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2009

# Upper Cumberland River Basin in Kentucky

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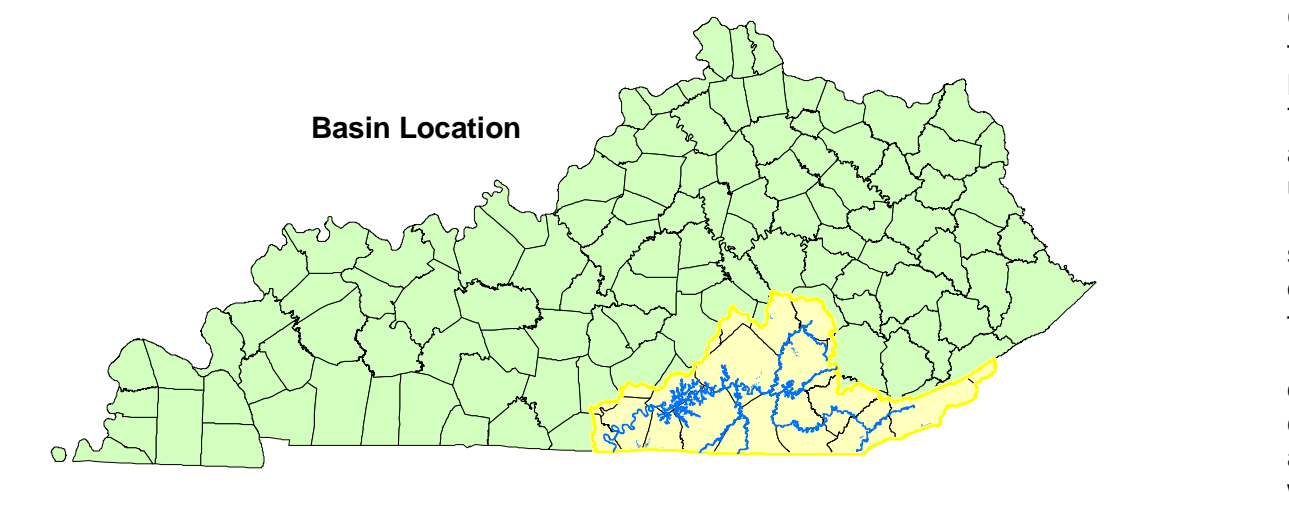
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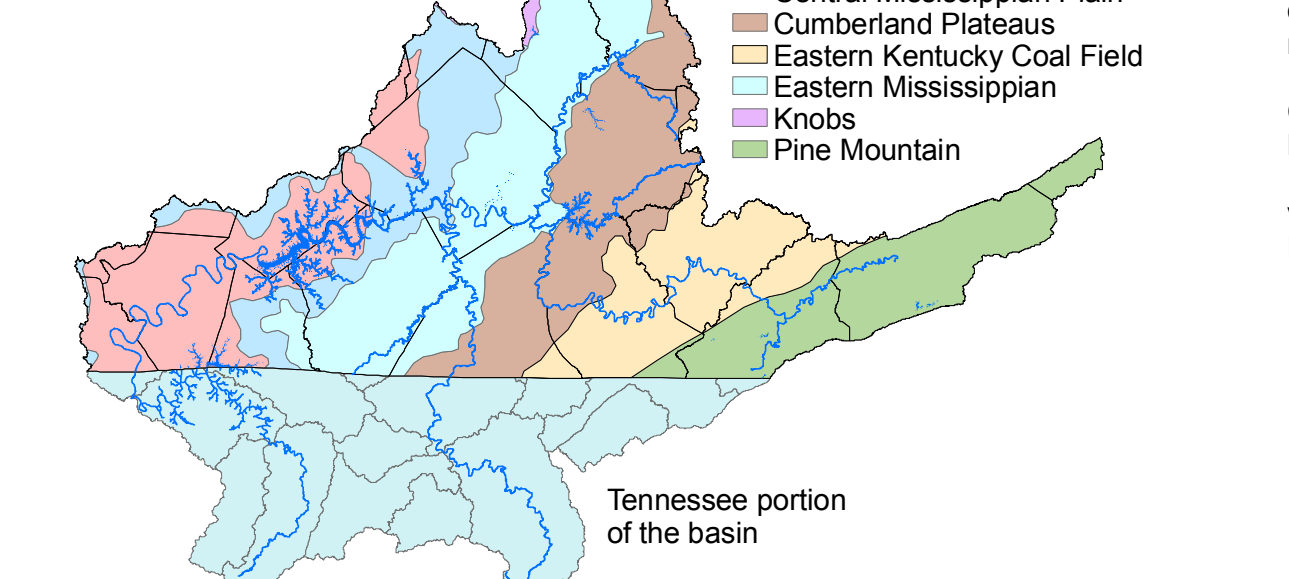
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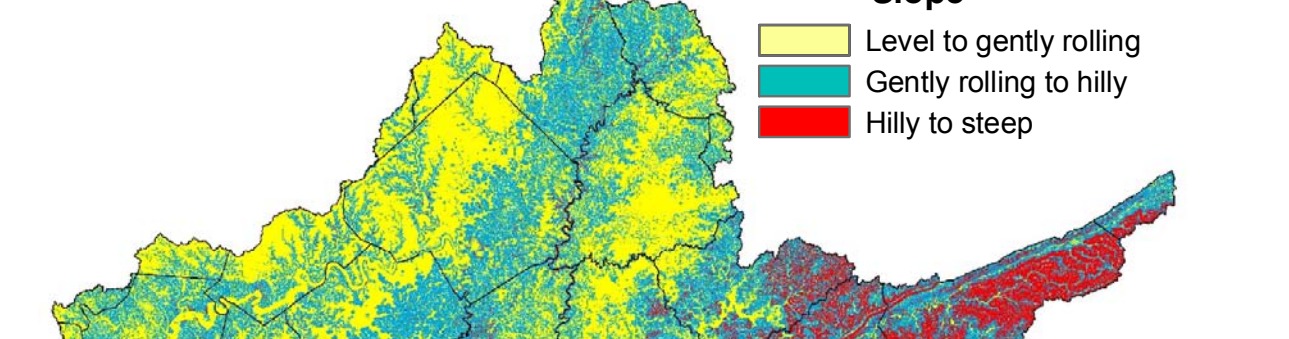
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### Upper Cumberland River Basin Physiographic Provinces



### Tennessee portion of the basin



### Eagle Falls



The 44-foot Eagle Falls in Cumberland Falls State Park can be seen at the Cumberland River from Trail 9. Photo by Donna Webb, Kentucky Geological Survey.

### Ky. 90 Bridge over the Cumberland River



A steel and concrete bridge faced with native sandstone from a McCreary County quarry carries Ky. 90 over the scenic Cumberland River at the McCreary-Whitley County line. The 460-foot-long bridge, just upstream of Cumberland Falls, was completed in 1954. Photo by Bethany Overfield, Kentucky Geological Survey.

### Cumberland River

The Cumberland River crosses Cumberland County from northeast to southwest in broad, sweeping, meandering loops and intervening large spur. It is one of the finest cool-water fishing streams in the eastern United States, with spring bass (40 pounds), brown trout (20 pounds), and rainbow trout. Spring droughts and hot weather can bring reduced flow and warmer water that threatens the fish, as in the drought of 2007 seen here. Managed releases from the upstream Lake Cumberland Dam mitigate the impacts.

### Public Water Withdrawals

Table with columns: Location, PWSID, Owner, Source. Lists various water withdrawal locations and their details.

Data from the Kentucky Infrastructure Authority (2008) Public Water System Identification Number.

Residents of Kentucky draw about 38 million gallons of water per day from streams and reservoirs in the basin. On average, about 6,300 million gallons per day (mgd) flow out of the basin, but about once every 10 years, only 55 mgd will flow for a week. This variability in flow affects water users and support designated uses for warm-water aquatic habitat, fish consumption, primary contact recreation, or secondary contact recreation. Not all streams have been assessed. The percentage of assessed streams not supporting uses was: warm-water aquatic habitat (57%), fish consumption (2%), primary contact recreation (65%), secondary contact recreation (50%). Nearly 400 miles of streams have been declared special use waters: either exceptional waters or reference reach waters.

There are six remediation priority watersheds including 370 square miles: primary impacts are nutrients, pathogens, siltation, habitat alteration, low dissolve oxygen, turbidity, and pH caused by construction and development, silviculture, mining, and agriculture. There are 11 large man-made lakes in the basin, ranging from the 40-acre Chenoa Lake to the 50,000-acre Lake Cumberland, one of the largest east of the Mississippi River. There are nearly 800 square miles of public land in the basin, with scenic vistas, trails, wild rivers, and unique rock formations. The Daniel Boone National Forest covers nearly 500 square miles.

### Rockcastle River



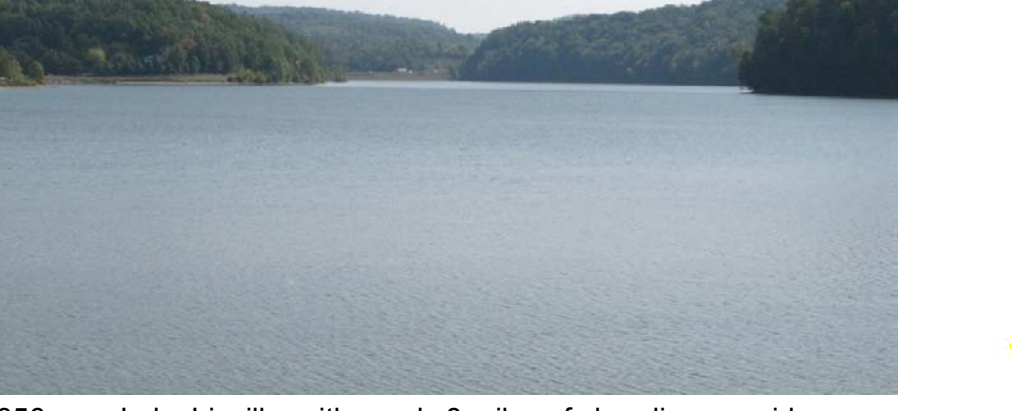
The Rockcastle River below the 1930's Old Sublimity Bridge at the Bee Rock Recreation Area in Laurel County. This 15.9-mile reach from Billows to Lake Cumberland is part of the Kentucky Wild Rivers Program.

### Cumberland Falls



Erosion-resistant sandstones of the Rockcastle Conglomerate line the banks and form the cliffs below Cumberland Falls in Whitley County. The 60-foot-high, 125-foot-wide falls is known as the "Niagara of the South." Photo by Bethany Overfield, Kentucky Geological Survey.

### Lake Linville



The 356-acre Lake Linville, with nearly 8 miles of shoreline, provides boating, fishing (bass, crappie, bluegill, and catfish), and lakeside home sites in Rockcastle County. Renfro Creek was dammed in 1968 by the 1-75 fill embankment to create the lake. The lake provides water to the Mount Vernon Water Works and is part of a source-water protection area.

# Upper Cumberland River Basin in Kentucky

Daniel I. Carey

### Wolf Creek Dam, Lake Cumberland



The 50,000-acre Lake Cumberland has 1,255 miles of shoreline and hosts nearly 4.5 million visitors each year. Its nearly 90,000 land acres includes 35 recreation areas, 452 picnic sites, 839 camping sites, 16 playgrounds, 28 boat ramps, 10 marinas, and much more. The \$80.4 million dam was completed in 1952 to provide hydroelectric power and flood control, primarily for Nashville. The lake is maintained and operated by the U.S. Army Corps of Engineers, Nashville District. The dam is currently (2009) undergoing repairs to prevent seepage through underlying limestone and possible failure. Photos and user's guide map courtesy of the Nashville District Corps of Engineers.

### Water Quality

Maintenance of clean water is essential for public water systems, groundwater, aquatic wildlife, recreation, and going to the swimming hole in McCreary County.

### Large Boat Ramp Information

Table with columns: Name, Directions, Fee, Latitude, Longitude. Lists boat ramps and their details.

### Flood Protection

The Cumberland River and its tributaries define the settlement patterns in Harlan County. Flooding has been a historical problem. Cutoffs such as this one in Loyal, although preventing flooding, leave isolated meanders that may create unanticipated secondary impacts.

### Water Body

Table with columns: Name, Directions, Fee, Latitude, Longitude. Lists various water bodies and their details.

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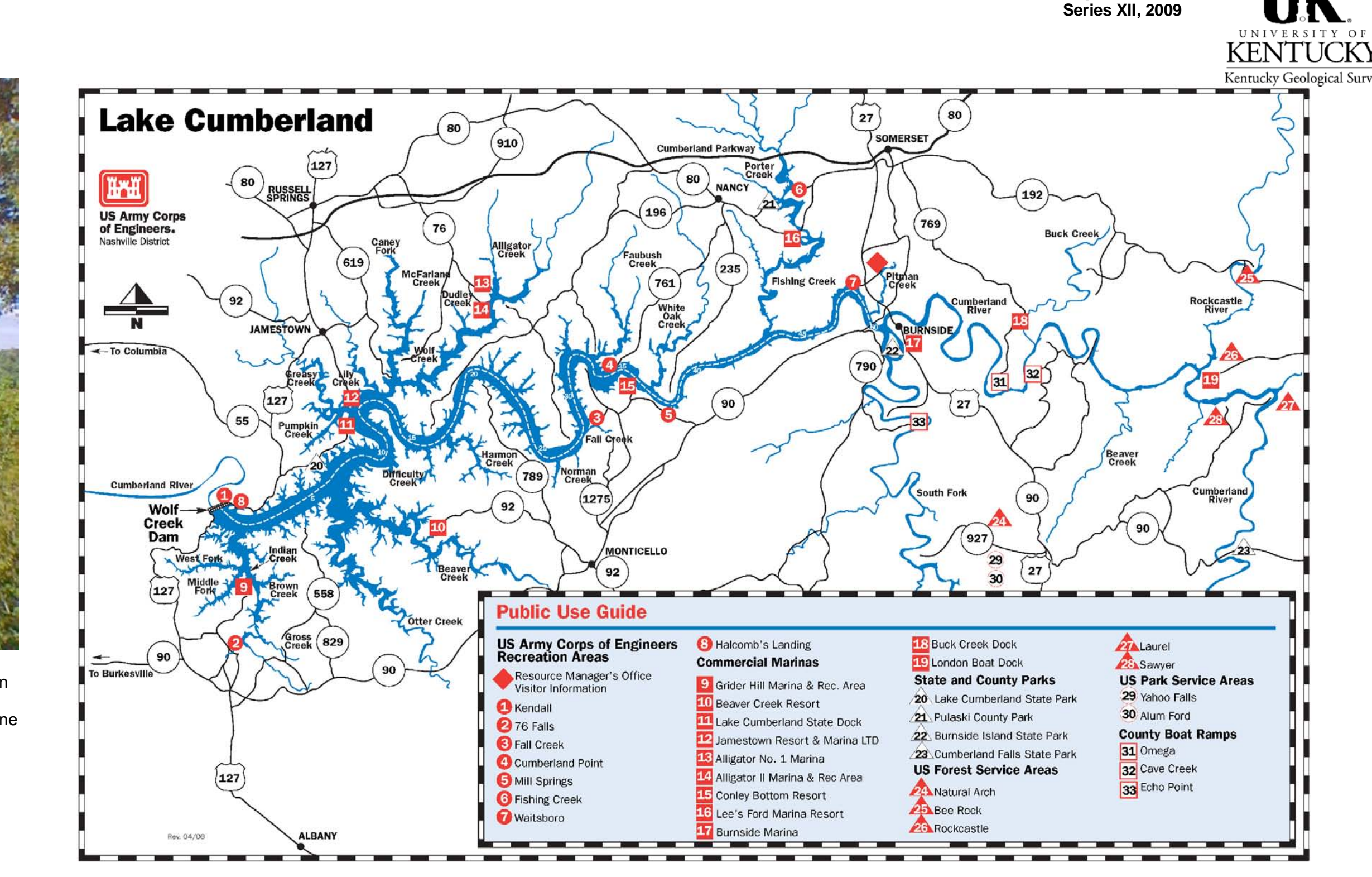
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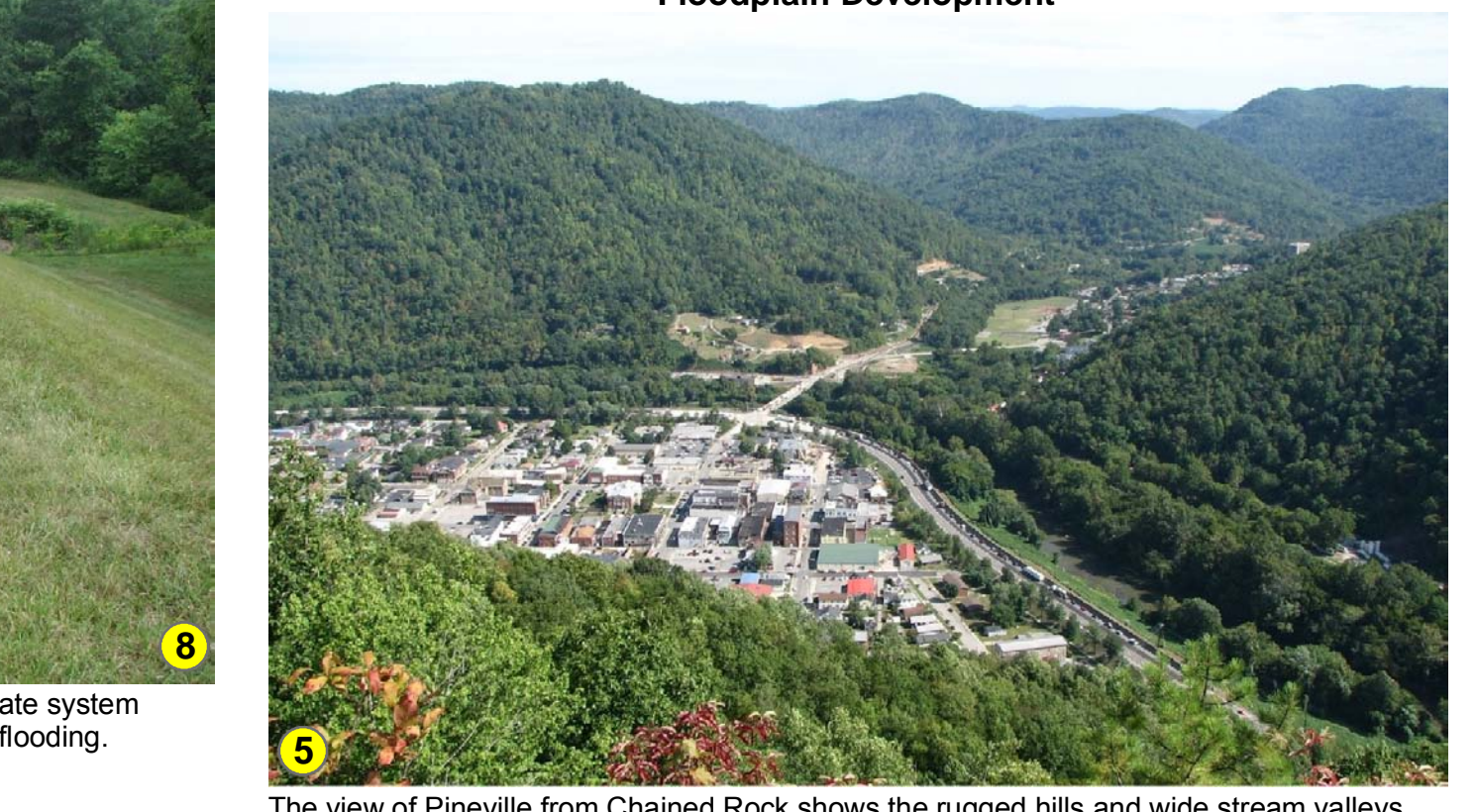
When rains are heavy, a 26-foot-high, 19,536-foot-long levee and floodgate system protects downtown Barbourville in Knox County from Cumberland River flooding.

### Alluvial Valleys



Alluvial valleys in Knox County, subject to drainage problems and flooding, provide level land and soils for agriculture and other compatible uses.

### Floodplain Development



The view of Pineville from Chained Rock shows the rugged hills and wide stream valleys typical of the upper basin. The floodwall to the right of U.S. 25E that protects the city from the Cumberland River floodwaters also demonstrates the threat of flooding to development in stream valleys.

### Acknowledgments

Thanks to Terry Hounshell and Meg Smith, Kentucky Geological Survey, for cartographic and editorial improvements. Thanks to Kim and Kent Ammons, Kentucky Division of Geographic Information, for base-map data.

### More Information

Boating and fishing access sites, KY Dept. Fish and Wildlife Resources: kygo.net/kygov/dfs/... Upper Cumberland River Basin: www.waterworks.gov/basins/upper\_cumberland/... Dale Hollow Lake: www.im.usace.army.mil/pdof/... Kentucky Water Resources Research Institute: www.uky.edu/WaterResources/... Water Watch Data: kgsnmap.uky.edu/waterwatch/... U.S. Geological Survey surface water data: water.usgs.gov/

### Mountaintop Mining

Clay and coal from the Hyden Formation are important to the economy of the upper basin. Mountaintop-removal coal mining is seen here near Pine Mountain in Whitley County. Balancing economic and environmental goals is sometimes difficult. Photo by Bethany Overfield, Kentucky Geological Survey.

### Small Boat Ramp Information

Table with columns: Name, Directions, Fee, Latitude, Longitude. Lists small boat ramps and their details.

Data from the Kentucky Department of Fish and Wildlife Resources. For boat access information throughout the basin, go to kygo.net/kygov/fwrview.htm.