

Kentucky River Basin Assessment Report: Basin and Subbasin Overviews

Basin Overview.

A relatively small number of issues account for most of the problems in the Kentucky River Basin that were documented in the Kentucky Division of Water's most recent Report to Congress under the Clean Water Act. Water quality issues in the basin include straight pipes, contamination by animal waste, erosion and siltation, alteration of flow, removal of streamside vegetation, and contaminated storm water, as well as some point sources of pollution.

Water quality is not the only watershed-related concern in the river basin. Water supply issues, stormwater management and flash flooding, and changes associated with development have all been prominent in local and regional news as communities throughout the basin have tried to balance the various demands on natural resources.

None of these problems will be easy to solve, but we can achieve significant progress by prioritizing and building community consensus for solutions. Many of the issues affecting our land and water are highly interrelated. The watershed approach offers an opportunity for comprehensive planning to better manage the resources on which we all depend. The principle of a watershed approach is to seek integrated local solutions at a watershed level: this report therefore focuses on conditions in individual watersheds. The ninety-seven watershed reports contain detailed information about conditions at a local level. Therefore, this section simply summarizes some of the issues that are common to many of the watersheds in our basin.

Straight pipes and failing septic systems.

Spillage of human waste into streams spreads disease and makes waterways unsafe for recreation. It also causes undesirable changes in stream ecosystems by reducing oxygen and increasing phosphorus. This is a widespread and serious problem throughout the state, compounded by geology that is poorly suited to septic systems and by areas of steep terrain. Some existing septic systems do not work properly and therefore are almost the same as straight pipes. New technology for onsite sewage disposal can help. Extension of sewer lines may also be feasible in some areas.

Siltation and turbidity caused by erosion.

Any exposure of soil that allows it to be washed away causes problems at both ends: soil loss at the source and pollution of the streams that the soil goes into. Particles of soil suspended in the water (causing turbidity) disrupt stream life. Particles that settle out (siltation) clog the streambed and change the flow, causing more problems. Siltation is also harmful to stream life. Sources of erosion include agriculture (both grazing and row-cropping), logging, mining, construction, destruction of vegetation (such as logging roads, off-road vehicle trails), and modification or destabilization of stream banks. Best management practices (BMPs) are techniques to minimize harmful side effects from such activities.

Removal of streamside vegetation.

Trees, shrubs, and other plants along the stream bed prevent erosion and absorb many types of pollutants that would otherwise reach the stream. Removal of this vegetation promotes erosion of the stream bank and allows more silt and other pollutants from uphill to wash into the stream. Loss of shade can also raise the water temperature. Restoration and protection of streamside vegetation is supported by several programs.

Contamination of storm water.

Rain runoff from roads and towns carries pollution into streams. Waste such as motor oil that is dumped on pavement or into storm drains also contaminates the streams that the streets or storm drains empty into.

Livestock and poultry manure contamination.

Animal waste that washes into streams can cause undesirable changes in stream and lake ecosystems by reducing oxygen and increasing phosphorus. It can also spread disease and make waterways unsafe for recreation. Management practices can reduce these loadings.

Illegal dumping.

Trash dumped in stream beds or alongside roads ends up being washed into streams. This refuse is unsightly, and it contributes to water pollution and health risks as it degrades. Cleanup efforts can reduce impacts and draw attention to the issue. Trash attracts dumping, so cleanup may reduce dumping temporarily. Long-term reduction requires changes in people's disposal practices.

Acid mine drainage.

Acid-producing conditions occur when certain types of rock are exposed to air (usually during mining activity). In Eastern Kentucky, alkaline limestone and soil often counteract this effect, but in some cases serious acid pollution can occur before this happens.

Subbasin Overviews

The North Fork Kentucky River subbasin occupies all of Perry County and most of Letcher, Knott, and Breathitt Counties, as well as parts of Wolfe and Lee Counties. The North Fork subbasin, like the rest of the Eastern Kentucky coal field, has mountainous terrain that causes rapid surface runoff of rainwater. The northern edge of the subbasin is in the plateau area of the coal field, with more rolling terrain and somewhat less rapid surface runoff.

A few issues account for most of the problems documented for this subbasin in the Kentucky Division of Water's most recent Report to Congress under the Clean Water Act. These include straight pipes and failing septic systems, contamination from runoff in heavily settled areas, modification of streambeds or removal of vegetation, and siltation resulting from logging, mining, construction, or other activities.

All but two of the watersheds in the North Fork subbasin ranked high or medium in the Ranked Watershed List, and most ranked high. This is an indication of the consistently high need for attention to waterways and watersheds in the subbasin.

The Middle Fork Kentucky River subbasin occupies most of Leslie County and parts of Harlan, Perry, Breathitt, and Lee Counties. The Middle Fork subbasin, like the rest of the Eastern Kentucky coal field, has mountainous terrain that causes rapid surface runoff of rainwater.

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All of the watersheds in the Middle Fork subbasin ranked high or medium in the Ranked Watershed List. This is an indication of the consistently high need for attention to waterways and watersheds in the subbasin.

The South Fork Kentucky River subbasin occupies most of Clay and Owsley Counties and parts of Leslie, Bell, Knox, Jackson, and Lee Counties. The South Fork subbasin, like the rest of the Eastern Kentucky coal field, has mountainous terrain that causes rapid surface runoff of rainwater. The northern edge of the subbasin is in the plateau area of the coal field, with more rolling terrain and somewhat less rapid surface runoff.

A few issues account for most of the problems documented for this subbasin in the Kentucky Division of Water's most recent Report to Congress under the Clean Water Act. These include straight pipes and failing septic systems, contamination from runoff in heavily settled areas, modification of streambeds or removal of vegetation, and siltation resulting from logging, mining, construction, or other activities.

All of the watersheds in the South Fork subbasin ranked high or medium in the Ranked Watershed List. This is an indication of the consistently high need for attention to waterways and watersheds in the subbasin.

The Central subbasin of the Kentucky River occupies all of Powell and Estill Counties, much of Wolfe and Lee Counties, and parts of Jackson, Owsley, Menifee, Montgomery, Clark, and Madison Counties.

The subbasin is largely in the Knobs physiographic region, characterized by hilly terrain, very rapid surface runoff, and very slow groundwater drainage. In level parts of the Knobs, both runoff and groundwater drainage are slow.

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The Lower subbasin of the Kentucky River stretches from Madison County north to Carroll and Gallatin Counties. It includes the most heavily populated region of the basin, surrounding Lexington.

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The watersheds in counties surrounding Lexington almost all ranked high in the Ranked Watershed List. Several were among the top ten in the basin, underscoring the need to address watershed issues in an area of high population density and rapid growth. The northern part of the subbasin includes many watersheds that ranked lower in need for action, but several also ranked medium or high.