



2005

Generalized Geologic Map for Land-Use Planning: Wayne County, Kentucky

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Adams, T. Jeffrey; Davidson, Bart; and Carey, Daniel I., "Generalized Geologic Map for Land-Use Planning: Wayne County, Kentucky" (2005). *Kentucky Geological Survey Map and Chart*. 92.

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Generalized Geologic Map for Land-Use Planning: Wayne County, Kentucky

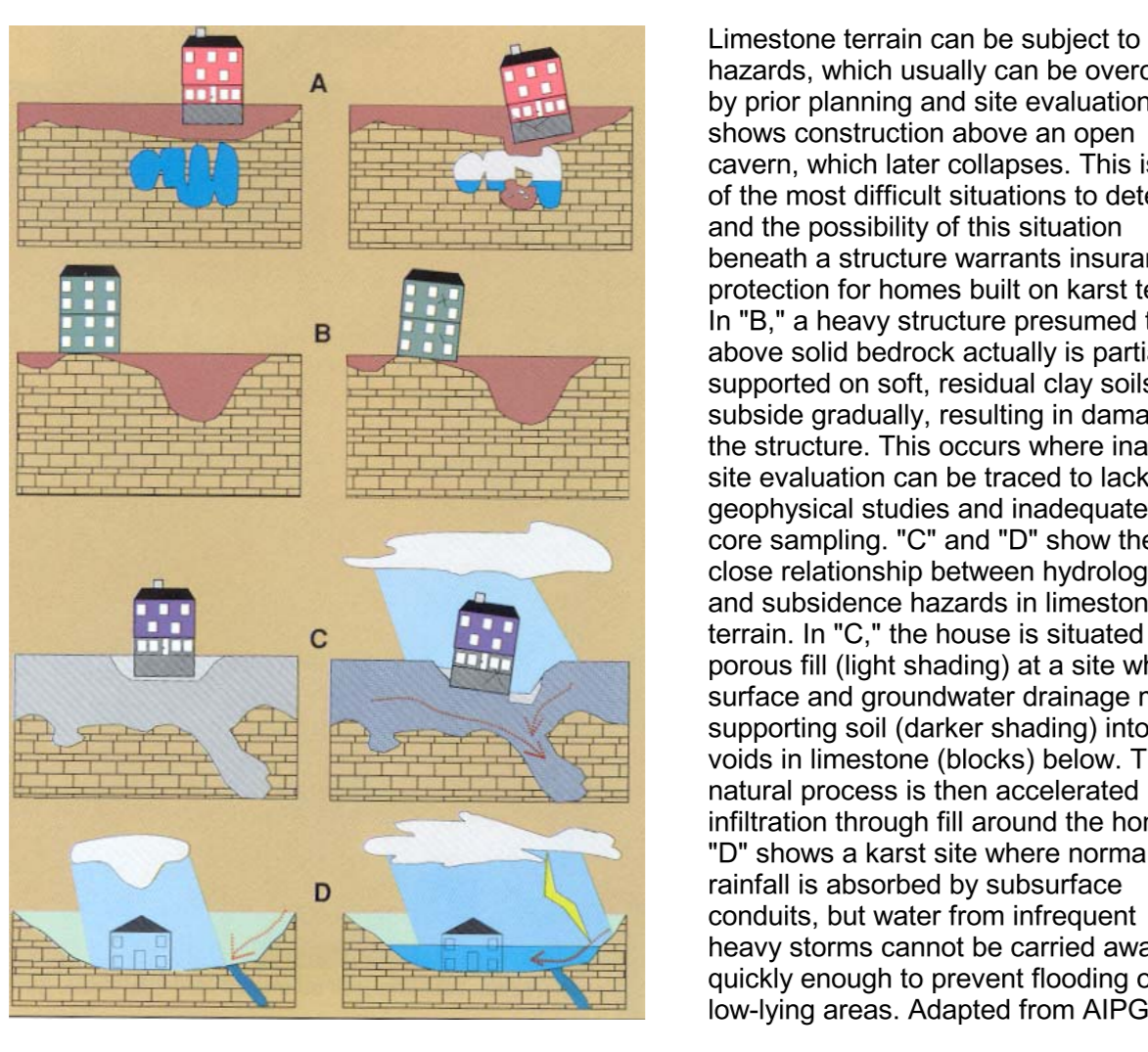
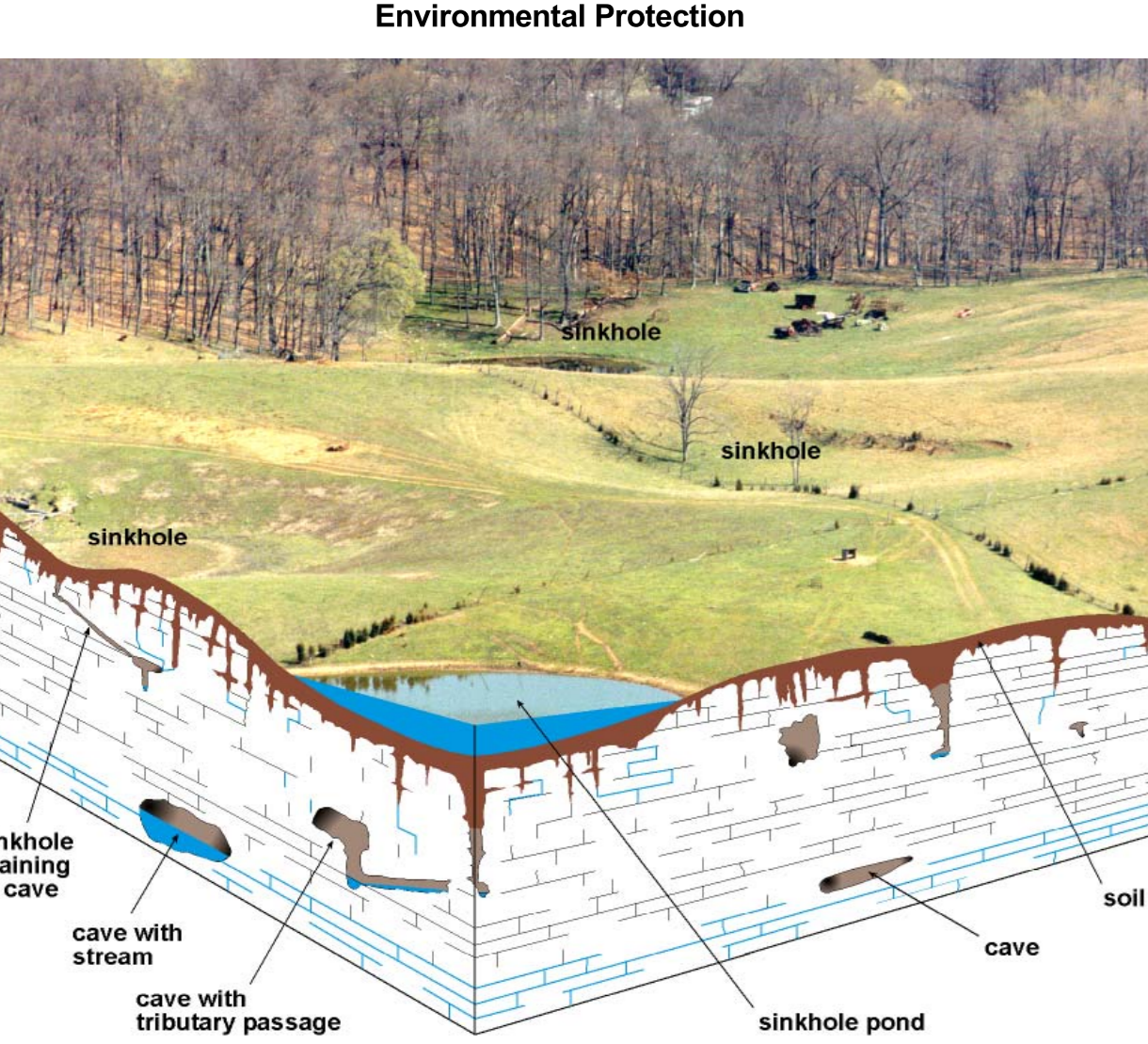
T. Jeffrey Adams Don Morden Multiple Services Inc. Bart Davidson and Daniel I. Carey Kentucky Geological Survey

Acknowledgments

Geology adapted from Duncan (2004), Johnson (2004a-c), Murphy (2004), Murphy and Slichtam (2004), Zhang (2004a-g), and Zhang and Slichtam (2004). Sinkhole data from Poyler and others (2004). Thanks to Jim Currens, Kentucky Geological Survey, for karst illustrations.

For Planning Use Only

This map is not intended to be used for selecting individual sites. Its purpose is to inform land-use planners, government officials, and the public in a general way about geologic bedrock conditions that affect the selection of sites for various purposes. The properties of thick soils may supersede those of the underlying bedrock and should be considered on a site-to-site basis.



Limestone terrain can be subject to subsidence hazards, which usually can be overcome by prior planning and site evaluation. 'A' shows construction above an open cavern, which later collapses.

Never use sinkholes as dumps. All waste, but especially pesticides, paints, household chemicals, automobile batteries, and used motor oil, should be taken to an appropriate recycling center or landfill.

The term 'karst' refers to a landscape characterized by sinkholes, springs, sinking streams (streams that disappear underground), and underground drainage through solution-enlarged conduits or caves.

Make sure your home septic system is working properly and that it's not discharging sewage into a creek or sinkhole.

Sinkholes are depressions on the land surface into which water drains underground. Usually circular and often funnel-shaped, they range in size from a few feet to hundreds of feet in diameter.

Keep cattle and other livestock out of sinkholes and sinking streams. There are other methods of providing water to livestock.

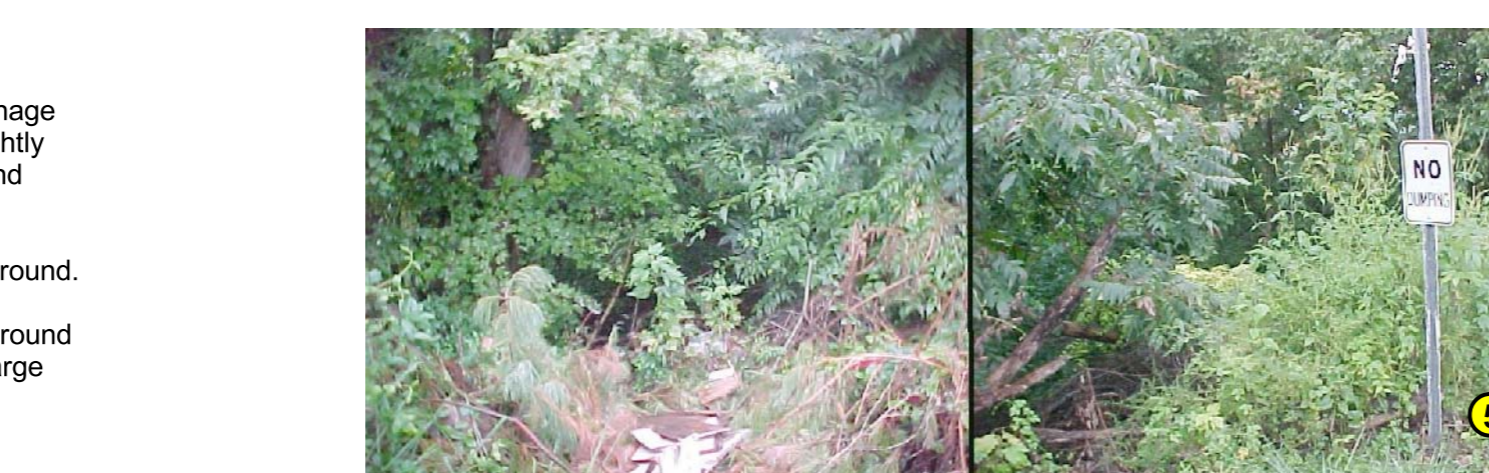
Sinkholes near the new courthouse in Monticello have been neglected. Sinkholes can be a source of contamination to local aquifers, and should also be carefully considered before building in the area.

Contract waste-holding lagoons in karst areas carefully, to prevent the bottom of the lagoon from collapsing, which would result in a catastrophic emptying of water into the groundwater.

This well-house is situated near a pond that is probably a 'sinkhole pond', meaning that it is connected to the limestone aquifer by fractures in the bedrock, but is currently plugged with soil.



A small cave is located in Monticello across from the new courthouse. This cave was apparently used by the public in the past, and included a rock staircase and reflection pool nearby. It is now in a state of disrepair and marked by litter.



This sinkhole near the new courthouse in Monticello has been neglected. Sinkholes can be a source of contamination to local aquifers, and should also be carefully considered before building in the area.

FOUNDATION AND EXCAVATION The terms 'earth' and 'rock' excavation are used in the engineering sense; earth can be excavated by hand tools, whereas rock requires heavy equipment or blasting to remove.

LIMITATIONS Slight—A slight limitation is one that commonly requires some corrective measure but can be overcome without a great deal of difficulty or expense.

LAND USES Septic tank disposal system—A septic tank disposal system consists of a septic tank and a filter field. The filter field is a subsurface tile system laid in such a way that effluent from the septic tank is distributed with reasonable uniformity into the soil.

Radon Gas radon, although not widely distributed in Kentucky in amounts above the Environmental Protection Agency's maximum recommended limit of 4 picocuries per liter, can be a local problem.

Table with columns: Rock Unit, Foundation, Septic System, Residence, Highways, Access, Light Industry, Intensive, Extensive, Reservoir Areas, Reservoir, Underground. Rows include 1. Alluvium, 2. Shale, 3. Shale, 4. Sandstone, 5. Limestone, 6. Limestone, 7. Basalt, 8. Shale and dolomite, 9. Sandstone.

Table with columns: Radon Risk Levels, Estimated Annual Lung Cancer/1000, and Comparative Risk. Includes a sub-table for 'COMPARATIVE RISK CHART FOR RADON LEVELS'.



A National Historic Site, Mill Springs is the location of one of the first important battles of the Civil War in 1862. It is named after 13 horses that feed a creek which powers the gristmill, constructed in 1839.



Although located primarily in the Mississippi Plateau, Wayne County also has foothills of the Eastern Kentucky Coal Field, as seen in this photo. Land-use practices differ significantly in the more mountainous parts of the county.

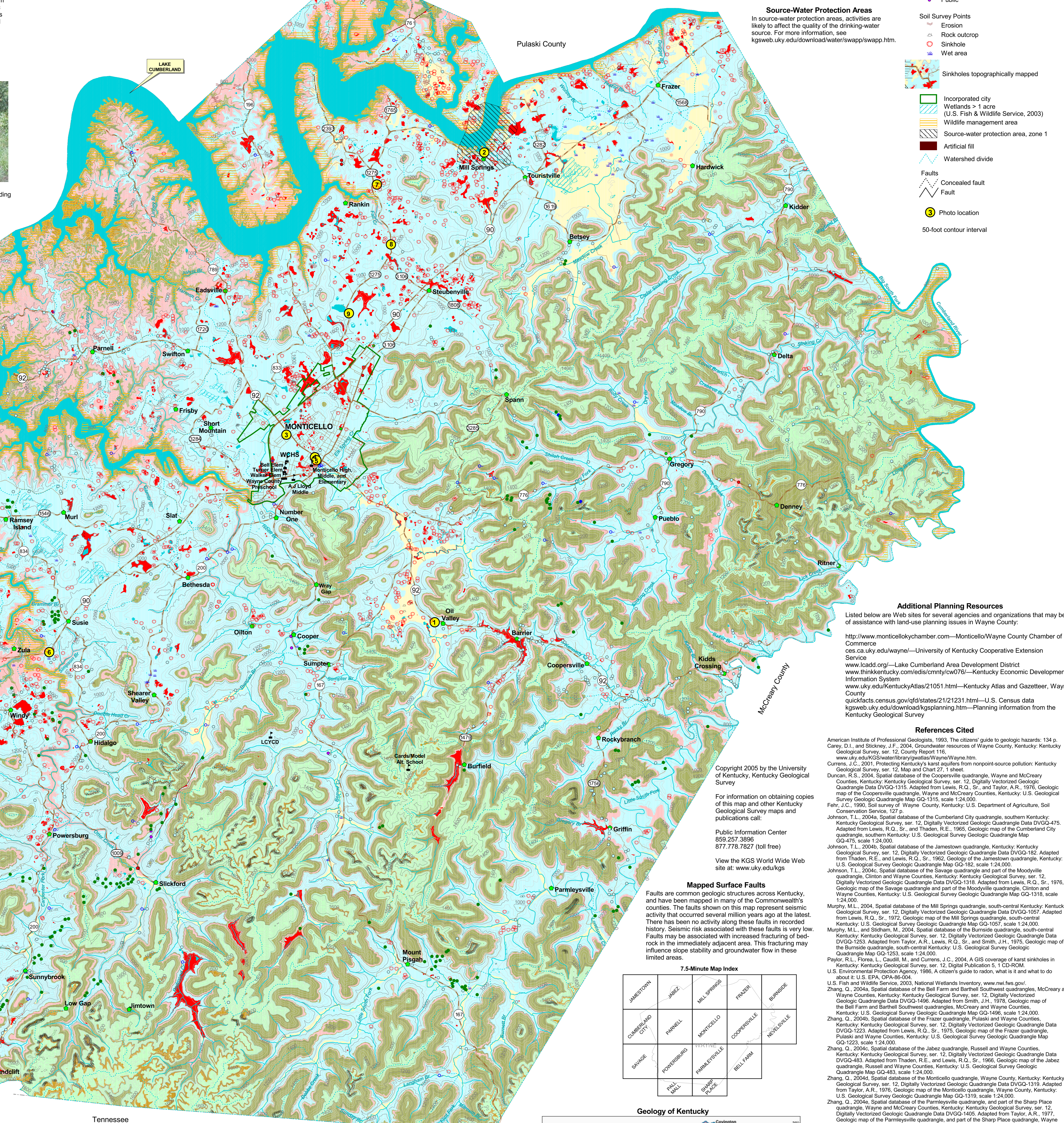


The lumber industry is a common land-use feature of Wayne County. View looking north. Photo by Jeff Adams, Don Morden Multiple Services Inc.



The majority of Wayne County's land use is agricultural, exemplified by this soybean crop. Best management practices are recommended to ensure that pesticide and fertilizer applications do not pose problems to the groundwater supply.

EXPLANATION legend showing symbols for School, Oil and Gas Wells, Water Wells, Source-Water Protection Areas, Soil Survey Points, Faults, and Photo locations. Includes a 50-foot contour interval.



7.5-Minute Map Index table showing a grid of townships and ranges: JAMESTOWN, JAMES, MILL SPRINGS, FREEZE, BERTHOLETT, COOPERVILLE, MONTICELLO, SLOTTON, COOPERSVILLE, PUEBLO, SANDLICH, SANDLICH, JIMTOWN, SANDLICH, SANDLICH, SANDLICH, SANDLICH.

Geology of Kentucky map showing major geological features and a legend for the state. Includes text: 'Learn more about Kentucky geology at www.uky.edu/gsc/gey'.

Groundwater Availability section with text: 'In the eastern half of Wayne County, most of the wells drilled in the valley bottoms are adequate for a domestic supply. Less than half the wells drilled on hillsides and hillsides are adequate for domestic needs.' Includes a scale bar and north arrow.

Additional Planning Resources: www.monticellochamber.com—Monticello/Wayne County Chamber of Commerce; www.lcaid.org—Lake Cumberland Area Development District; www.thinkkentucky.com/cvds/cmny/cw76b—Kentucky Economic Development Information System; www.ky.gov/kgsweb/kyedu/download/water/swapp/swap.htm—Kentucky Water Quality Assessment and Planning Information System.

References Cited: American Institute of Professional Geologists, 1993. The citizen's guide to geologic hazards: 134 p.; Currens, J.C., and Slichtam, M., 2004. Groundwater resources of Wayne County, Kentucky: Kentucky Geological Survey, ser. 12, County Report 116, www.uky.edu/kgsweb/kyedu/download/water/swapp/swap.htm.

Public Information Center 899.257.3895 877.738.3327 (toll free) View the KGS World Wide Web site at: www.uky.edu/kgs