

Watershed Summaries: Introduction and Explanation

The 97 watershed summaries provide a snapshot of each watershed: descriptive information, results of framework rankings, highlights of critical issues and activities, diagrams of its position in the basin, and a map. The summaries provide a compilation of information on the critical issues in the river basin, broken down watershed by watershed. By bringing together important but scattered information in this format, we hope both to facilitate the identification of watersheds that meet specific targeting criteria and to aid discussions of interrelated issues in individual watersheds.

See below for explanations and sources for each element of the summaries. Summaries are organized into sections for the ten regions of the basin, which are hydrologic groupings of watersheds. See page 117 for a map of the regions in the basin. Indexes to watershed summaries by name, region, and county begin on page 405.

Watershed name. Watershed names are based on the name of the stream that carries water out of the watershed. Distinguishing modifiers are added in cases when the same stream (or two streams with the same name) forms the main stem of more than one watershed. A few of the watershed names have been altered since publication of the Kentucky River Basin Assessment Report. These changes are listed in the table on page 403.

Watershed number. Watersheds listed here are designated by unique 11-digit Hydrologic Unit Codes (HUCs) assigned by the U.S. Geological Survey (USGS). The first six digits designate the Kentucky River Basin (051002), the next two digits indicate one of the five subbasins, and the final three digits code for a particular watershed.

Basic information on geography, waterways, land and water use, and the results of agency assessments of individual streams comes from the Kentucky River Basin Assessment Report (August 2000). The original sources of this information appear in the list on the following pages.

At the bottom left of each summary is a box containing rankings calculated during the prioritization phase of the basin cycle and also a mobilization category. For rankings, “high” indicates a greater need for restoration or protection than “medium” or “low,” relative to other watersheds in the river basin. The watershed information used to calculate the rankings is provided in Appendix A (page 373). The basic methodology for the ranking calculation is available at kywatersheds.org and is summarized in the Kentucky River Basin Assessment Report. Framework mobilization categories (I to IV) indicate the current priority for future outreach

and organization of watershed management activity in the watershed, based on both need and feasibility (see the framework mobilization strategy on page 16). The present three priority watersheds comprise category I. The watersheds in categories II and III are likely candidates for the next round of priority watersheds.

Watershed highlights present critical information related to water supply protection, sewage, impaired waterways and total maximum daily load (TMDL) status, selected ranking metrics, and other data. Specific sources and criteria for the highlights are listed below. Source water protection zones are those identified under the Source Water Assessment and Protection Program (SWAPP) as draining to a public water supply intake. Impairments reflect assessments by DOW of the degree to which monitored waterways meet requirements to support aquatic life and use for drinking water supply and recreation. Assessments for each use designate stream segments that support, partially support, or do not support the use.

Diagrams at the upper right indicate (in white) the region to which the watershed belongs and the location of the watershed within the region. At bottom right is a map depicting the watershed boundaries, stream drainage pattern, sewage plants, and water supply intakes. Color maps of each region (with highways and some stream names) are included in this report on pages 119 to 139.

Explanations and sources for information in summaries

Watershed Narrative.

Geography. Physiographic regions, topography, and rates of surface runoff and groundwater drainage were derived from *The River Basin Water Quality Management Plan for Kentucky* (Frankfort, Ky.: Division of Water Quality, Dept. for Natural Resources and Environmental Protection, 1977. Volume 8: Kentucky River Basin). Geologic information was derived from “Generalized Hydrogeologic Map of the Kentucky River Basin” (compiled by D. I. Carey. Lexington, Ky.: Kentucky Geological Survey, 1994).

Waterways. Descriptions of waterways were derived from EPA Reach File 3 and/or National Hydrographic Dataset geographic information system (GIS) data and from maps constructed from those data by KWRRI staff. Some information was verified by reference to *Kentucky Atlas and Gazetteer* (Yarmouth, Maine: DeLorme, 1997).

Land and water use. Land use, drinking water systems, and permits for discharges were derived from GIS coverages from EPA and Kentucky DOW.

Agency data assessment. Data assessments and related information were derived from “2000 Kentucky Report to Congress on Water Quality” [305(b) report; <http://water.nr.state.ky.us/wq/305b/2000/index.htm>]. Some additional information may come from “1998 303(d) List of Waters for Kentucky” (a list of water bodies not supporting designated uses; <http://wwater.nr.state.ky.us/303D/>).

Watershed Highlights.

Watershed area was derived from the GIS shape file for HUC-11 watersheds, originally developed by USGS.

Drinking water sources were identified from DOW's GIS shape file for permitted water withdrawals.

Source water protection zones were identified from preliminary GIS shape files for zone 1, zone 2, and zone 3 areas developed for DOW SWAPP. Zone 1 covers the drainage area from 0.25 miles below the intake to 5 miles above. Zone 2 extends to 10 miles upstream, and zone 3 extends to 25 miles upstream.

Municipal sewage plants were identified from DOW's GIS shape file for permitted discharges.

Stream and lake assessments (designated use support, or impairment) were done by DOW for Kentucky's 2000 Report to Congress [305(b) report] and 1998 List of Impaired Water Bodies [303(d) report]. Kentucky did not submit a 303(d) report in 2000. Full information can be found in the DOW documents cited.

TMDL status reflects action on segments listed in the 1996 and 1998 303(d) list. TMDL stands for total maximum daily load. The TMDL program analyzes the pollution reduction needed to bring impaired streams back into compliance. The notations "TMDL 1st priority 2002" and "TMDL 2nd priority 2002" are based on the assumption that, when the 2002 303(d) list is issued in October 2002, segments in nonsupport will be assigned first priority and segments in partial support will be assigned second priority, as in the past.

Watershed Watch findings are derived from "Summary Report: 2000 Kentucky River Watershed Watch Data Collection Effort" (L. Ormsbee and E. Zechman. Lexington, Ky.: KWRRRI, 2000) and "Summary Report: 2001 Kentucky River Watershed Watch Data Collection Effort" (L. Ormsbee and J. Booth. Lexington, Ky.: KWRRRI, 2001).

PRIDE censuses of straight pipes and failing septic systems are derived from shape files on the CD-ROM "PRIDE GIS Data" (Kentucky ADDs, 2000). The census was produced for Eastern Kentucky PRIDE, not the newer Bluegrass PRIDE, so "PRIDE service region" refers here to the 40-county area served by Eastern Kentucky PRIDE (see map of PRIDE areas on page 141).

Appendix A contains full information on the ranking metrics employed to compare the watersheds of the basin during the prioritization phase of the watershed management cycle. The following ranking metrics are cited in the highlights, as outlined below.

The notation that "water supply is a critical issue" appears for watersheds rated 2 (on a scale of 0 to 2) for supply inadequacy by the DOW Water Resources Branch as part of the watershed ranking process in 2000. The notation that "water supply is an issue" appears for watersheds rated 1 on the same scale.

Data on the potential for agricultural erosion were compiled for the watershed ranking database from county data provided by NRCS. The notation that “the potential for agricultural erosion is substantially higher than the basin average” indicates that the calculated watershed value exceeded 4 tons per acre (about the 75th percentile) relative to the basin average of 3.2 tons/acre. This erosion potential includes only the potential for erosion from cultivated fields and does not assess the potential for streambank erosion or erosion caused by nonagricultural activities in a watershed.

Groundwater sensitivity ratings were compiled for the watershed ranking database by the DOW Groundwater Branch in 2000. The notation that “groundwater is substantially more sensitive than the basin average” indicates that the rating exceeded 3.3 (about the 75th percentile) relative to the basin average of 3.2. The range for all watersheds in the basin fell between 2 and 5.

Livestock numbers were compiled for the watershed ranking database from county data provided by the Kentucky Department of Agriculture. The notation that “livestock density is substantially higher than the basin average” indicates that the number of equivalent animal units exceeded 160 per square mile (about the 70th percentile) relative to the basin average of 100 per square mile and median of 60 per square mile.

Population without access to public sewers was derived from 1990 U.S. census data by Kimberly Prough for the watershed ranking database in 1997. The notation that “population without access to public sewers is substantially higher than the basin average” indicates that unsewered population exceeds 20 per square mile (about the 70th percentile), relative to the basin average of 16 per square mile. This information is not included for watersheds for which a PRIDE estimate of the number of straight pipes and failing septic systems is available.