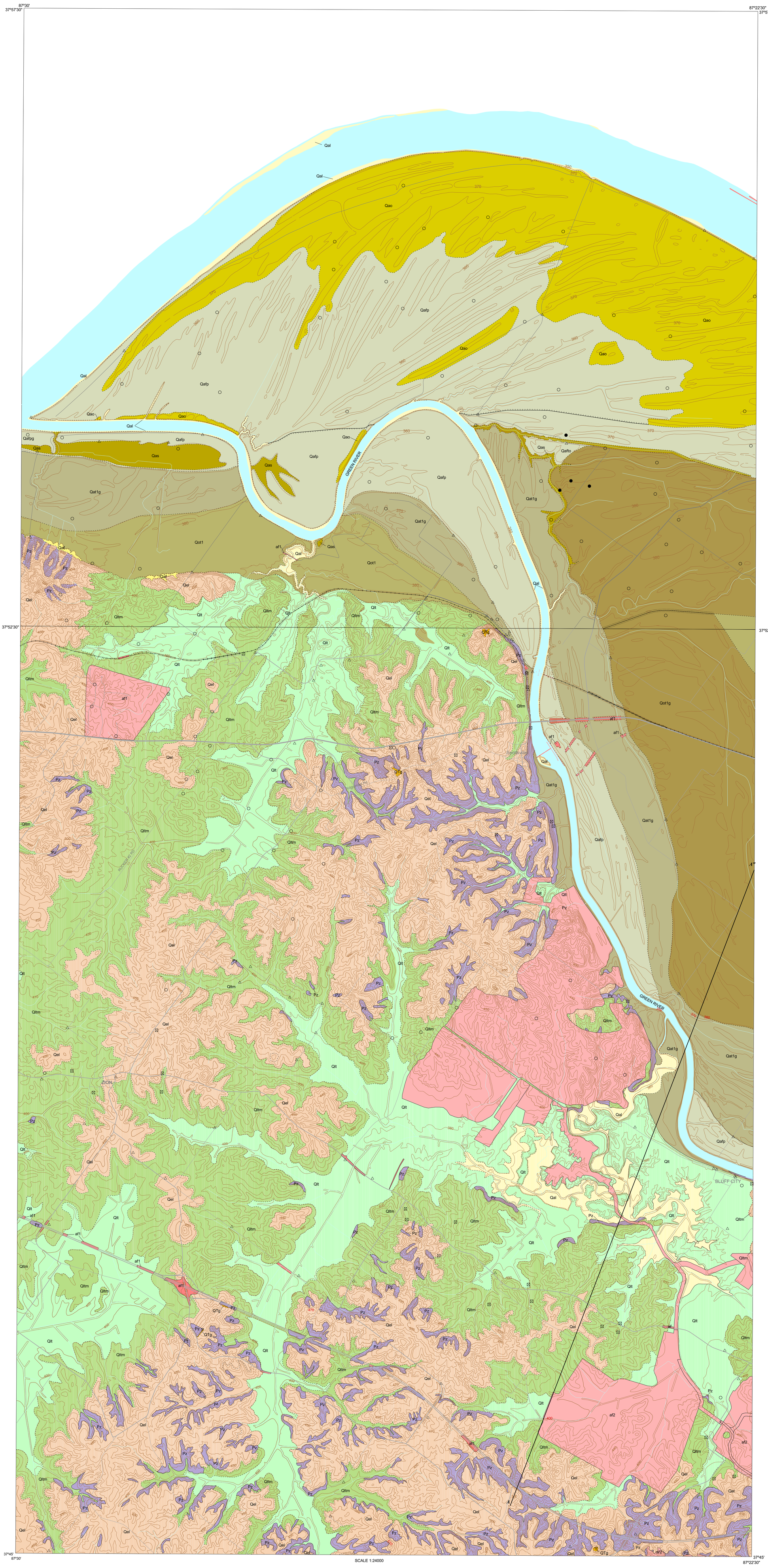
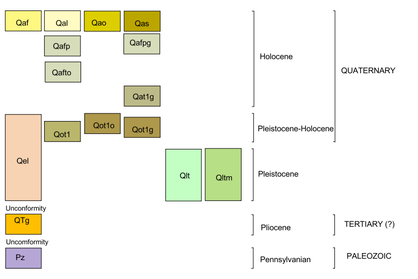
KENTUCKY GEOLOGICAL SURVEY
University of Kentucky, Lexington
James C. Cobb, State Geologist and Director

DRAFT GEOLOGIC MAP
SPOTTSVILLE AND NEWBURG QUADRANGLES
Series XII, 2006
Contract Report 16



CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

Alluvium, modern (Holocene)
Silty clay and sandy silt with minor sand and sparse gravel; thickness 10 to 30 feet (3 to 10 m); found along banks of Ohio River and in floodplains along streams tributary to the Ohio River; deposited by modern historic stream processes; deposit is inset into adjacent map units; contact with adjacent units varies from sharp to poorly defined; mapped on the basis of topographic expression.

Alluvium, natural levee deposits (Holocene)
Sand and silt; deposited in levee ridges or overwash deposits on floodplains of major rivers (Qafp) and on the Ohio River low outwash terraces (Qot1); grades into adjacent floodplain deposits; typically sandier than adjacent floodplain deposits.

Alluvium, active modern sloughs (Holocene)
Organic-rich, black and gray clayey silt, silty clay, and clay; found within low lying areas on floodplain (Qafp) and low outwash terrace (Qot1); serve as poorly drained pathways to channel water off of the floodplain; areas that retain water year-round form bogs and cypress swamps.

Alluvial fans (Holocene)
Silt, sand, and gravel; thickness uncertain; forms fan-shaped alluvial-colluvial apron at mouths of small valleys; deposited by floods and debris flows from small tributary valleys developed in loess-mantled uplands; extent of unit mapped by topographic expression.

Alluvium, Ohio River floodplain (Holocene)
Sand, silt, fine gravel, and clay; surface mantled by silty clay and sandy silt; surface forms the lowest well-developed terrace along the Ohio River; 30 to 45 feet (10 to 15 m) thick, overlies sand and gravel deposits of older outwash deposits; contact is sharp, drawn at scarp of next higher terrace; estimated to range in age up to 6,500 years

Alluvium, Green River Floodplain (Holocene)
Silt, sand, fine gravel, and clay; surface mantled by silty clay and sandy silt; surface forms the lowest well-developed terrace along the Green River; 30 to 45 feet (10 to 15 m) thick, overlies older valley-fill units; contact is sharp, drawn at scarp of next higher terrace; stimated to range in age up to 6,500 years

Alluvium, Ohio River floodplain terrace (Holocene)
Sand, silt, fine gravel, and clay; surface mantled by silty clay and sandy silt; surface forms a distinct low relief terrace along the landward margin of the Ohio River floodplain (Qafp); 30 to 45 feet (10 to 15 m) thick, overlies sand and gravel deposits of older outwash deposits; contact is sharp, drawn at scarp of next higher terrace. Estimated to range in age up to 6,500 years.

Alluvium, Green River floodplain terrace
Silt, sand, fine gravel, and clay; surface mantled by silty clay and sandy silt; surface forms a distinct low relief terrace along the margin of the Green River floodplain (Qafpg); 30 to 45 feet (10 to 15 m) thick; overlies sand and gravel deposits of older outwash deposits; contact is sharp, drawn at scarp of next higher terrace; estimated to range in age up to 6,500 years

Alluvium, low Green River Terrace (Holocene)
Poorly sorted silt, sand, and clay deposited by the Green River; lithologically similar to Green River floodplain (Qafpg) but distinguished by topographic expression from lower floodplain (Qafpg), but found below Ohio River low outwash terrace (Qot1).

Outwash, Ohio River scrollwork terrace (Pleistocene - Holocene)
Fine to coarse sand and gravel, with local lenses of silt and clay; gravel includes chert, quartzite, sandstone, siltstone, igneous and metamorphic rocks, limestone, and coal; lithologically similar to adjacent outwash terraces; surface mantled with alluvial-silty sand and sandy silt; 30 to 45 feet (10 to 15 m) thick; surface forms well-developed, swell-and-swale topography on Ohio River low terrace; deposited as glacial outwash reworked during postglacial adjustment of the Ohio River; overlies older outwash deposits (Qot3); contact is approximate, inferred from surface topography.

Outwash, Green River scrollwork terrace (Pleistocene - Holocene)
Fine to coarse sand and gravel, with local lenses of silt and clay; gravel includes chert, quartzite, sandstone, siltstone, limestone, and coal; lithologically similar to adjacent outwash terraces; surface mantled with alluvial-silty sand and sandy silt; 30 to 45 feet (10 to 15 m) thick; surface forms well-developed, swell-and-swale topography on Green River low terrace; deposited as post bar deposits of glacial outwash reworked by meandering postglacial Green River; overlies older outwash deposits (Qot3); contact is approximate, inferred from surface topography.

Outwash, low terrace (Pleistocene - Holocene)
Fine to coarse sand and gravel, with local lenses of silt and clay; gravel includes chert, quartzite, sandstone, siltstone, igneous and metamorphic rocks, limestone, and coal; lithologically similar to adjacent outwash terraces (Qot2, Qot3); surface mantled with alluvial-silty sand and sandy silt; 30 to 45 feet (10 to 15 m) thick; surface forms well-developed, low-relief terrace along Ohio River valley; deposited as glacial outwash reworked by post-glacial Ohio River; overlies older outwash deposits (Qot3); contact is sharp, drawn at scarp of next higher terrace or upland.

Loess (Pleistocene-Holocene) (thicker than ~3 to 5 feet)
Silt, clayey silt, and fine sand deposited by wind; typically massive; unit thickest (up to 40 feet) near Ohio River valley and thins gradually to the south; mantles bedrock upland; not mapped where locally found on lacustrine terrace (Qlt) and high outwash terraces (Qot3); estimated to range in age from 22,500 to 10,000 years old; locally includes thin layers of loess inferred to be older than 30,000 years.

Lacustrine terrace (Pleistocene)
Clayey silt and silty clay; 30 to 45 feet (10 to 15 m) thick, thicker in tributary valleys; overlying complex deposits of sand, silt, clay and minor gravel; locally mantled by loess (Qal, not mapped); forms prominent low-relief terrace in tributary valleys and sheltered portions of Ohio River valley; unit deposited in lacustrine and slackwater environments associated with alluviation of the Ohio River valley by glacial outwash and resulting impoundment of tributary valleys; underlying material is of apparent mixed fluvial and fluvio-lacustrine origin; contact with fluvial units is sharp, and drawn on scarps separating adjacent terraces; contact with aolian and upland units (Qal, Qeo) is gradational and approximate, inferred from surface topography; estimated to rage in age from 23,000 to 18,000 years old.

Marginal lacustrine deposits (Pleistocene)
Clayey silt, silt, and fine sand; thickness uncertain; surface forms moderate slope and benched upland areas bordering lacustrine deposits (Qlt); unit represents complex transition between lacustrine deposits and loess mantling upland; deposits include loess, loess-derived slopewash, colluvium, lacustrine silt and clay, and lacustrine shoreline deposits; contacts gradational and approximate, mapped on the basis of topographic expression.

Upland gravel (Pliocene-Pleistocene)
Gravel and medium to coarse sand; pebbles include brown, patina chert, quartz, and silicified fossils; locally cemented by iron oxide; unit found on uplands, covered by loess and poorly exposed; comparable to the Lace Gravel of Ray (1965).

Bedrock (Paleozoic)
Consolidated shale, sandstone, coal, and overlying poorly sorted regolith, comprising the core of the uplands in the study area; includes areas of loess thinner than 3 ft (1 m).

Artificial fill, engineered fill (Modern)
Unconsolidated material used as fill for the construction of roads, railroads, buildings, and floodwalls.

Artificial fill, mine spoil (Modern)
Disturbed bedrock and regolith produced from mining operations.

EXPLANATION

- Contact
- Aproximate contact
- Terrace scarp, teeth point downhill
- Federal highways
- State roads
- Parkway
- County roads
- Other roads
- Private roads
- Railroads

Surface observations
- Landform
- Subsurface data
- This study
- Database

Economic points
- Pit
- Shaft

ACKNOWLEDGMENTS

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Field mapping was completed by Michael L. Murphy and Mark F. Thompson from April 2005 to December 2005, with assistance from W. Andrews, R. Counts, and S. Martin, (KGS), D. Gehring and R. Toor (USDA-NRCS), Lundstrom (USGS), and D. Murphy (FCPS).

Subsurface information was compiled from data on file at the Kentucky Geological Survey as well as data contributed by the Kentucky Transportation Cabinet and the U.S. Geological Survey.

REFERENCES

Cox, Frank R., Jr.,1974, Soil survey Daviess and Hancock counties, Kentucky; U.S. Department of Agriculture, 108p.

Converse Henry T., Jr., and Cox, Frank R., Jr., 1967, Soil Survey of Henderson County, Kentucky; U.S. Department of Agriculture, 108p

Johnson, W.D., Jr., 1972, Geologic map of the Newburgh and Yankeetown quadrangles, Henderson and Daviess Counties, Kentucky: U.S. Geological Survey Geologic Quadrangle Map GQ-1045, scale 1:24,000.

Johnson, W.D., Jr., 1972, Geologic map of the Reed quadrangle, Kentucky-Indiana: U.S. Geological Survey Geologic Quadrangle Map GQ-1038, scale 1:24,000.

Ray, L.L., 1965, Geomorphology and Quaternary geology of the Owensboro quadrangle, Indiana and Kentucky: U.S. Geological Survey Professional Paper 488, 71p.

Solis, M.P., and Terry, J., 2000, Spatial database of the Newburgh and Yankeetown quadrangles, Henderson and Daviess Counties, Kentucky: Kentucky Geological Survey, ser. 12, Digitally Vectorized Geologic oadrngle Data DVGQ-1045. Adapted from Johnson, W.D., Jr., 1972, Geologic map of the Newburgh and Yankeetown quadrangles, Henderson and Daviess Counties, Kentucky: U.S. Geological Survey Geologic Quadrangle Map GQ-1045, scale 1:24,000.

Solis, M.P., and Terry, J., 2000, Spatial database of the Spottsville quadrangle, Henderson County, Kentucky: Kentucky Geological Survey, ser. 12, Digitally Vectorized Geologic Quadrangle Data DVGQ-1090. Adapted from Johnson, W.D., Jr., 1973, Geologic map of the Spottsville Quadrangle, Henderson County, Kentucky: U.S. Geological Survey Geologic Quadrangle Map GQ-1090, scale 1:24,000

Theis, Charles Vernon, 1929, The Geology of Henderson County, Kentucky, University of Cincinnati, "unpublished dissertation", 251p

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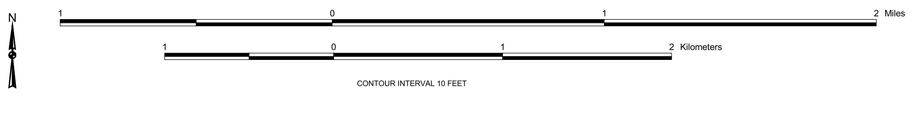
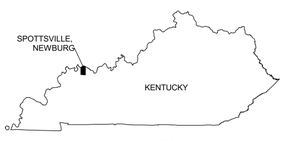
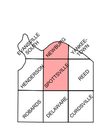
Universal Transverse Mecator projection, zone 16, North American Datum of 1927

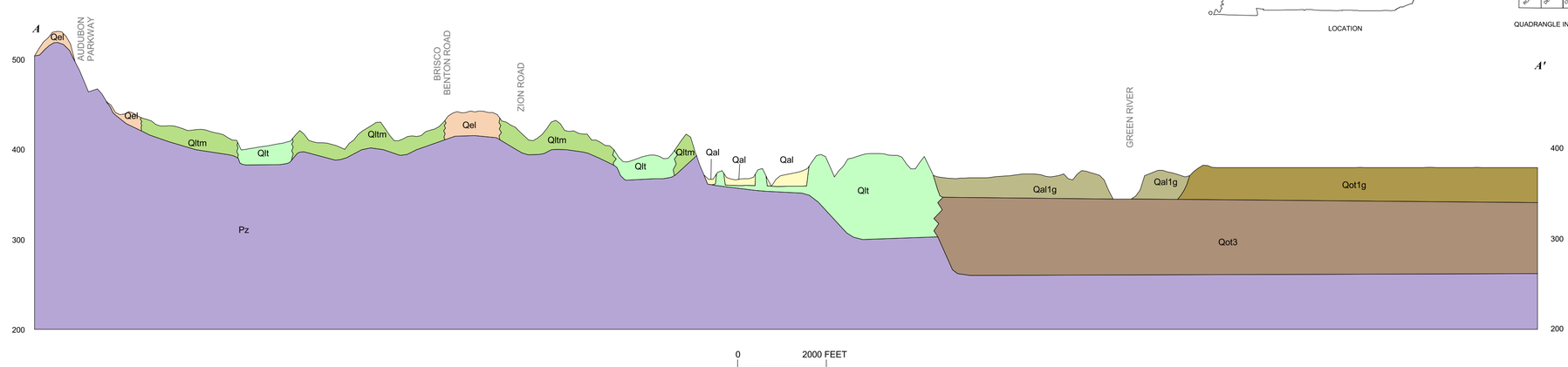
Topographic base from USGS Tagged Vector Contour file for Spottsville and Newburg quadrangles.

Highway locations from Kentucky Transportation Cabinet digital files.









QUATERNARY GEOLOGIC MAP OF THE SPOTTSVILLE QUADRANGLE AND PART OF THE NEWBURG QUADRANGLE, HENDERSON AND DAVIESS COUNTIES, WESTERN KENTUCKY

By Michael L. Murphy, Mark F. Thompson, and William M. Andrews Jr.

2006