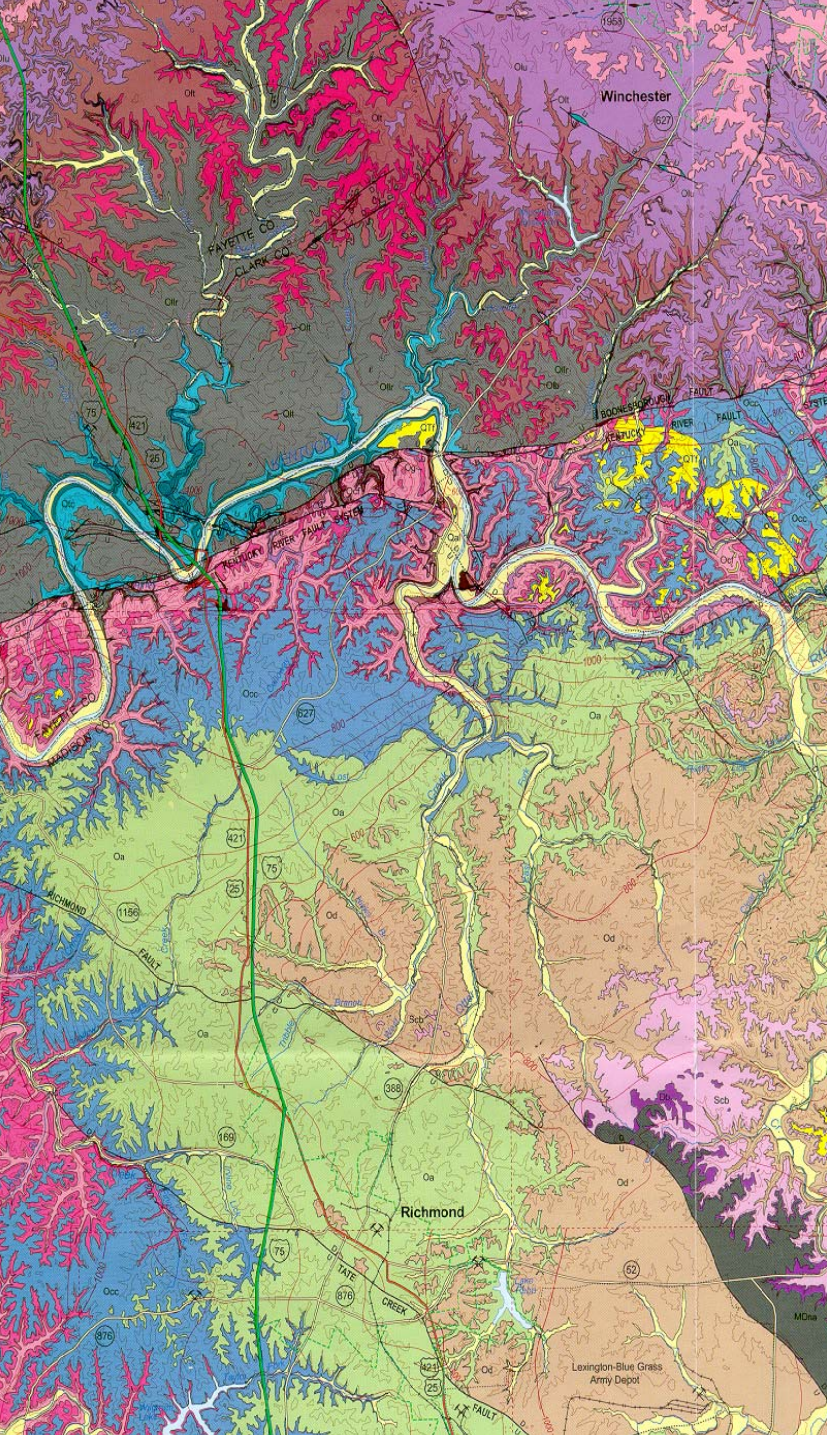
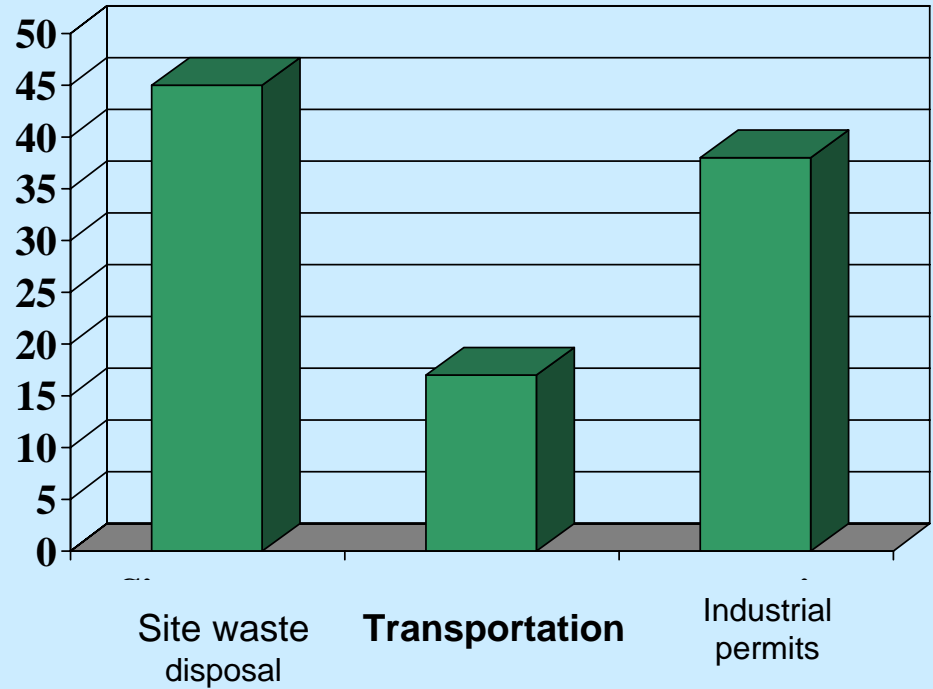


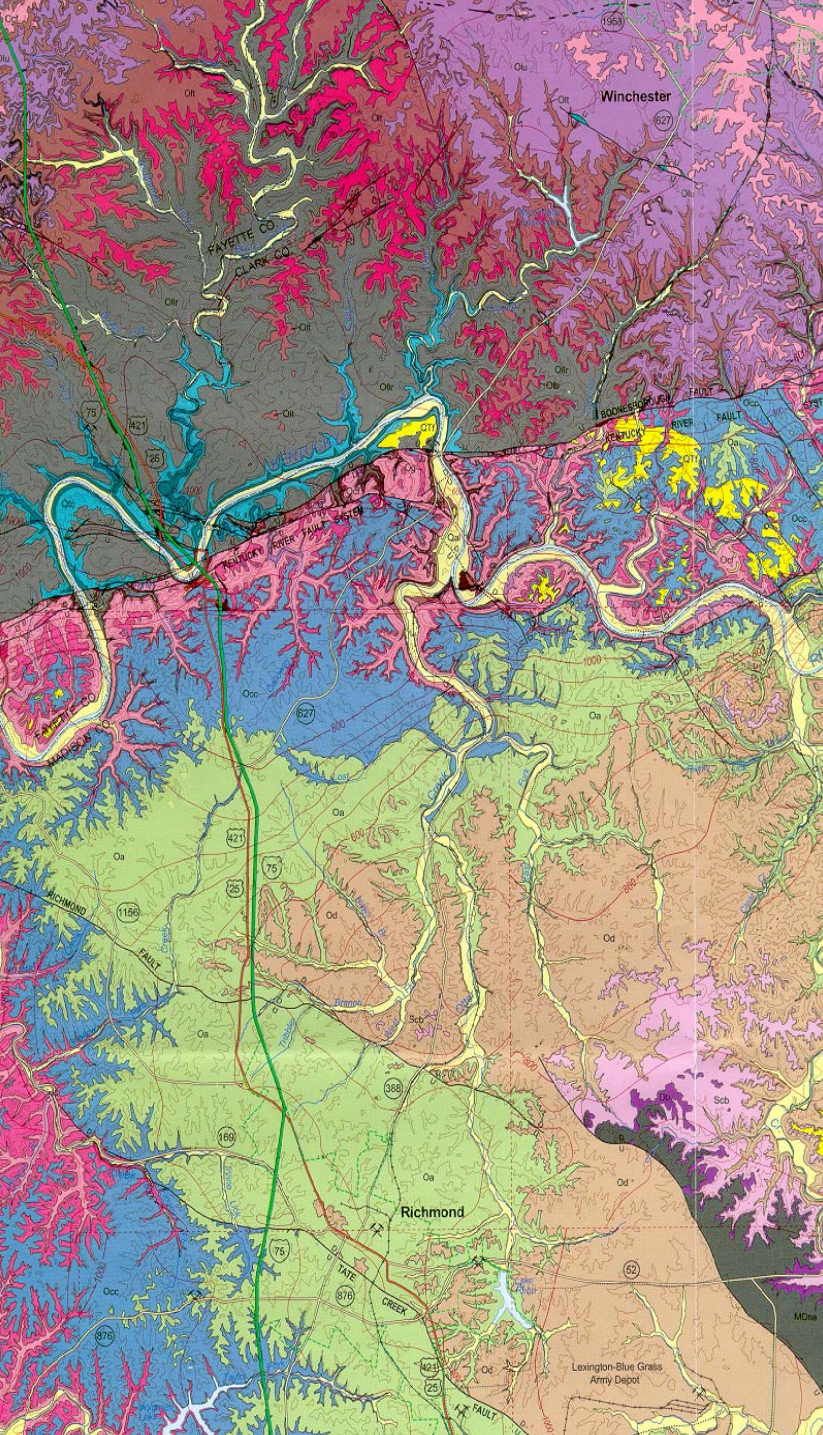
The Value of Geologic Maps for Transportation Planning in Kentucky



Map use in public planning

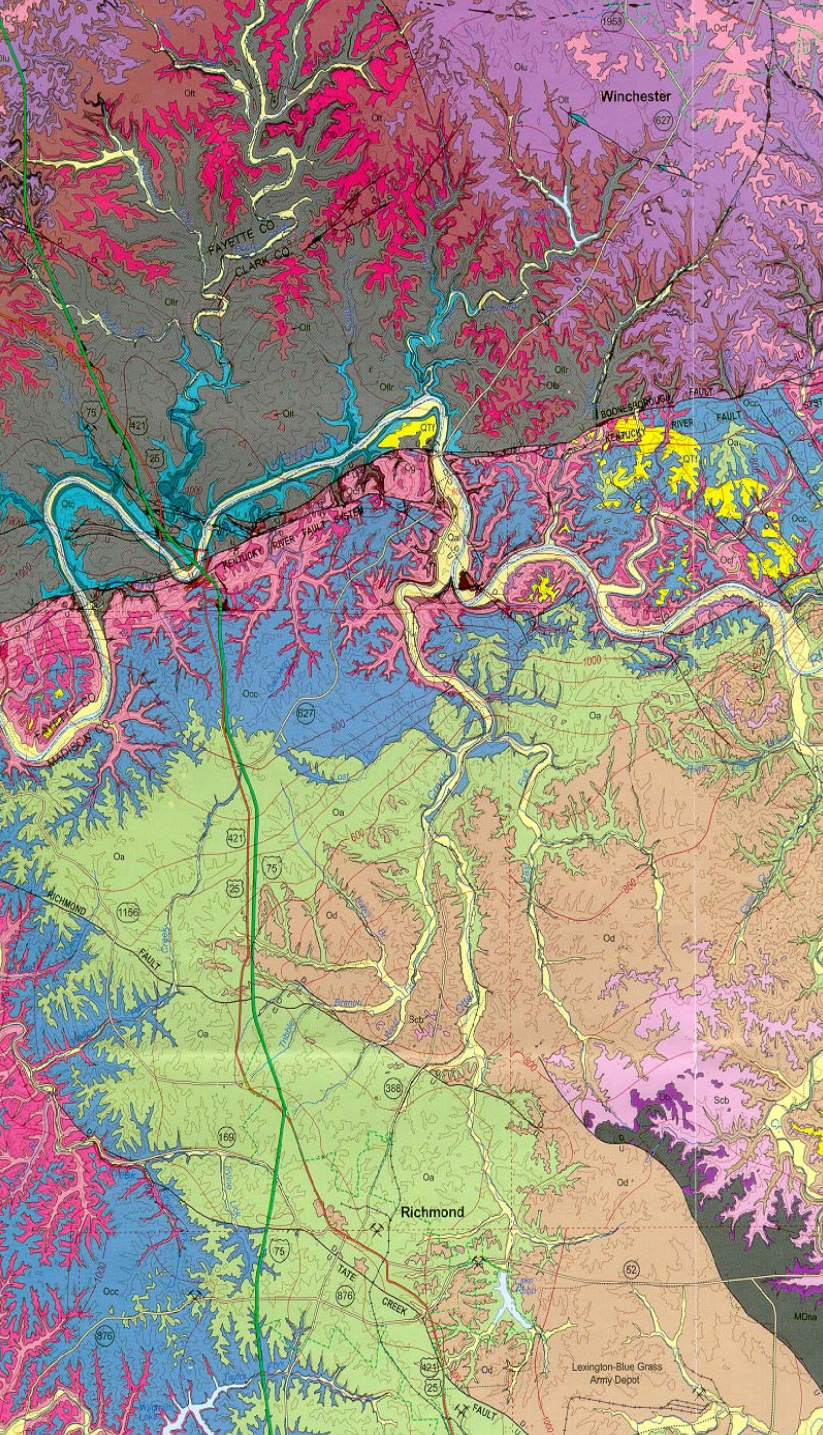
%





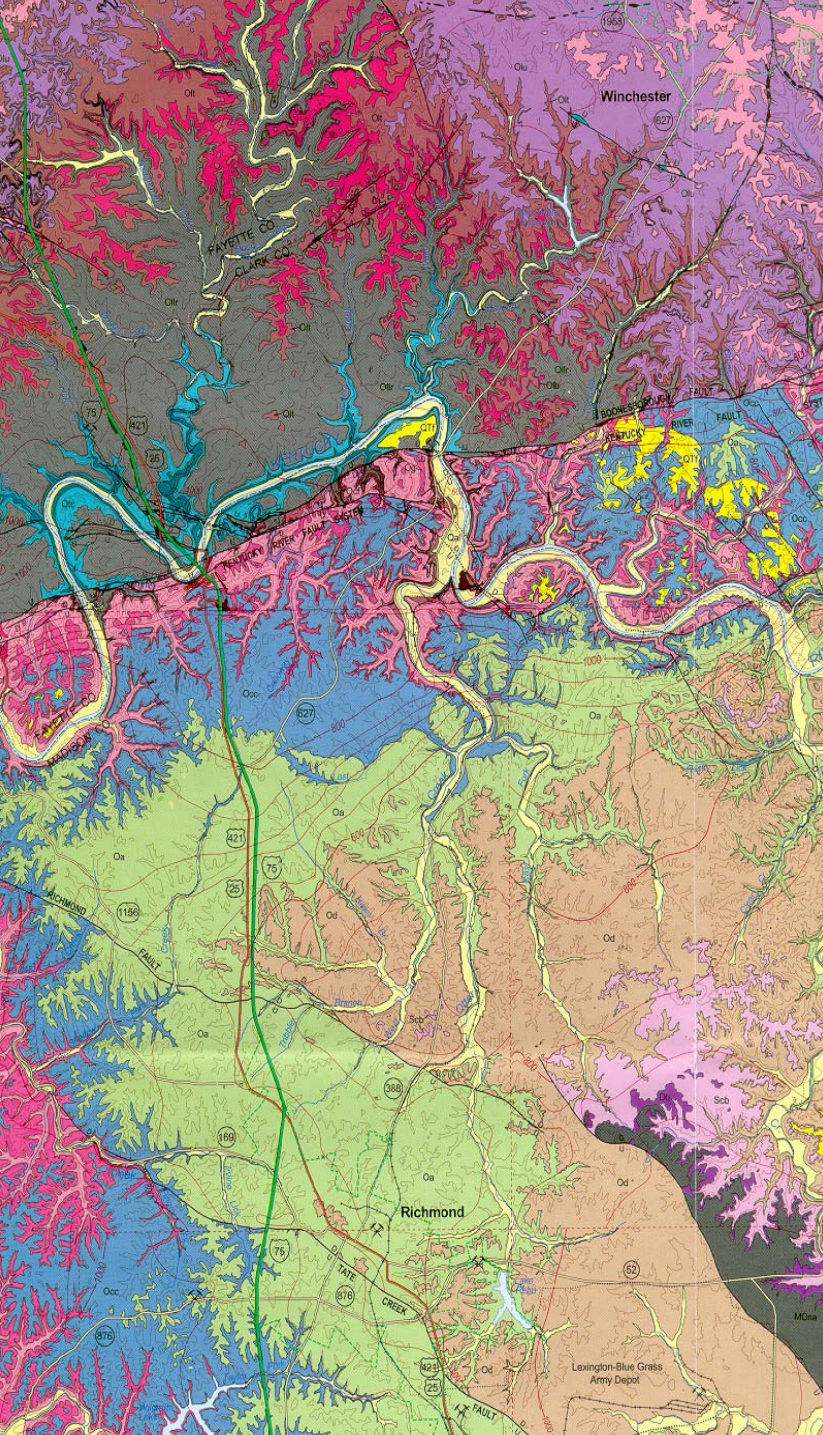
Value of Geologic Maps

- About 17% of project costs are spent on data in the absence of geologic maps.
- \$27,776 is the amount spent in the absence of a geologic map.
- \$43,527 is the average amount saved because of the existence of a geologic map.



Cost – 2007 \$

- **\$21 million in 1960 dollars or ~ \$145 million today**
- **~ \$3.5 million over 11 years of digital conversion (~\$5,000 per quad)**
- **~ \$50K for field mapping quads today**



Cost to Benefit Ratio

- Kentucky geologic maps cost \$21 million in 1960 dollars or \$90 million in 1999 dollars.

- Value \$2.3 to \$3.4 billion dollars (1999 dollars).

- Value is 25 to 39 times the cost.

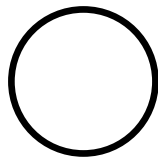
Still a bargain for a public investment



707 GQ maps make a spatial database

(1:24,000 scale)
Digitally Vectorized
Geologic Quadrangles
(DVGQ)

DVGQ
Series 12
© 2001
Kentucky
Geological
Survey



Dr. James C. Cobb
State Geologist
and Director

**FOR THE 100K MAP OF
Harrodsburg**



CADFILES



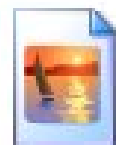
Nad27



Nad83



hazardsouth.htm
HTML Document
39 KB

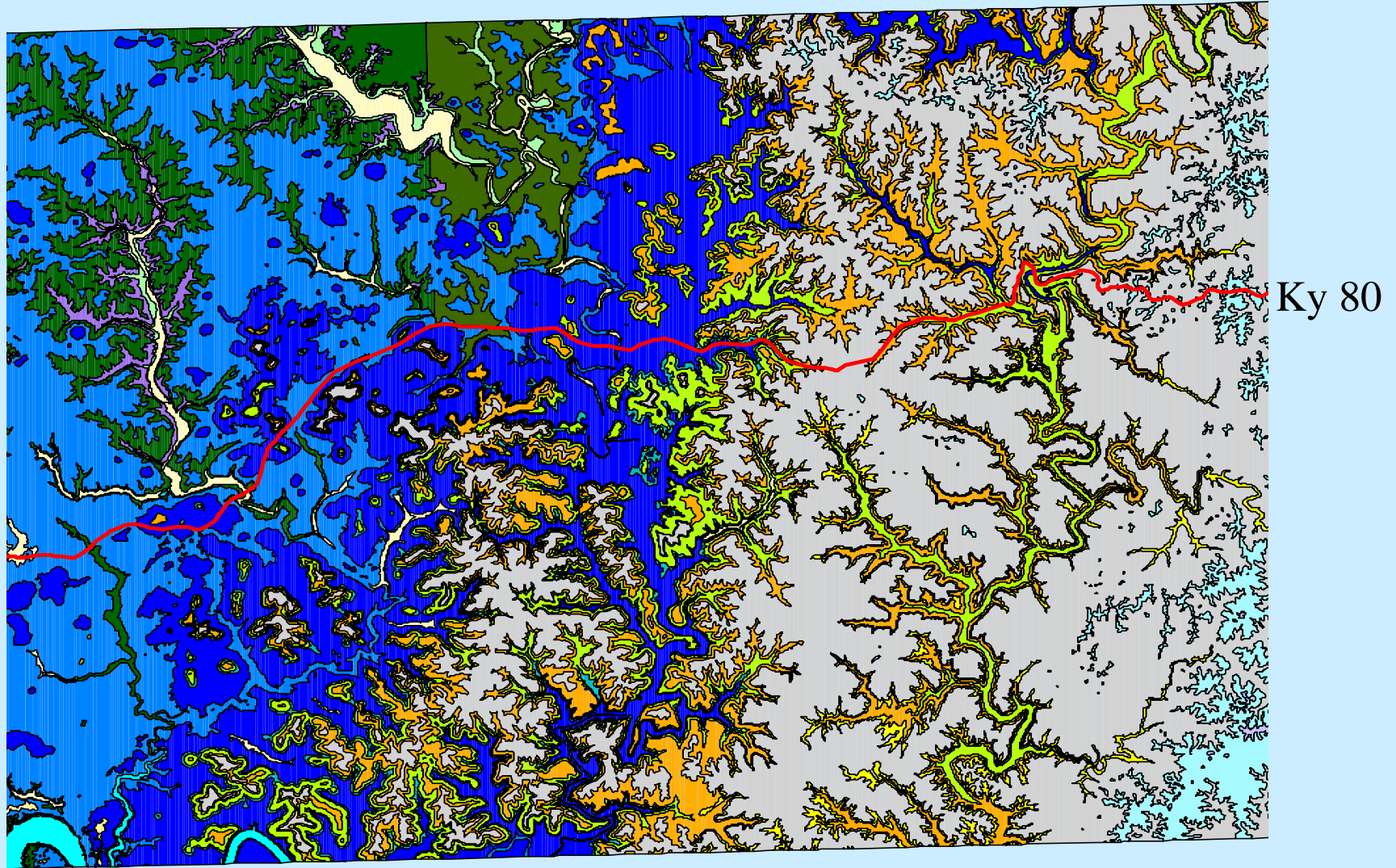


hazardsouth.jpg
1670 x 1670
JPEG Image



hazardsouth.xml
XML Document
28 KB

Somerset Area Geology

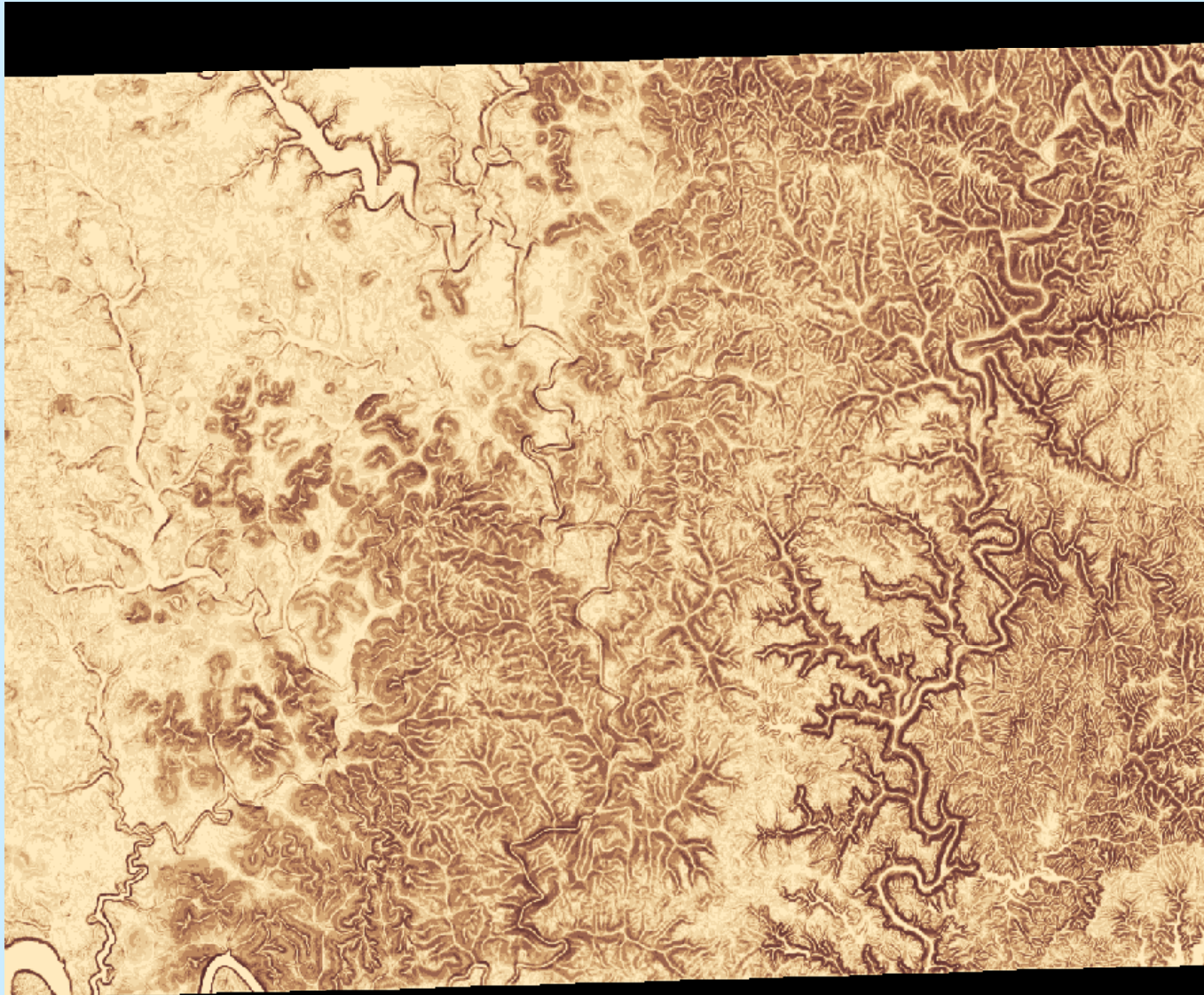


Mississippian

Pennsylvanian

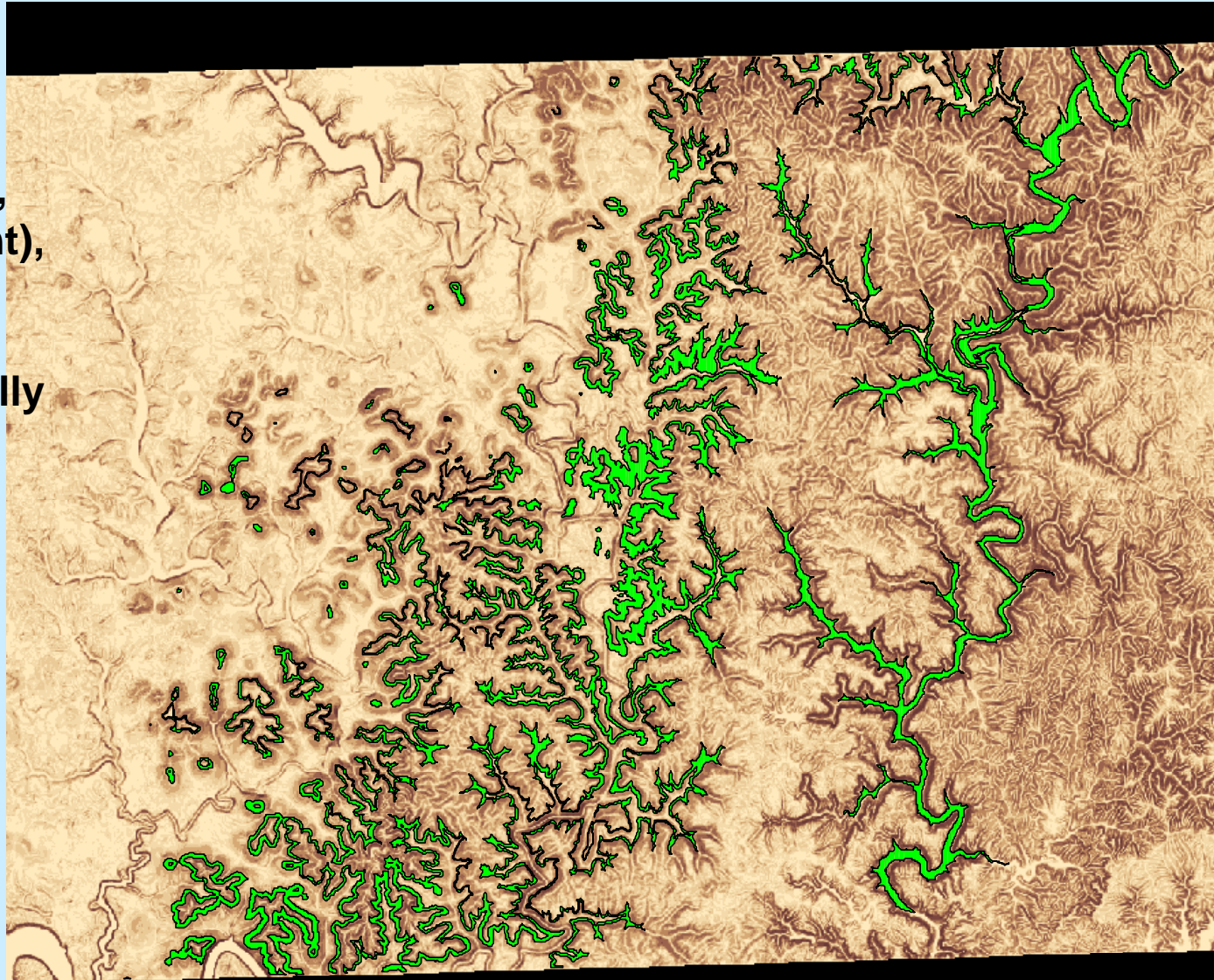


Surface Slope

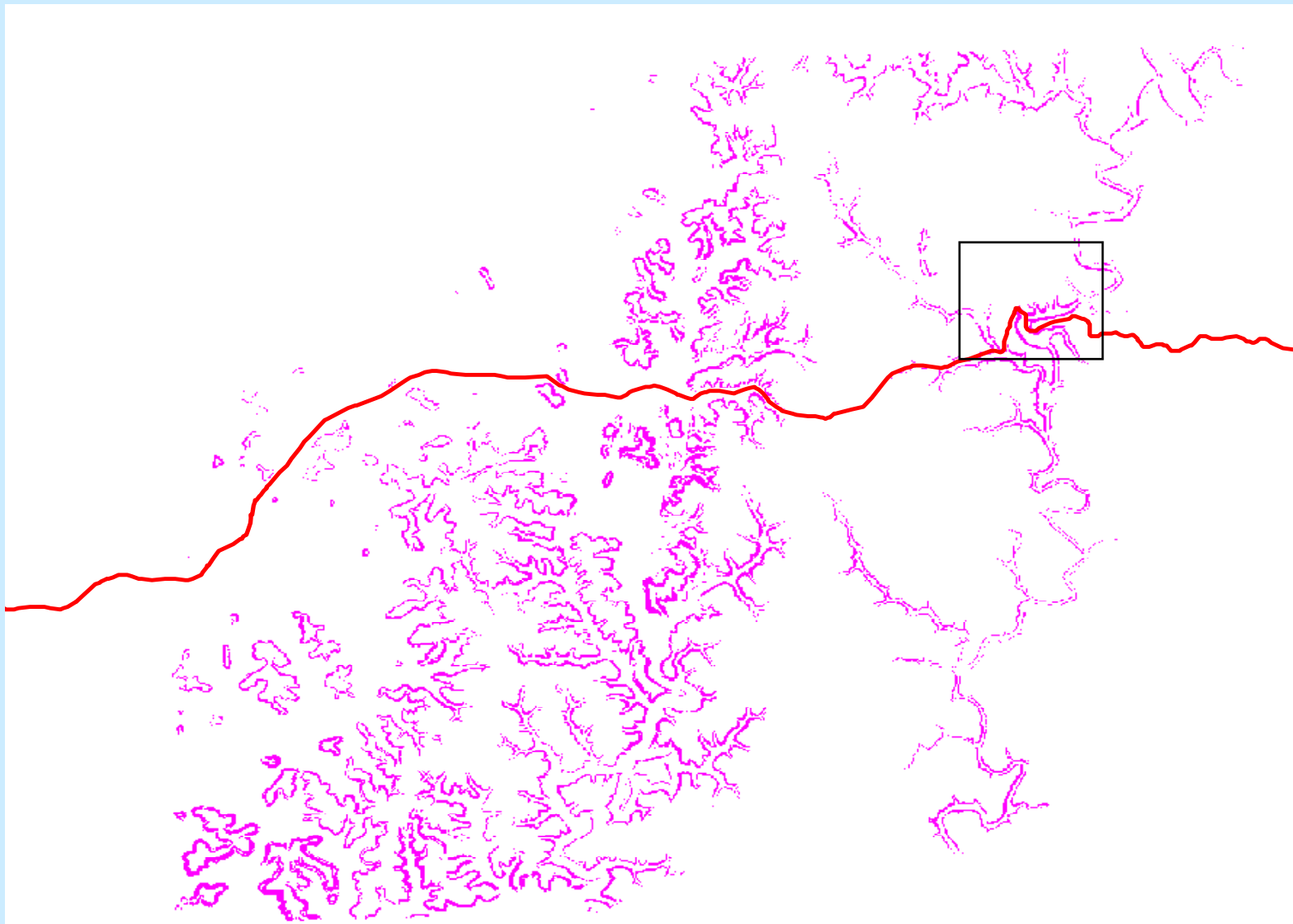


Paragon Formation

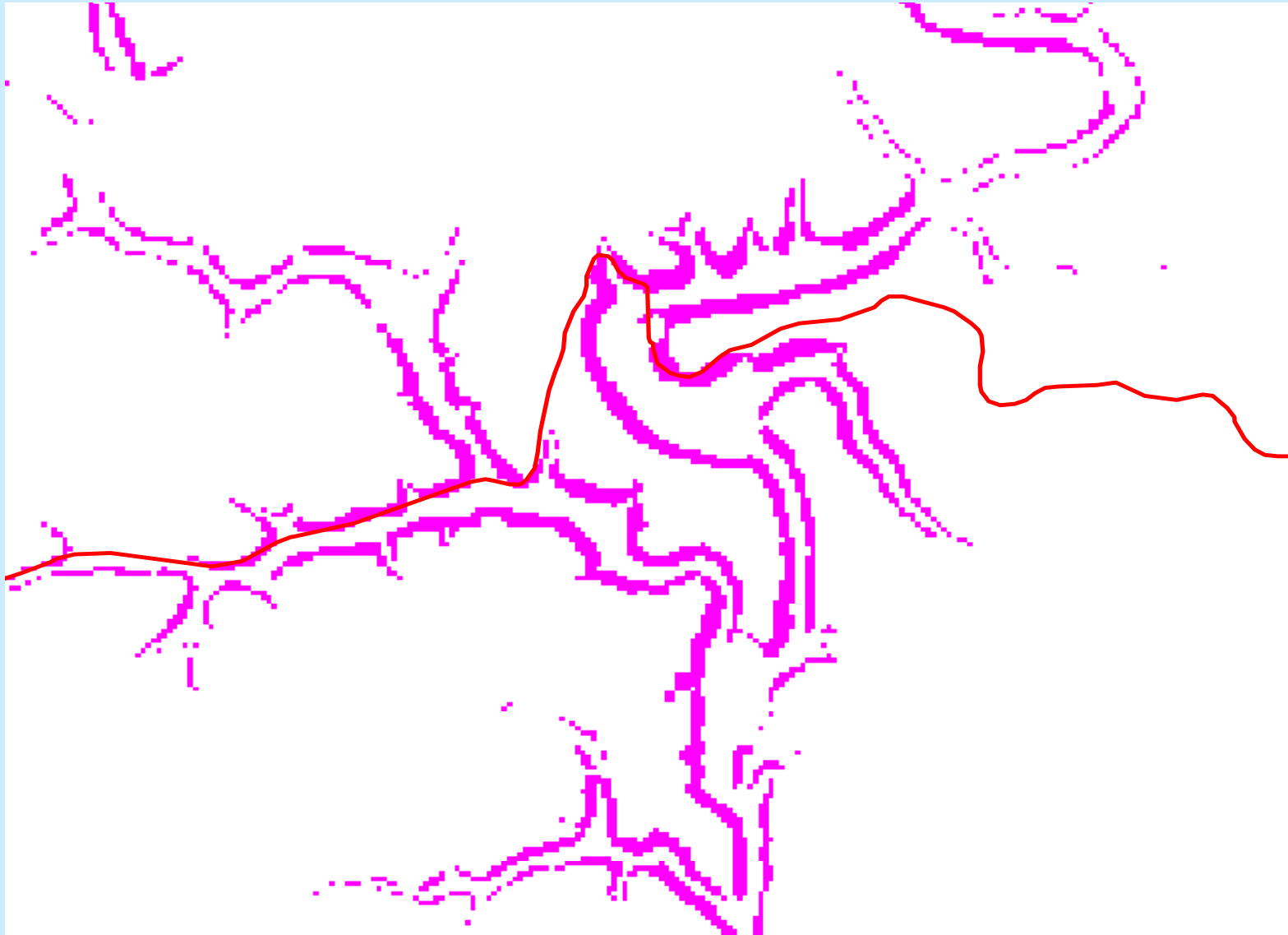
**Shale (80 percent),
siltstone (10 percent),
sandstone (10 percent),
and minor dolomite:
Shale, olive-gray to
yellowish-green, locally
medium-green to red.**




Paragon with slope > 30%



Predicted High Maintenance



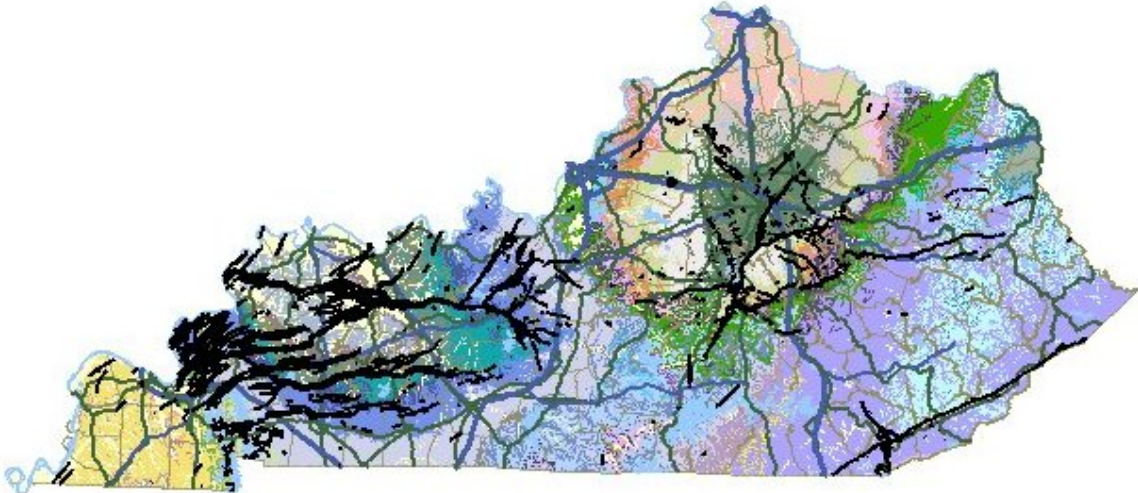
KGS Online Geologic Map and Information Service



Kentucky Geologic Map Information Service
Kentucky Geological Survey

Note: please disable popup blocking software for full functionality.

KGS Home > [Maps, Pubs., & Data](#) > Geologic Map Service



500K geologic map data
Kentucky Geological Survey, 11/7/2006

[Map Legend](#) [Map Layers](#) [Geologic Information](#)










Select a Map Layout:
[Standard Geologic Map](#)
[Original GQ Map Image](#) | [about](#)
[Dominant Lithology Map](#) | [about](#)
[Karst Potential Map](#) | [about](#)
[Petroleum Geology Map](#) | [about](#)
[Coal Information Map](#) | [about](#)

Bookmark Map:

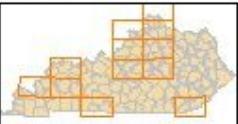
- Customize Map:


- dimmed layers are invisible at current scale:
[more info](#)

- Geology:


- 1:500K Scale Geology (general geology) 
- 1:500K Geology Labels 
- Structure contours 
- Geologic Contacts (1:500K Scale) 
- Outcrop Traces 
- Coal Beds 
- Formal Beds 
- Non-Coal Beds 
- Faults 

Scale = 1:4,336,427



Map Scale:
choose a map scale 


Enter a Custom Map Scale:



zoom to a location

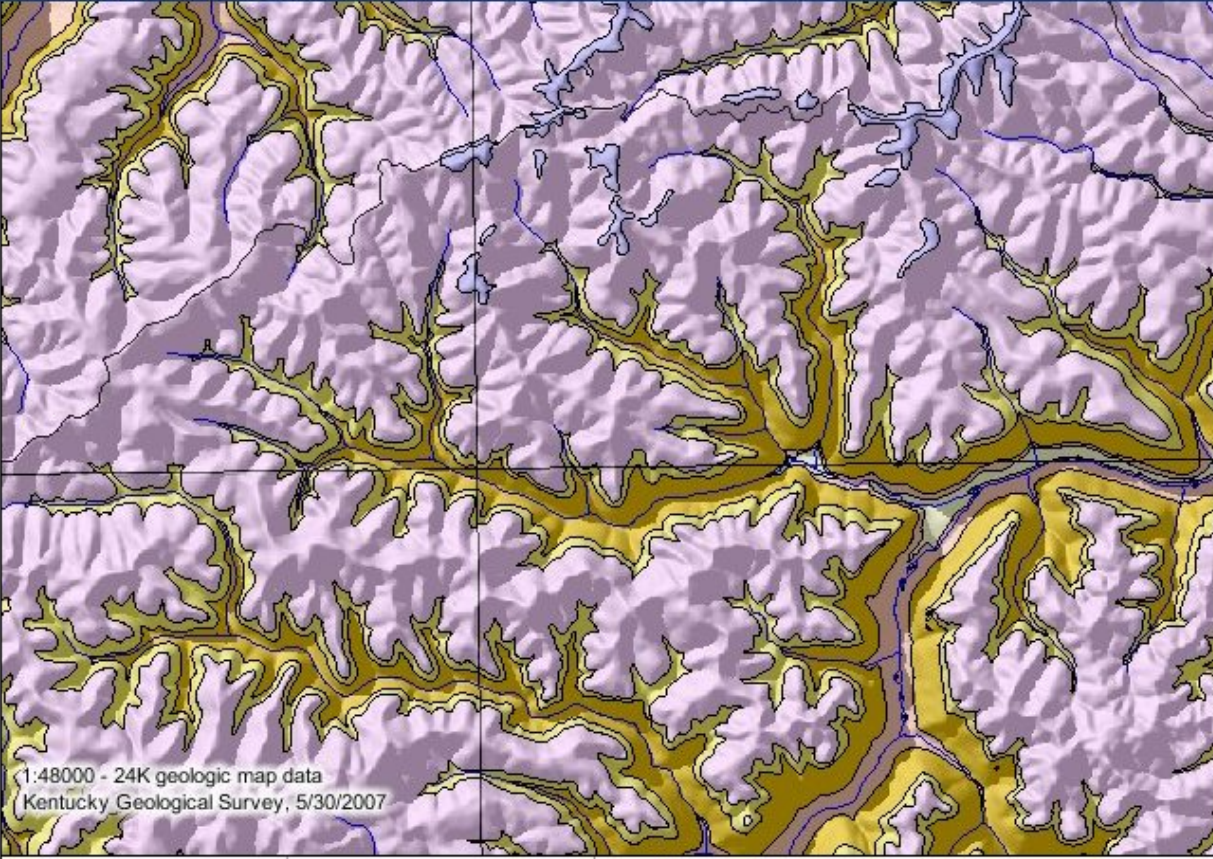
- [General information about this service](#)
- [Geologic maps and geologic issues in Kentucky: a citizen's guide \(pdf - 25 MB\)](#)
- [Geologic maps and geologic issues in Kentucky: a citizen's guide \(djvu - 2 MB\)](#)

Traditional Map Layout

 **Kentucky Geologic Map Information Service**
Kentucky Geological Survey

Note: please disable popup blocking software for full functionality.

[KGS Home](#) > [Maps, Pubs, & Data](#) > [Geologic Map Service](#)



1:48000 - 24K geologic map data
Kentucky Geological Survey, 5/30/2007

Pg	Grundy Formation (Lower Pennsylvanian - Middle Pennsylvanian)
Plc	Corbin Sandstone Member of Lee Form. (Lower Pennsylvanian - Middle Pennsylvanian)
Plr	Rockcastle Conglomerate (Lower Pennsylvanian - Middle Pennsylvanian)
Pac	Alvy Creek Formation (Lower Pennsylvanian - Middle Pennsylvanian)
Mpn	Paragon Formation (Upper Mississippian - Upper Mississippian)
Mbha	Bangor Limestone and Hartselle Formati (Upper Mississippian - Upper Mississippian)
Mba	Bangor Limestone (Upper Mississippian - Upper Mississippian)
Mha	Hartselle Formation (Upper Mississippian - Upper Mississippian)
Mmk	Kidder Limestone Member (Upper Mississippian - Upper Mississippian)
Mmg	Ste. Genevieve Limestone Member of M (Upper Mississippian - Upper Mississippian)

Symbols:

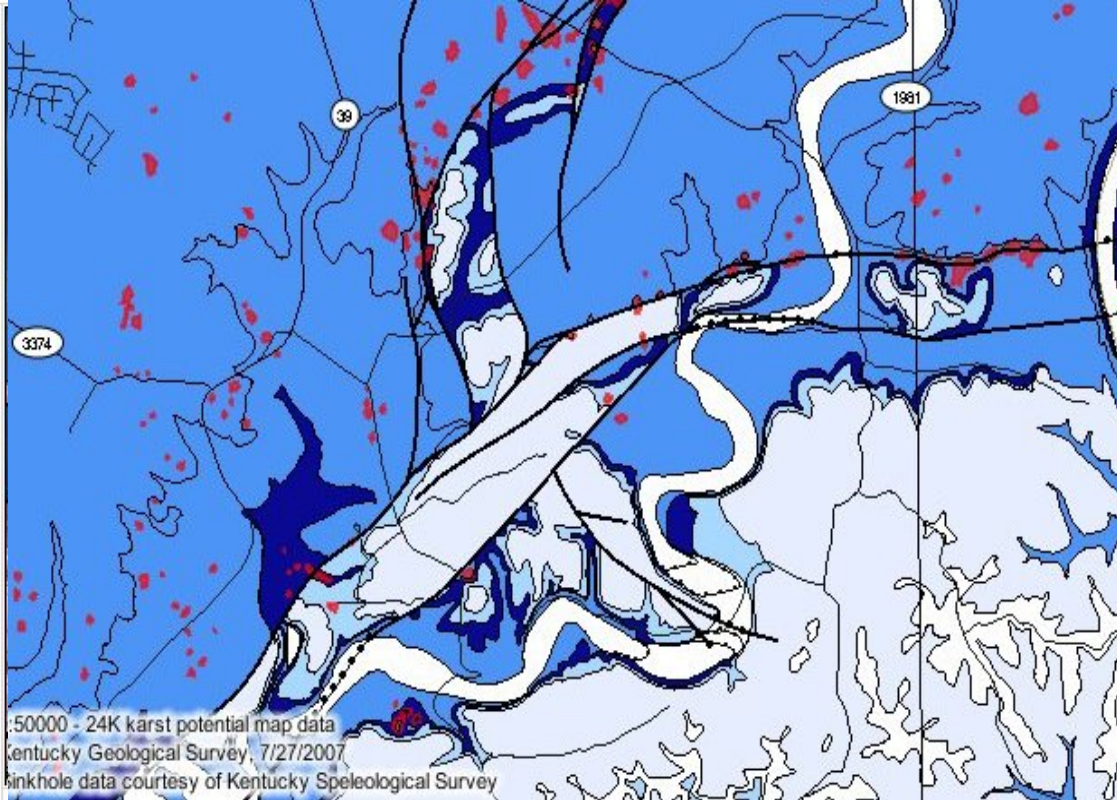
- contacts / structural features:

- geologic contact
- contact - concealed
- contact - secondary

Customized Map Layout

Kentucky Geological Survey
Geologic Information Service (beta)

Note: please disable popup blocking software for full functionality.



50000 - 24K karst potential map data
Kentucky Geological Survey, 7/27/2007
Sinkhole data courtesy of Kentucky Speleological Survey

Current Scale = 1:24,000

Map Scale:
[choose a map scale]






Map Size:
[half page (650 x 450)]



Predefined

[Map Legend](#) [Map Layers](#) [Geologic Information](#)

Karst Potential Units:

-  very high
-  high
-  medium
-  low
-  non-karst

Customize Map:
Layers for 1:24,000 scale data (detailed geology)
• dimmed layers are invisible at current scale ([more info](#))

- **Geology:**
 - 24K Geology
 - Structure contours
 - Contacts
 - Beds
 - Faults
 - 24K Geology Labels
- **Point overlays:**
 - Water Wells/Springs
 - Oil & Gas Wells
- + **Derivative maps**
- **Economic areas:**
 - Non coal quarries and pits
- **Hazards:**
 - Sinkhole outlines
- + **Water**
- **Basemaps:**

User-defined



Other mapping tools



Id features with selected area

Display photo for location

Measure distance tool

Show coordinates at a point

Clear measuring and id points

Query visible map features

Clear highlighted features

Download georeferenced map image

Print map

**Kentucky Geological Survey
Geologic Map Service**

Geologic and feature descriptions for visible themes

Note: Economic descriptions in this report are historic in nature and may not reflect current

- [Print This Page](#)
- [Detailed Info About This Well \(Casing & Lithologic\) - Microsoft Internet Explorer](#)

Descri
Geolog
•



**Detailed Info About This Well (Casing & Lithologic)
Kentucky Groundwater Data Repository**

Olu

AKGWA #: 00021488
KGS ID: 20843
PWSID:

Quadrangle: Little Hickman
County: Jessamine

Latitude, Longitude (dms): 37° 49' 18", -84° 30' 51"
Latitude, Longitude (dec degree): 37.821944, -84.514444

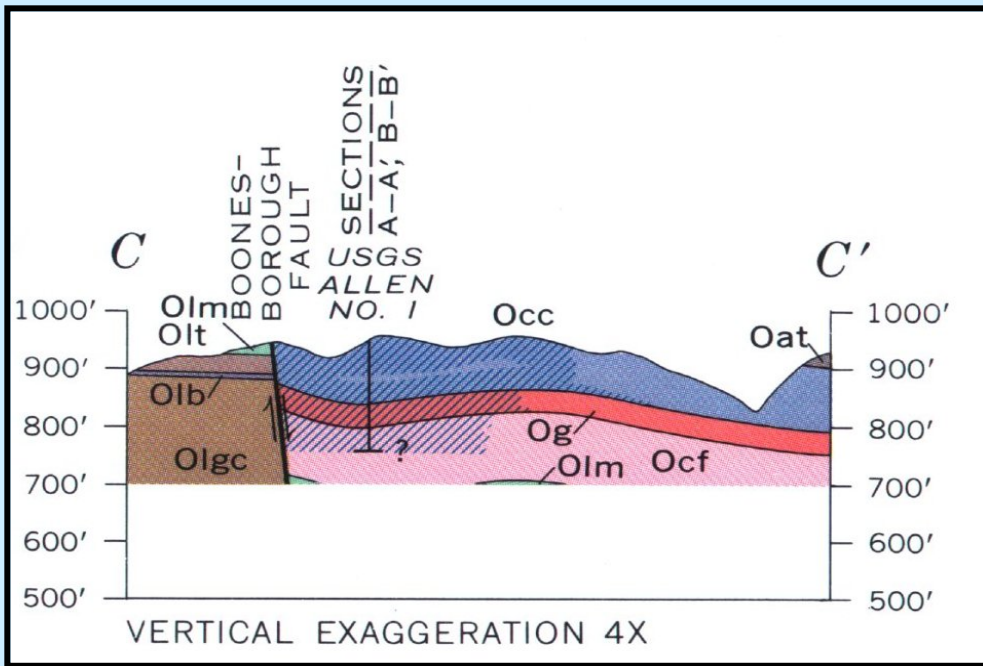
Agency: Kentucky Division of Water
Surface Elev (ft): 750
Total Depth (ft): 120
Depth To Bedrock (ft): 4
Static Water Level (ft):
Primary Use: Unknown
Owner Information: MIKE ESTEPP

[Download this report into a semicolon-delimited text file](#)

[Print this page](#) (for best results, use LANDSCAPE orientation)

Water Well Lithology Report					
Litho From (ft)	Litho To (ft)	Thickness (ft)	Lithologic Description	Water Description	Flow Quantity
0	4	4	SURFACE		0
4	120	116	GRAY LIMESTONE/SHALE		0

Water Well Casing Report						
Casing Start Date	Depth Cased From (ft)	Depth Cased To (ft)	Casing Length (ft)	Hole Inside Diameter (in)	Casing Inside Diameter (in)	Casing Type
8/6/1993	0	20	20	8.75	6.25	PVC
8/6/1993	20	120	100	6		OPEN HOLE



Ky.Transportation Cabinet

- Catalog about 6000 historical geotechnical reports
- Make them accessible from the Web
- Document the locations of projects
- Relate projects to geologic context



Search Results Page

Kentucky Transportation Cabinet Geotechnical Report Database

Search Result

Sort Result by and then by

Kentucky Transportation Cabinet Geotechnical Report Database

Report Summary

Report Name	S-030-2005
Item Number	08-0159.00
Company Name	Kentucky Transportation Cabinet
County Name	Adair
Project Type	Culvert
Project Phase	Design
Route Label	KY-55B
MapareaId	KYTC077
Title	Culvert report for Year 2005 on KY-55B in Adair County
Brief Description	Adair Co. - 10' X 5' RCBC @ KY 767 Sta. 46+27
Link to Report File	S-030-2005.pdf
Verified	Yes

Back to [Search Result](#)

Summary	Year		
Summary	1993	View Geologic Map	View Basemap
Summary	1987	View Geologic Map	View Basemap
Summary	1987	View Geologic Map	View Basemap
Summary	1987	View Geologic Map	View Basemap
Summary	1983	View Geologic Map	View Basemap
Summary	1983	View Geologic Map	View Basemap
Summary	1982	View Geologic Map	View Basemap
Summary	1977	View Geologic Map	View Basemap
Summary	1976	View Geologic Map	View Basemap

und

ge

View project extent on a map

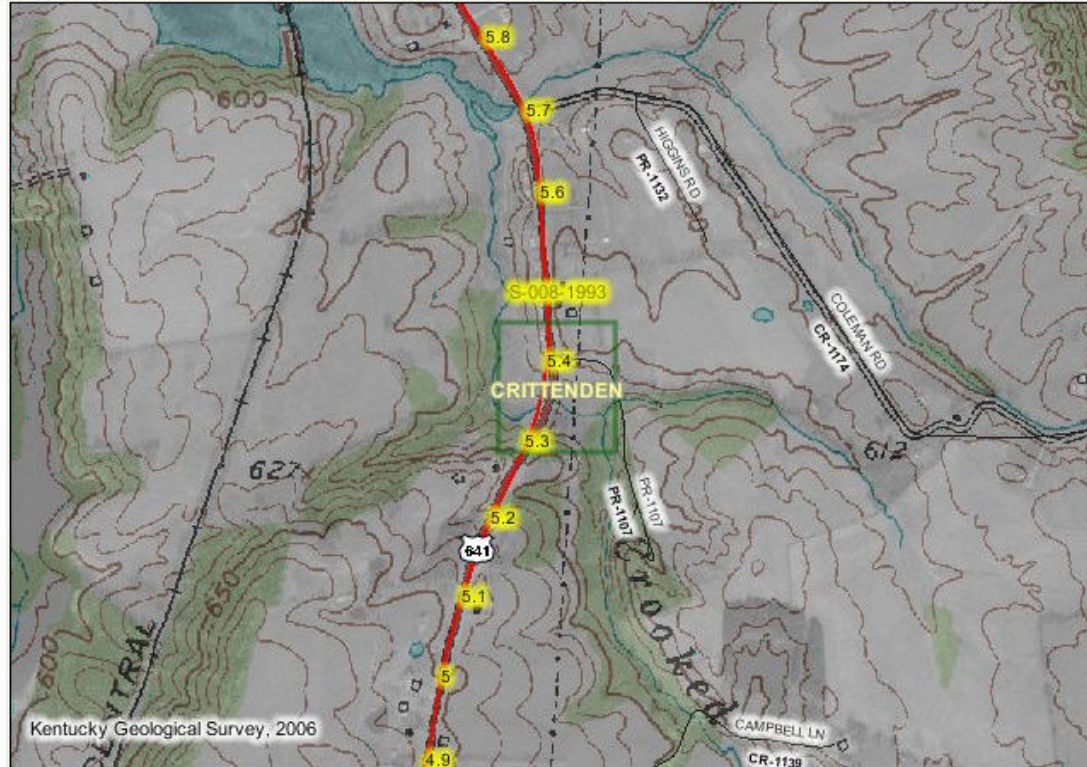
7 - 2006 by Kentucky Transportation Cabinet.
ions and comments.
6, 2006 .



Basemap and zoom with Project Area

Kentucky Geological Survey Find Location Service

Note: please disable popup blocking software for full functionality.



[Map Legend](#) [Map Layers](#) [Area Search](#)

Customize Map:

- dimmed layers are invisible at current scale

- Point overlays:

- Water Wells/Springs
- Oil & Gas Wells
- KYTC Holes
- Outcrop Points
- Photo Locations

- Geology:

- Non coal quarries and pits
- Outcrop Traces

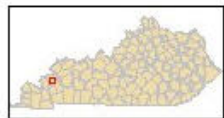
- Hazards:

- Sinkhole outlines

- Basemaps:

- Rivers and Streams
- Wild Rivers
- Lakes/Reservoirs
- Road Milepoints
- Local Roads
- Local Road Label
- State Roads
- US Highway

Current Scale = 1:12,545



Map Scale:

choose a map scale

Map Size:

half page (6.8 x 4.7 in)



Draw and zoom to a circle on the map:

Select a radius (miles or feet): .05 mile

Use the circle draw tool (on the left-hand toolbar), to place a point on the map and draw a circle for this selected radius.

View Data and Maps for the Same Extent

Use the links below to open a map or data service to the map extent above:

- Data searches yield tabular results, and on large areas may yield slow response times (and timeout errors)
- [Descriptions of the services below](#)

Basemaps:

- [Kentucky Basemap](#)
- [Kentucky Simple Basemap](#)
- [National Map Viewer \(USGS\)](#)
- [Kentucky's Incorporated Cities \(DGI\)](#)

Geology:

- [KGS Publications \(tabular\)](#)
- [KY Geologic Map Information Service \(KGS\)](#)
- [Core & Sample Holdings Map \(KGS\)](#)

Energy:

- *non-mining energy related information*
- [Coal Information Map \(KGS\)](#)
- [Coal Borehole Data \(KGS-tabular\)](#)
- [Coal Quality Data \(KGS-tabular\)](#)
- [Coal Thickness Data \(KGS-tabular\)](#)
- [Oil & Gas Wells Map \(KGS\)](#)
- [Oil & Gas Well Data \(KGS-tabular\)](#)

Mining:

- [Active Coal Mines \(KMMI\)](#)
- [All Historical Coal Mines \(KMMI\)](#)
- [Surface Mining Information \(KDHR-DSMRE\)](#)

Water:

- [Water Wells and Springs Map \(KGS\)](#)
- [KY Groundwater Data Repository Map and Data \(KGS\)](#)
- [Water Well Data \(KGS-tabular\)](#)
- [Springs Data \(KGS-tabular\)](#)
- [Hydrology of Kentucky \(USGS\)](#)
- [KY e-Clearinghouse Mapping Portal -- \(reg. req.\) \(WRIS\)](#)
- [KY Proposed Water Infrastructure Projects \(WRIS\)](#)
- [Kentucky's Water Infrastructure -- \(reg. req.\) \(WRIS\)](#)
- [Water Management Planning \(WRIS\)](#)
- [Wastewater Mapping Portal \(WRIS\)](#)
- [Watershed Viewer \(KDHR\)](#)
- [Surface Mine Water Monitoring Data \(KDHR-DSMRE\)](#)

Transportation:

- [Active Six Year Plan Projects \(KYTC\)](#)
- [HIS Interactive Planning Map \(KYTC\)](#)
- [Geotechnical reports \(tabular - KYTC\)](#)

Land-Use Planning:

- *services that are specifically directed towards land-use planning*
- [Land-Use Planning \(KGS\)](#)

Counties:

- *services that serve Kentucky counties (data may be limited to the specific county only)*
- [Barren County, Kentucky PVA \(DGI\)](#)
- [Boone County GIS \(BCPC\)](#)
- [Crittenden County, Kentucky PVA \(KDHR\)](#)
- [Lexington-Fayette County Basemap \(LFUCG\)](#)
- [Lexington-Fayette County Zoning \(LFUCG\)](#)
- [Pendleton County, Kentucky PVA \(DGI\)](#)
- [Wayne County, Kentucky PVA \(DGI\)](#)
- [Webster County, Kentucky PVA \(DGI\)](#)

Recreation:

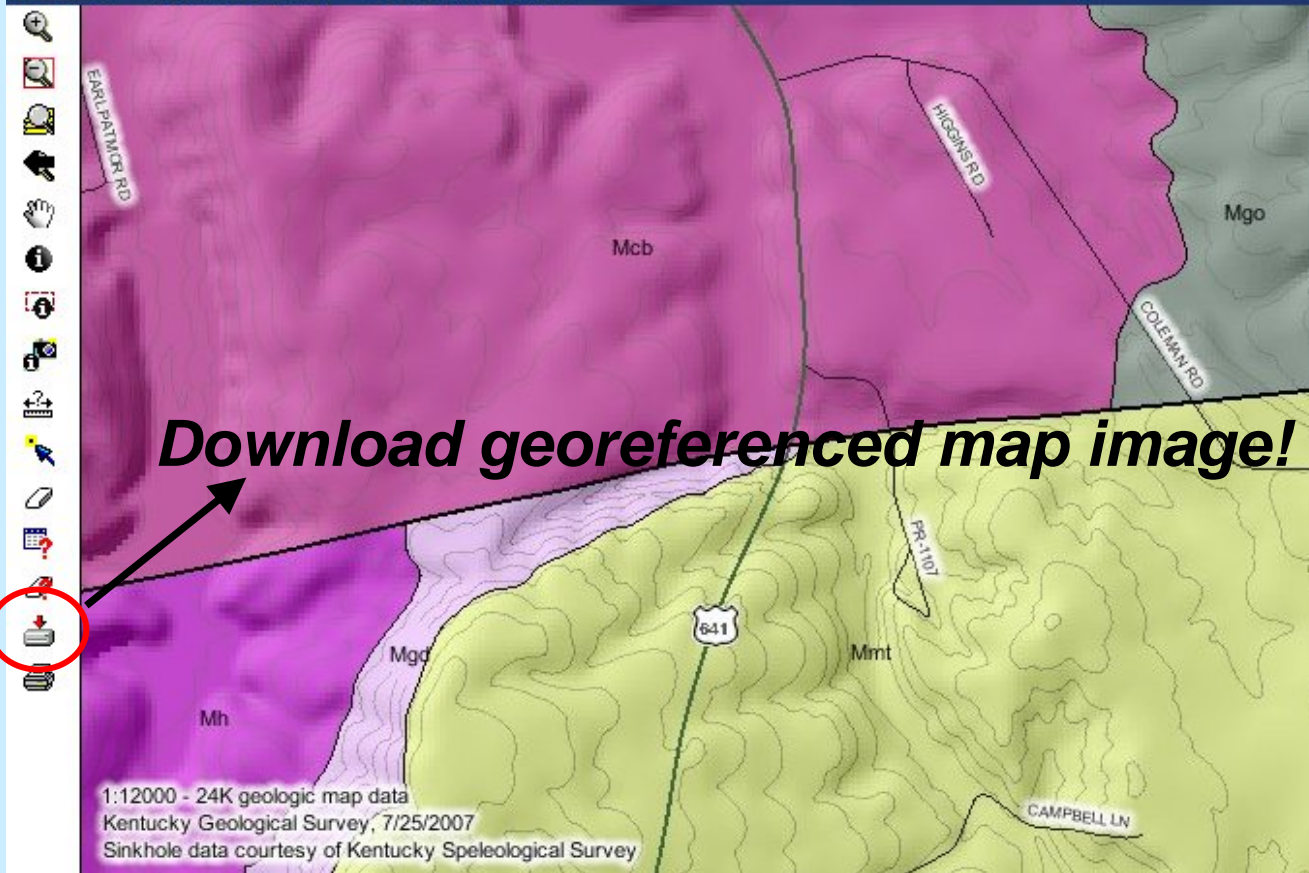
- [Hunting and Fishing Sites \(KYFWIS\)](#)
- [Kentucky's State Parks \(KYPARKS\)](#)
- [KY GAP Public Lands \(KYFWIS\)](#)

Geologic Map

Kentucky Geologic Map Information Service
Kentucky Geological Survey

Note: please disable popup blocking software for full functionality.

KGS Home > Maps, Pubs., & Data > Geologic Map Service



[Map Legend](#) [Map Layers](#) [Geologic Information](#)

Select a Map Layout:

- [Standard Geologic Map](#)
- [Original GQ Map Image](#) | about
- [Dominant Lithology Map](#) | about
- [Karst Potential Map](#) | about
- [Petroleum Geology Map](#) | about
- [Coal Information Map](#) | about

Bookmark Map:

[create a bookmark](#)

- Customize Map:

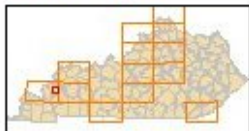
- dimmed layers are invisible at current scale:
[more info](#)

- Geology:

- 1:24K Scale Geology (detailed geology)
- 1:24K Geology Labels
- Structure contours
- Geologic Contacts (1:24K Scale)
- Outcrop Traces
- Coal Beds
- Formal Beds
- Non-Coal Beds
- Faults

1:12000 - 24K geologic map data
Kentucky Geological Survey, 7/25/2007
Sinkhole data courtesy of Kentucky Speleological Survey

Scale = 1:12,000



Map Scale:

choose a map scale

Enter a Custom Map Scale:

[zoom](#)

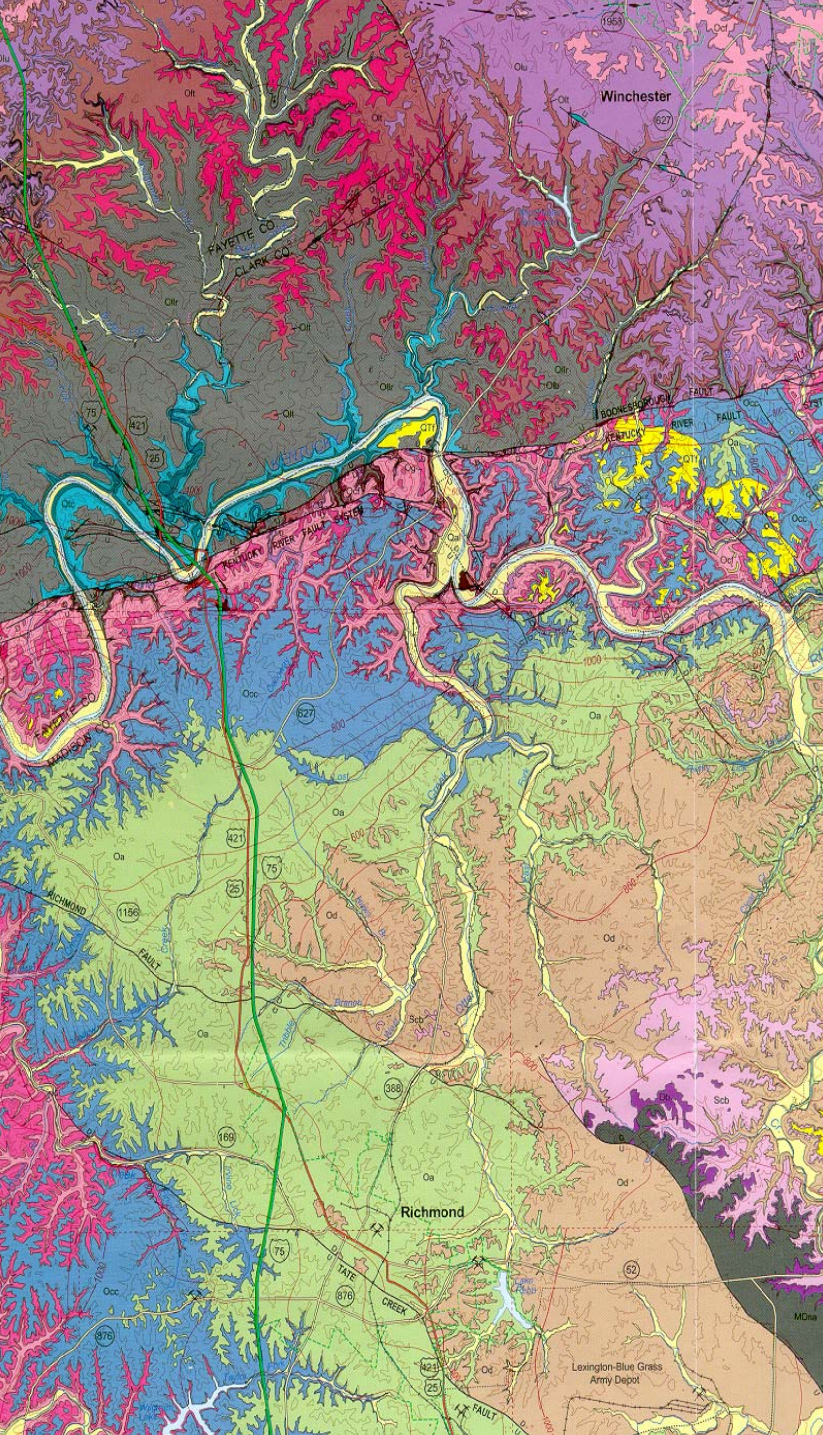
Map Size (width):



zoom to a location



- [General information about this service](#)
- [Geologic maps and geologic issues in Kentucky: a citizen's guide \(pdf - 25 MB\)](#)
- [Geologic maps and geologic issues in Kentucky: a citizen's guide \(divu - 2 MB\)](#)



Geologic Map Usage

- 150,000 original maps sold recovering some costs
- Online map service: 2,200 monthly users/hits
- So far in 2007: 13,000 users/hits

A detailed geological map of the Richmond, Kentucky area. The map shows various geological units in different colors: red/pink for older units, green for younger units, and brown for the most recent units. Major features include the Ohio River, the Kentucky River, and the Richmond Plateau. Labels include 'Winchester', 'FAYETTE CO.', 'CLARK CO.', 'Richmond', 'Lexington-Blue Grass Army Depot', and 'STATE FAULT'. Road numbers like 421, 75, 1198, 160, 876, 888, and 627 are also visible.

Thank you!

- **Kentucky Geological Survey – www.uky.edu/KGS**
- **KGS Geologic Map Service – <http://kgsmap.uky.edu/website/KGSGeology/viewer.asp>**