, includes areas west of I-75 including Barnes Mill Road (KY 876), Tates Creek Road (KY 169), Goggins Lane (CS 1574), and Crutcher Pike (CR 1354), among other roadways. The majority of Richmond, including downtown Richmond, Eastern Kentucky University (EKU), and most of the incorporated city, is located east of I-75 between Exits 87 and 90. In the last 20 years, development has expanded to the west, especially along KY 876 at Exit 87. This commercial section of KY 876 extends west to Goggins Lane, where it transitions to a more rural corridor with farmland and less dense residential neighborhoods. Goggins Lane provides the most direct north-south connection in the study area, paralleling I-75 to connect KY 876 to KY 169 and Jacks Creek Pike (KY 1156) to the north.

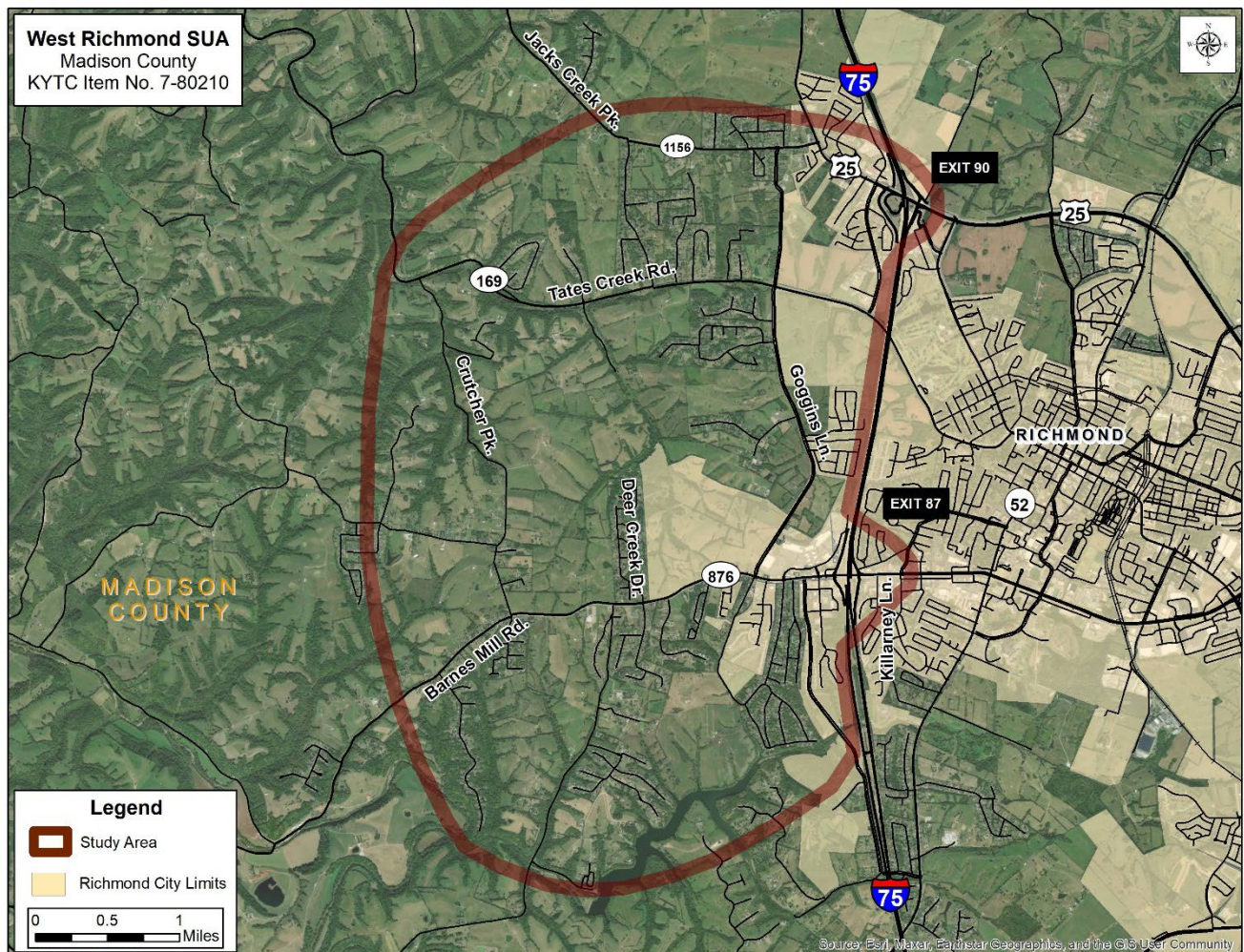


Figure ES-1: West Richmond Study Area

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Daily traffic on KY 876 is heaviest just east of I-75, at 29,600 vehicles per day (VPD), and drops to 12,750 VPD west of the interchange. This decrease in traffic continues to the west, where KY 876 carries 4,100 VPD west of Deer Creek Drive (CR 1389A) and 1,700 VPD west of Crutcher Pike. KY 169 experiences a similar drop in daily traffic to the west, with 5,700 VPD east of Goggins Lane and 1,750 VPD to the west. AM and PM peak hour microsimulation models were developed for the KY 876 corridor between Goggins Lane and Killarney Lane, including the I-75 interchange. Results from the existing simulation model analysis show that all study area intersections operate at an acceptable level of service (LOS) D or better during the AM and PM peak hours.

Crash data were collected on study area roads for the five-year period between 2018 – 2022. Over the course of the five years, a total of 1,472 crashes were reported on study area roads (excluding mainline I-75), one of which resulted in a fatality (0.1 percent) and 254 resulted in one or more injuries (17.2 percent). The fatal crash was a head on collision on wet pavement on KY 169. The most common crash types were rear end (45 percent) and angle (23 percent) collisions, most of which occurred on the more congested routes near Exits 87 and 90. Single vehicle collisions (11 percent) were more common on the rural roadways to the west.

Future Conditions

Based on population projections from the Kentucky State Data Center (KSDC), Madison County has grown over the past 20 years and is expected to continue to grow, around 0.8 percent per year between 2020 and 2050.

Early in the study process, the project team met with local officials and stakeholders to solicit feedback on areas of concern and potential developments. Congestion was identified as the highest transportation concern, especially along the KY 876 corridor and at the I-75 interchange. This congestion is expected to increase as the study area continues to develop. A map depicting 11 anticipated developments in and around the study area is shown in **Figure ES-2**. The socioeconomic data in the Lexington Area Metropolitan Organization (LAMPO) Regional Travel Demand Model was updated to include these developments and 2045 daily model traffic assignments were compared to existing assignments to estimate growth patterns in the study area.

Future growth scenarios were developed based on historical traffic trends, regional population trends, anticipated developments, and output from the updated LAMPO Regional Travel Demand Model. The following annual growth rates were proposed to develop future year traffic volumes:

- Goggins Lane: two percent (2017 – 2023), five percent (2023 – 2035), two percent (2035 – 2045)
- West of I-75: two percent
- East of I-75: 0.8 percent
- I-75 Mainline: one percent

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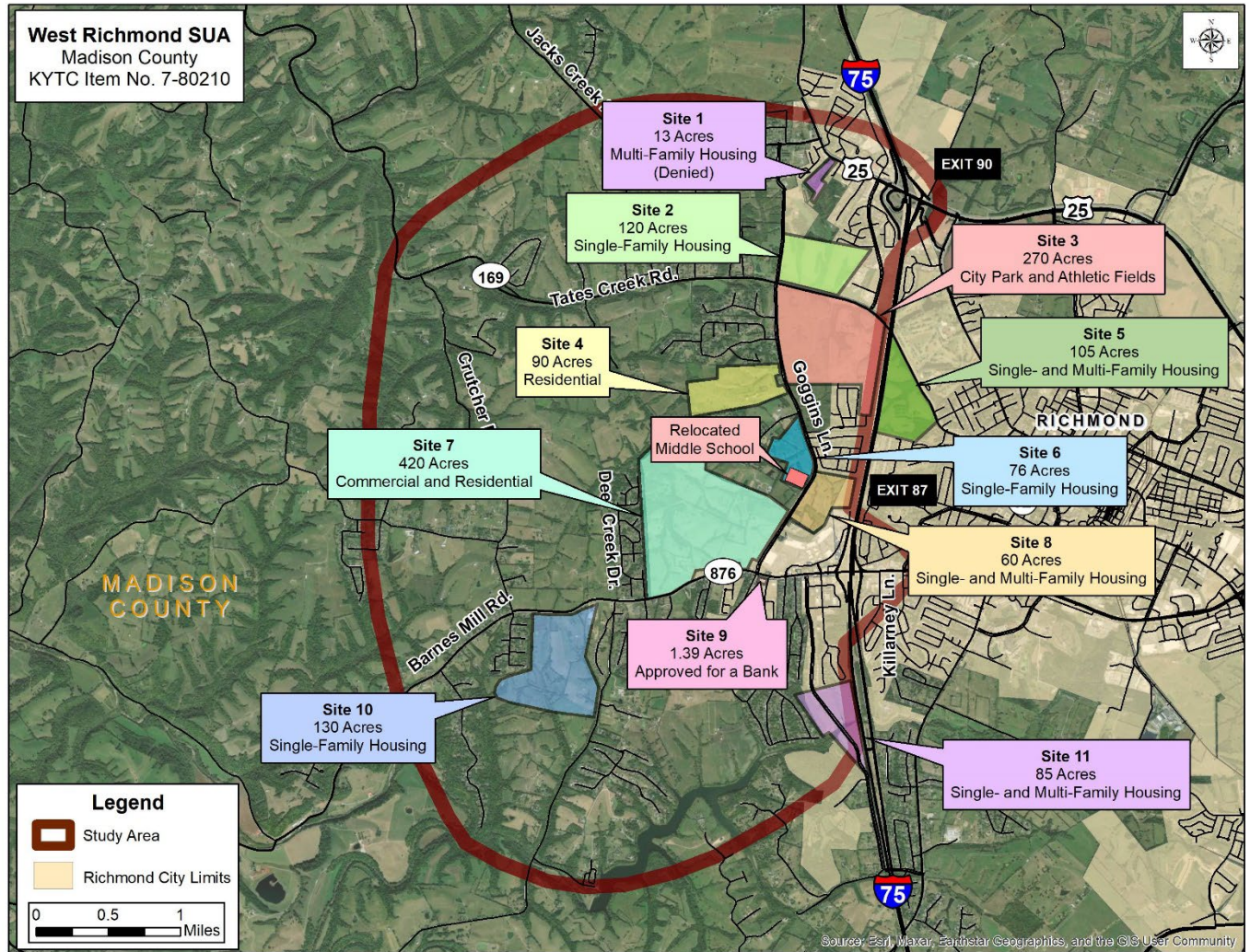


Figure ES-2: Anticipated Study Area Developments

These annual growth rates were then applied to the latest KYTC daily traffic counts (excluding counts from 2020) to develop 2045 daily traffic forecasts. KY 876 is expected to carry 35,800 VPD east of I-75 and 22,200 VPD to the east in 2045 while Goggins Lane is expected to carry 18,500 VPD.

Improvement Concept Development

Improvement concepts were developed based on a combination of input from the project team, a review of the existing conditions, traffic analyses, safety analyses, field reconnaissance, and input from the local officials and stakeholders. The improvement concepts were categorized as follows:

- **Short-Term:** The short-term concepts are typically lower-cost improvements that can be implemented in the near future. These types of improvements should require little or no right-of-way to construct and, in some cases, could be implemented by the KYTC Division of Maintenance as part of regular activities.

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- **Long-Term:** The long-term concepts are higher-cost improvements that will require more significant resources to implement. These types of improvements will generally require additional right-of-way to construct and will need to be funded through a future Kentucky Six-Year Highway Plan.
- **Local Concepts:** The local concepts are not located on the state-maintained system and would likely need to be funded by the City of Richmond or Madison County. A private developer may also take on this responsibility.

Seven short-term and nine long-term concepts were initially developed. One of the short-term concepts and three of the long-term concepts were re-categorized as local concepts.

Over the course of the study, three Local Officials/Stakeholder meetings were held to coordinate on key issues. The first meeting included a discussion of the existing conditions and a survey to solicit feedback on areas of concern within the study area, potential growth areas, and potential improvement concepts. At the second meeting, local officials and stakeholders were asked to provide feedback on preliminary improvement concepts. The revised concepts, discussed below, were presented to the local officials at the final meeting.

Conclusions

The objective of the West Richmond Small Urban Area (SUA) Study was to examine existing safety and operational conditions and to recommend a list of transportation improvement concepts to address existing and long-term transportation needs for the area west of I-75 in Madison County, Kentucky. The concepts were prioritized based on results from the traffic analysis, local official feedback, and the Benefit-to-Cost Analysis (BCA), which was conducted based on crash savings and time travel savings, as discussed in Section 8.1 in the main report. The following presents a summary of the prioritized improvement concepts with cost estimates in 2023 dollars. Utility cost estimates assume all utilities in the project area will be impacted. More detailed estimates should be developed during the design phase to determine actual impacts.

Short-Term Improvement Concepts: the short-term improvement concepts were categorized as high, medium, or low priority, as shown in **Table ES-1** and **Figure ES-3**.

Table ES-1: Short-Term Improvement Concepts

Concept	Location	Description	Total Cost	Benefit-Cost Ratio	Priority
A	KY 876 at Lantern Ridge Dr. / Amberly Way	Restripe Lantern Ridge Dr. & Amberly Way Approaches	\$400,000	2.13	High
B	I-75 Southbound Off-Ramp	Construct Dual Right-Turn Lanes with Receiving Lane on KY 876	\$1,080,000	0.97	High
C	KY 876 at Goggins Ln.	Construct Eastbound Goggins Ln. Left-Turn Lane	\$970,000	0.72	High
D	KY 169 West of Goggins Ln.	Update Signage	\$50,000	5.40	Medium
E	KY 876 West of Goggins Ln.	Construct Turn Lanes at Intersections	\$3,090,000	0.29	Low

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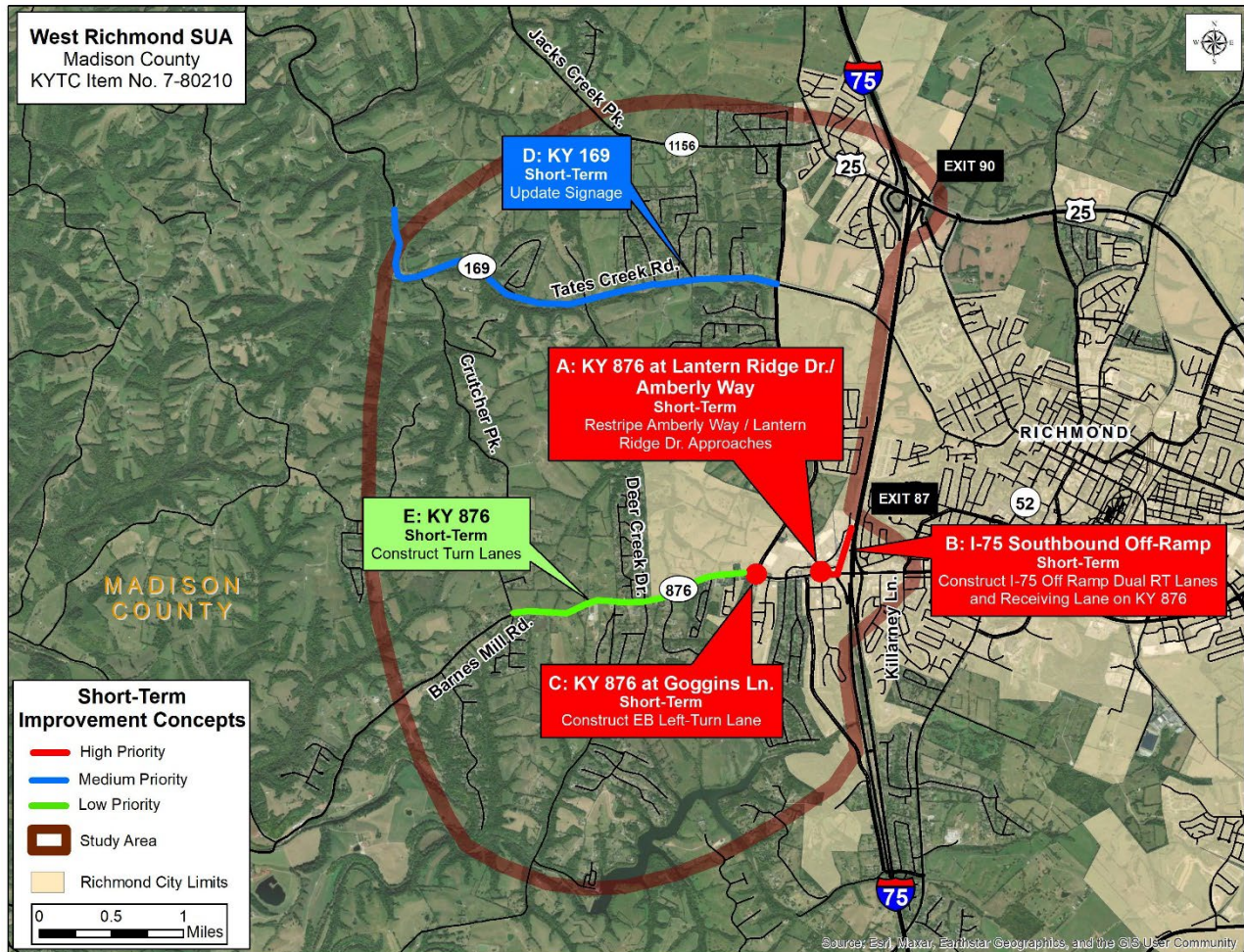


Figure ES-3: Short-Term Improvement Concepts

Long-Term Improvement Concepts: the long-term improvement concepts were categorized as high, medium, or low priority as shown in **Table ES-2** and **Figure ES-4**.

Table ES-2: Long-Term Improvement Concepts

Concept	Location	Description	Total Cost	Benefit-Cost Ratio	Priority
F1	KY 876 Corridor & Goggins Ln. Intersection	Option 1: Install Raised Median, Shared Use-Path & Construct Single-Lane Roundabout	\$5,780,000	0.90	High
F2		Option 2: Extend 4-Lane Section, Construct Shared-Use Path + Sidewalk & Construct Dual-Lane Roundabout	\$12,360,000	0.71	
G	I-75 Interchange	Construct Single-Point Urban Interchange (SPUI)	\$23,950,000	2.30	High
H	KY 169 at Goggins Ln.	Construct Single-Lane Roundabout	\$2,580,000	0.39	High
I	KY 169 East of Goggins Ln.	Construct Shared-Use Path	\$4,460,000	0.00	Low
J	KY 876 West of Goggins Ln.	Construct Two-Way Left-Turn Lane (TWLTL)	\$7,830,000	0.00	Medium
K	KY 876 West of Goggins Ln.	Construct Shared-Use Path	\$2,890,000	0.00	
L	KY 169 West of Goggins Ln.	2' Shoulder Widening on Both Sides of KY 169	\$5,600,000	1.70	Medium

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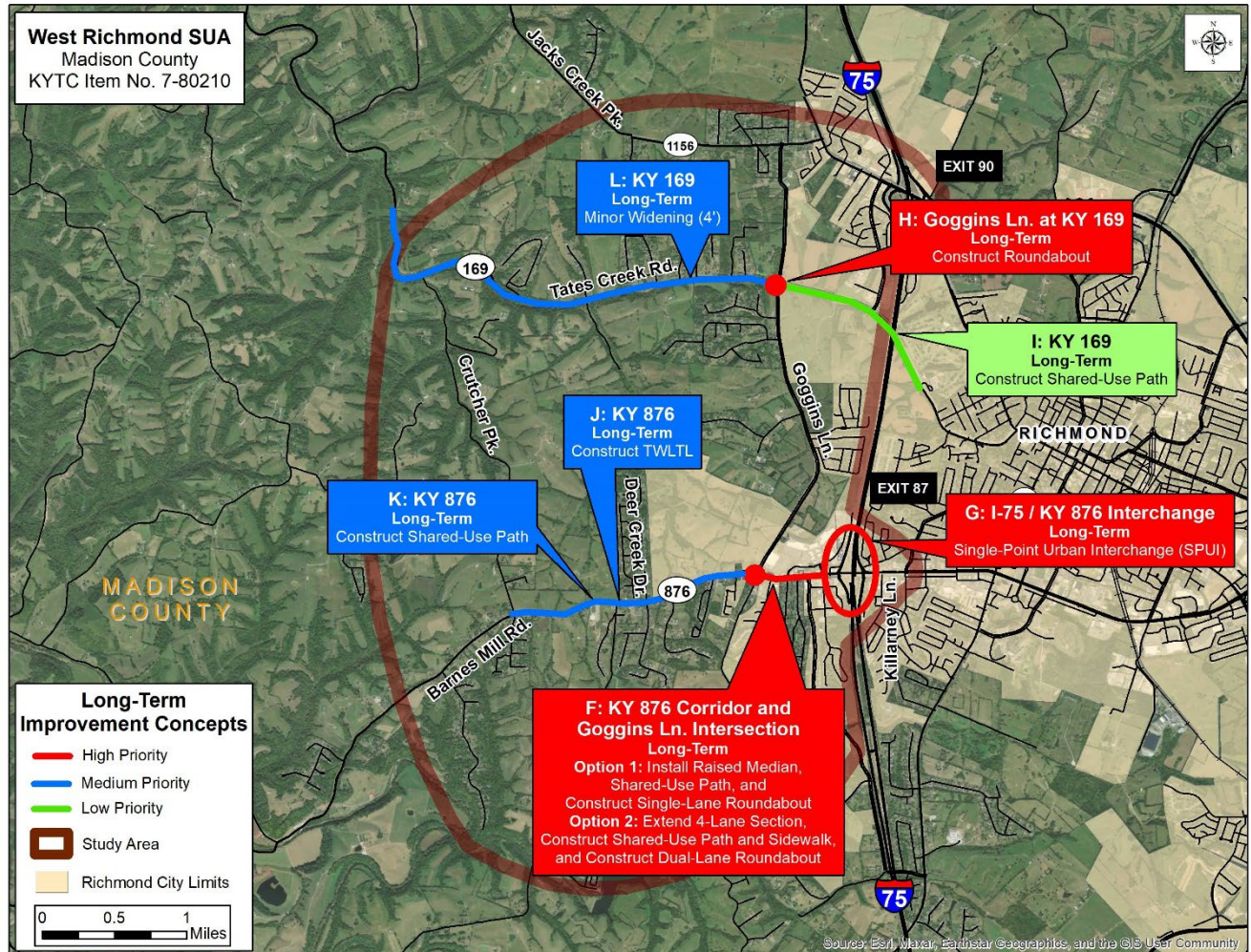


Figure ES-4: Long-Term Improvement Concepts

Local Improvement Concepts: the local improvement concepts were categorized as high, medium, or low priority and are shown in **Figure ES-5** and summarized in **Table ES-3**. Private developers, local planning staff, and local officials play a role in implementing these recommendations from the West Richmond Small Urban Area (SUA) Study. The proposed location and recommended typical section of the new roadways in Concept N and Concept O should be considered, along with commitments for general alignment or additional right-of-way, for rezoning applications, development plan applications, and plats. The future road connections identified are necessary as future development occurs to allow for additional routes and prevent high levels of congestion on the existing roads. As the larger area continues to develop over time, these connections will be critical in providing connectivity as well as alternative routes.

More detailed descriptions of all recommended concepts are included on the following pages.

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Table ES-3: Local Improvement Concepts

Concept	Location	Description	Total Cost	Benefit-Cost Ratio	Priority
M	Crutcher Pike	Improved Signage Widen Areas for Vehicles to Pull Over	\$260,000	0.12	Low
N	New Routes (KY 876 to KY 1156)	Construct New Routes			
O	Victory Blvd. & Goggins Lane North of KY 169	Extend Victory Blvd. to Goggins Lane & Widen Goggins Ln. North of KY 169	\$6,560,000	N/A	High
P	Goggins Ln. between KY 876 & KY 169	Construct Shared-Use Path	\$2,970,000	0.00	Medium

¹ Cost is expected to be addressed by developers as the adjacent land develops.

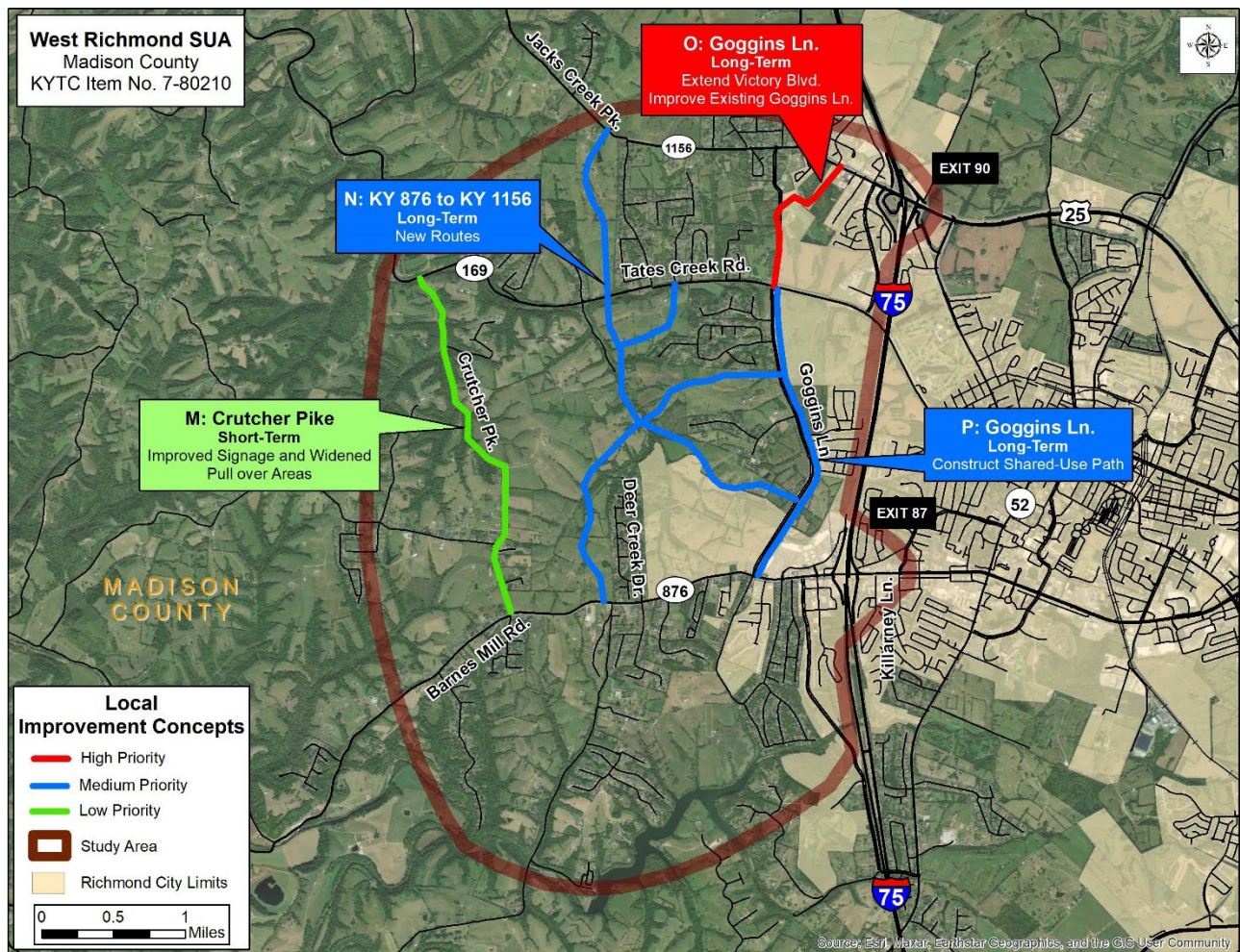


Figure ES-5: Local Improvement Concepts