Appendix D

Abbreviated Geotechnical Overview

Maysville Small Urban Area Study (SUA)
Abbreviated Geotechnical Overview
Mason County

This project is located in Mason County in an area surrounding Maysville as shown in the attached Figure 1. The study will focus on short and long-term improvements that the Kentucky Transportation Cabinet, the City of Maysville, or Mason County can use for further project development and implementation. Due to the large area, this overview was not a normal abbreviated overview, however, just a map of geotechnical conditions (Figure 2).The center coordinates of Maysville are approximately 38.631974 N, -83.795901 W. Mason County, in northern Kentucky, is in the Outer Bluegrass Physiographic Region characterized by deeper valleys, with little flat land, because the bedrock in this area is mostly composed of interbedded Ordovician limestones and shales. The Ohio River marks the northern boundary of the county and is the area of lowest elevations. The lowest point, the normal pool level of the Ohio River, is 485 feet. The valley flats of the Ohio are about 520 to 530 feet.

The terrain is rolling to hilly, with the area of lowest local relief being in the southern part of the county. The greatest local relief is in the vicinity of the Ohio Valley. Immediately north of Maysville the difference in elevation between ridgetops and the river is more than 400 feet. Ridgetop elevations of 900 feet are common throughout the county.

Nearly all of Mason County is underlain by rocks composed of layers of limestone and shale (see Exhibit 2). In general, when shale is predominant the terrain is rugged. When limestone is dominant the terrain is more gentle and suitable for agriculture and development.

The Ohio River alluvium is the best source of groundwater in the county.

The following prior KYTC projects nearby can be accessed through the KYTC Geotechnical Branch Database through the KYTC Division of Structural Designs home page (Click on Geotech and Search KYTC Completed Projects)[1]. KYTC Geotechnical Data, published by the KGS and KYTC, are as follows:

- L-002-1999
- L-002-2011
- L-009-2011
- R-020-1980
- R-020-2011
- R-021-2006
- R-033-1986
- R-044-1985
- R-045-1985
- R-101-1994
- R-107-1993
- S-013-1991
- S-014-1994
- S-018-1995
- S-023-1975
- S-044-1993
- S-051-1977
- S-064-1994
- S-068-2000
- S-116-2012
- S-118-2003
- S-120-2003
- S-123-2003
- S-126-2003
- S-127-2003
- S-128-2003
- S-129-2003

According to the Kentucky Geologic Survey (KGS), the study area karst potential is categorized as “prone” (categorized as intense, prone and non-karst). There are sinkholes present in the

[1] http://kgs.uky.edu/kgsmap/kytcLinks.asp

study area. The available mapping indicates some faults in the southeastern portion of the study area. Faults represent breaks in the Earth's crust.

According to the Natural Resources Conservation Service Soil Report, the study area encompasses nearly 34,000 acres (173 acres in Ohio) is predominantly types of silty or silt loam (nearly 80%) silty clay loam (10.3%), and Cynthiana-Faywood complex (10%) which is rocky (CyE2). The soil report for the study area is shown in Tables 1 and 2.

Landslide inventory from KGS show landslide inventory data east of US 68 along the Ohio River both east and west of the center of town (see Figure 2).

A study completed by HNTB in 2002 for the AA highway, gave general recommendation of CBR values of 3.0 for the subgrade if it consists of soil, shale and limestone rock.

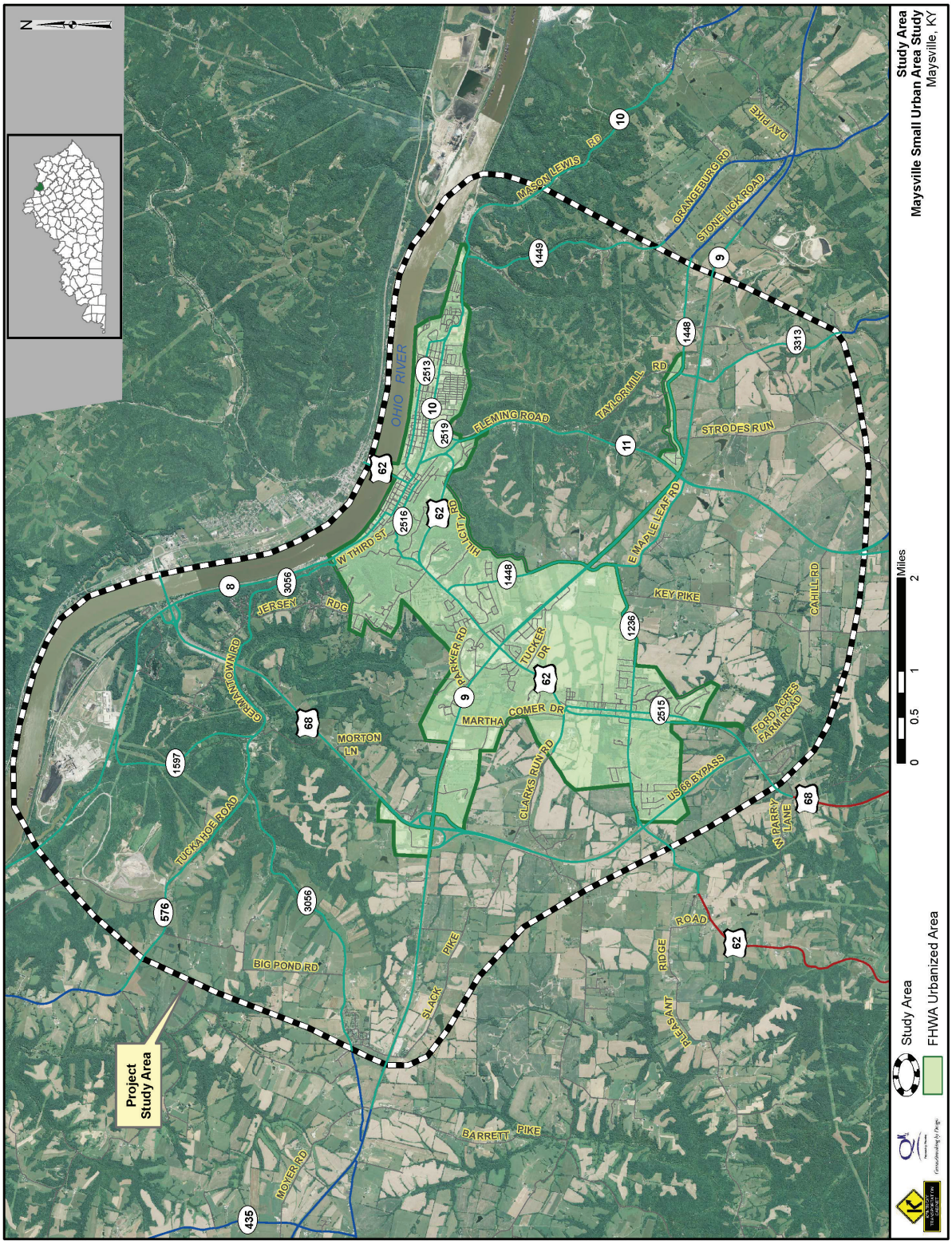


Figure 1 Study Area

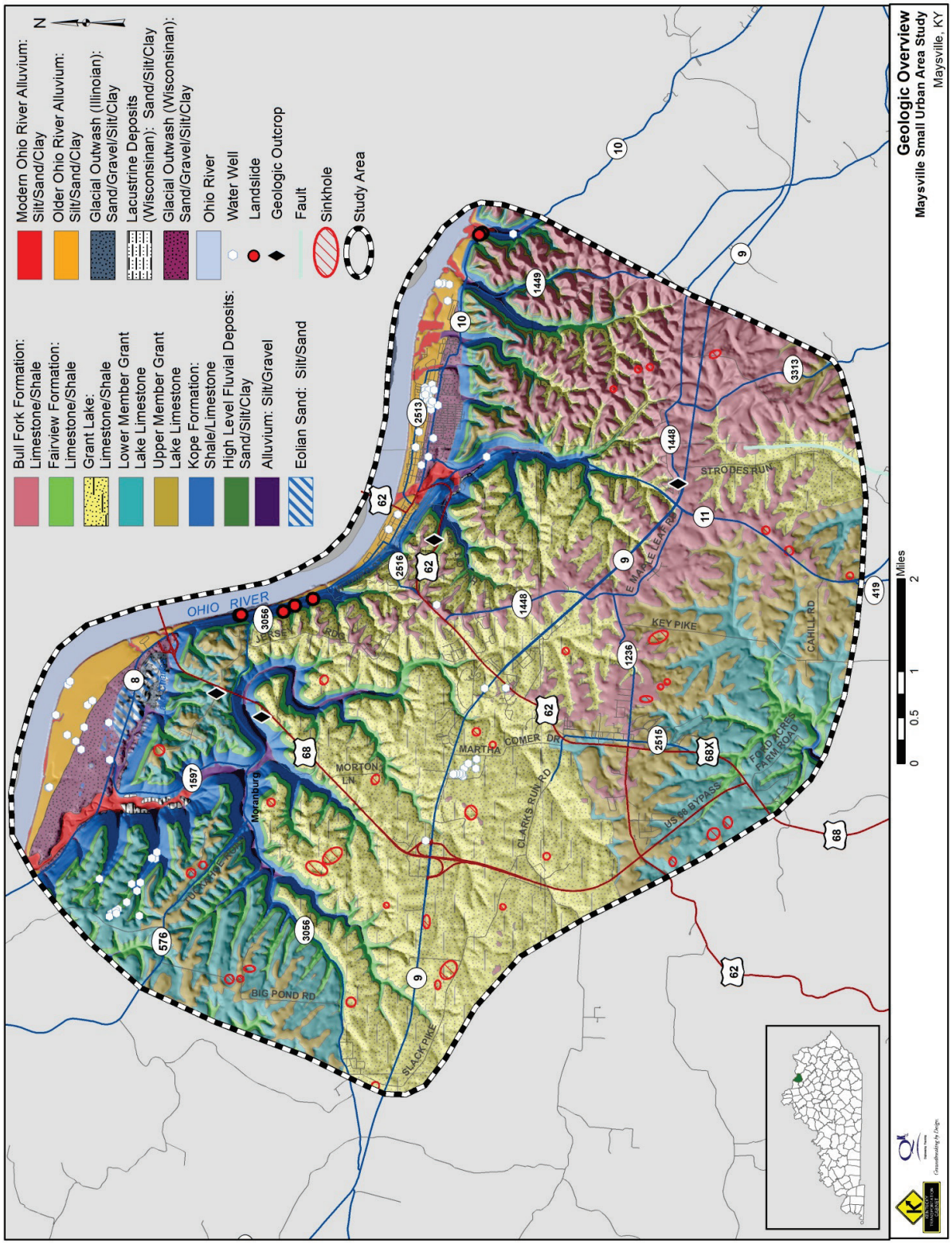


Figure 2 Overview

Kentucky Geologic Map Information Service

Karst Potential Units

- intense
- prone
- non-karst

Symbols

map symbols

Symbols are updated as layers are turned on/off and as they become visible by zooming in/out.

KGS LiDAR-derived Sinkholes

LiDAR Sinkholes

KGS Sinkholes

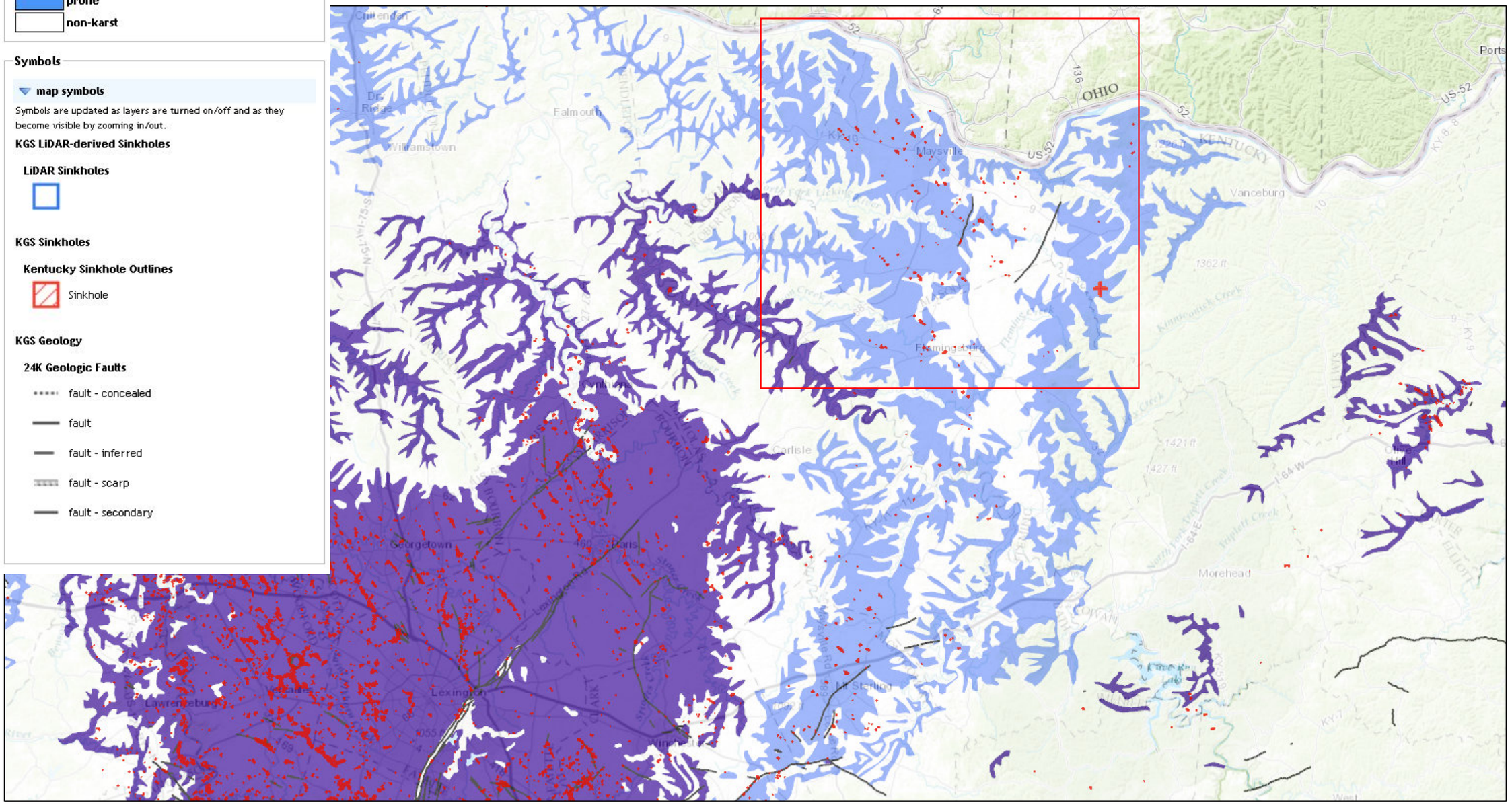
Kentucky Sinkhole Outlines

Sinkhole

KGS Geology

24K Geologic Faults

- fault - concealed
- fault
- fault - inferred
- fault - scarp
- fault - secondary



June 7, 2016

1:577,791

0 5 10 20 mi

0 10 20 40 km