

This report was prepared by the Kentucky Water Research Institute as a product of the statewide Kentucky Watershed Management process. Information presented in this report was collected from many sources. Reasonable attempts were made to ensure that information and figures are as accurate as possible, but no representation or guarantee is made as to either the correctness or suitability of information for particular purposes. All critical information should be independently verified. Please address questions or corrections to Basin Coordinator, KWRI, Rm. 233 Mining and Minerals Resources Building, University of Kentucky, Lexington, Kentucky 40506-0107.

Summary of Basin Characteristics and Facilities

General Land-use Characteristics:

Total Land Area (Acres):	61,562	Acres	% of Total		
Residential Area:	948		1.5	Number of Mine Permits:	0
Commercial Area:	736		1.2	Total Permitted Mining Area (Acres):	0
Industrial Area:	44		0.1	Number of Identified Wetland Areas:	38
Agricultural Area:	23,644		38.4	Total Wetland Area (Acres):	61
Rural and Wooded Area:	36,124		58.7		
Other Land-use Area:	0		0.0		

Withdrawal and Discharge Sites:

Number of Public Water Supplies and Water Withdrawal Sites:	4	Number of KPDES Discharge Permits:	11
Surface Water Withdrawals:	4		
Groundwater Withdrawals:	0		
No. of Potable Water Treatment Facilities:	3		

Sampling Site Statistics:

Number of USGS Gaging Stations:	1
Number of Kentucky Division of Water Sampling Sites:	1
Number of Kentucky Dept. of Fish and Wildlife Sampling Sites:	0
Number of US Forest Service Sampling Sites:	1
Number of US Army Corps of Engineers Sampling Sites:	0
Number of Kentucky River Watershed Watch Sampling Sites:	3
Number of Lexington-Fayette Urban Co. Gov. Sampling Sites:	0

Watershed Indicators and Ranking Categories:

Overall Watershed Ranking:

Protection Ranking

Observed Impacts

Potential Impacts

Restoration Ranking

Medium

High

Medium

Medium

Medium

Protection Categories:

Indicator	Value	Units	Range of All Watersheds	Mean of All Watersheds
Wetland Areas	61	Acres	0 - 106	12
Surface Drinking Water Sources	4	No. of sources	0 - 14	2
Ground Drinking Water Sources	0	No. of sources	0 - 17	1
Groundwater Sensitivity	2.38	Score	2 - 5	3.21
KY Dept. of Fish and Wildlife Management Areas	0	Acres	0 - 2951	93
U.S. Forest Service Management Areas	4,802	Acres	0 - 155253	12,600
Kentucky State Park Areas	0	Acres	0 - 1928	42
Nature Preserves Commission Areas	209	Acres	0 - 1430	32
Nature Conservancy Areas	0	Acres	0 - 2473	28
Reference Reach Watersheds	0.00	Score	0 - 100	3.08
Outstanding Resource Watersheds	0.00	Score	0 - 0	0.00
Recognized Stream Resources	5	No. of resources	0 - 8	1
Kentucky Rivers Assessment Scores	7.00	Score	0 - 11	1.80

Observed Impact Categories:

Human Health Impact Categories:

Indicator	Value	Units	Range of All Watersheds	Mean of All Watersheds
Flood Declarations	2	Number since 1970	0 - 10	4
Water Supply Inadequacy	1.00	Score	0 - 2	0.22
Observed Impacts to Surface Drinking Water	1.00	Score	1 - 1	1.00
Observed Impacts to Fish Consumption	1.00	Score	1 - 1	1.00
Observed Impacts to Primary Water Contact	1.00	Score	1 - 3	1.33
Contamination Sites Impacting Human Health	4	Number of sites	0 - 71	4

Ecological Health Impact Categories:

Indicator	Value	Units	Range of All Watersheds	Mean of All Watersheds
Observed Impacts to Aquatic Life	1.00	Score	1 - 3	1.31
Contamination Sites Impacting Ecological Health	4	Number of sites	0 - 71	4

Potential Impact Categories:

Indicator	Value	Units	Range of All Watersheds	Mean of All Watersheds
Potential Contamination Sites	17	Number of sites	1 - 121	12
Potential Pesticide Loading	5	Est. sales in tons	0 - 45	10
Potential Fertilizer Loading	242	Est. tons applied	0 - 2747	394
Agricultural Erosion Potential	1.00	Est. tons erosion / acre	0 - 9	3.20
Livestock Operations Potential Impact	5,284	Animal units	55 - 43826	7,021
KPDES Discharge Violations	26	Number of violations	0 - 541	39
KY Division of Water Citizen Complaints	14	Number of complaints	0 - 53	9
Toxic Release Inventory	0	Score	0 - 11547626	231,638
Population Change Projection	442	Number of persons	-149 - 11030	448
Population Not on Public Sewer Systems	1,496	Number of persons	12 - 4511	1,114
Mining Area	0	Acres	0 - 6305	355
Surface Water Runoff Potential	71.20	SCS Curve Number	60 - 79	68
KPDES Permitted Discharges	11	Number of sites	0 - 56	6

Watershed Name: Red River

11-Digit Watershed Identity Number: 05100204160

Stream and Waterbody Use Support Summary

<i>Total Stream Miles:</i>						
<input type="text" value="155.3"/>	<i>Number of Segments</i>	<i>Stream Miles Assessed</i>	<i>Miles * Fully Supportina</i>	<i>Miles * Partially Supportina</i>	<i>Miles * Not Supportina</i>	<i>Miles * Threatened</i>
<i>Segments Assessed:</i>	2	14.2	14.2	0.0	0.0	0.0
<i>Designated Uses</i>						
<i>Aquatic Life:</i>	2	14.2	14.2	0.0	0.0	0.0
<i>Primary Contact:</i>	1	12.3	12.3	0.0	0.0	0.0
<i>Fish Consumption:</i>						
<i>Drinking Water:</i>						

* Blank values indicate no assessed segments for this category.

<i>Assessed Stream Segments and Waterbodies</i>					
<i>Stream or Waterbody Name *</i>	<i>Starting Milepoint</i>	<i>Ending Milepoint</i>	<i>Segment Length (miles)</i>	<i>Designated Uses *</i>	<i>Overall Level of Support</i>
Judy Creek	1.5	3.4	1.9	AL	Fully Supporting
Red River	17.9	30.2	12.3	AL, PC	Fully Supporting

**Abbreviations: AL - Aquatic Life Support, PC - Primary Contact Recreation, SC - Secondary Contact Recreation, FC - Fish Consumption, DW - Drinking Water Supply, UT - Unnamed Tributary*

<i>Applicable Total Maximum Daily Load (TMDL) Reports:</i>	
<i>Stream or Waterbody</i>	<i>TMDL Report Status</i>
Red River	Data collection in progress

Watershed Name: Red River

11-Digit Watershed Identity Number: 05100204160

Withdrawal Sites and Discharge Facilities:

<i>Public Water Supplies and Water Withdrawal</i>			
<i>Facility</i>	<i>Origin of Source</i>	<i>Type of Facility</i>	<i>Permit ID Number</i>
BEECH FORK WATER COMMISSION	Surface Water	Water Treatment Plant	0990281
CLAY CITY WATER PLANT	Surface Water	Water Treatment Plant	0990074
STANTON WATER WORKS	Surface Water	Water Treatment Plant	0990418
STANTON WATER WORKS	Surface Water	Water Withdrawal Site	0990418

<i>KPDES Permitted Discharge Facilities</i>			<i>KPDES Site ID Number</i>
<i>Facility</i>	<i>Type of Facility</i>		
CLAY CITY STP	SEWERAGE SYSTEMS	KY0025119	
COLUMBIA GULF TRANSMISSION CO	NATURAL GAS TRANSMISSION	KY0095389	
KTC KNOX CO MAINT GARAGE	BUS TERMINAL & SERVICE FACILIT	KY0099112	
KTC POWELL CO MAINT LOT	BUS TERMINAL & SERVICE FACILIT	KYG500042	
NCS & T INC	CRUSHED AND BROKEN LIMESTONE	KYG840137	
STANTON STP	SEWERAGE SYSTEMS	KY0034428	
STANTON WTP	WATER SUPPLY	KY0090379	
US BRICK SIPPLE DIV	CONCRETE BLOCK & BRICK	KY0083437	

Gaging Stations and Sampling Sites:

<i>US Geological Survey and US Army Corps of Engineers Stream Gaging Stations</i>			
<i>Stream Location</i>	<i>Agency</i>	<i>Station ID Number</i>	<i>Sampling Parameter</i>
Red River	US COE	USNWS15-1576-43	Flow
Red River	USGS	USGS03283500	Flow

<i>KY Division of Water Sampling Sites</i>	
<i>Stream Name</i>	<i>Type of Sampling</i>
Judy Creek	Physical/Chemical Monitoring

<i>US Forest Service Sampling Sites</i>		
<i>11-Digit HUC</i>	<i>HUC Name</i>	<i>US Forest Service Site ID</i>
05100204160	Red River (lower)	0510020430001

<i>KY River Watershed Watch Sampling Sites</i>		
<i>Stream Name</i>	<i>KRWW Sample ID No.</i>	<i>Site Description</i>
Red River	K95	Below bridge on Hwy 15 Clay City
Red River	K76	East of Stanton
Red River - Lower	K94	Red River at Twin Creek

Watershed Name:

Red River

11-Digit Watershed Identity Number:

05100204160

Results from 1999 KY River Watershed Watch Sampling:

Conventional Parameters:

Sample ID Number: K76 Stream: Red River

Physical Data (May):

pH	7.4	Alkalinity	85
Temperature	20	Total Hardness	106
Dissolved Oxygen	0	Chlorides	9.4
		Conductivity	242
		Total Organic Carbon	3.4
		Total Suspended Solids	9

Fecal Data (July / August):

	Coliform Count	Strep Count	Coliform/Strep Ratio
July	<10	1500	<0.0067
August			

Sample ID Number: K94 Stream: Red River - Lower

Physical Data (May):

pH	7.7	Alkalinity	
Temperature	0	Total Hardness	
Dissolved Oxygen	10	Chlorides	
		Conductivity	
		Total Organic Carbon	
		Total Suspended Solids	

Fecal Data (July / August):

	Coliform Count	Strep Count	Coliform/Strep Ratio
July	<10	230	<0.043
August			

Sample ID Number: K95 Stream: Red River

Physical Data (May):

pH	7.6	Alkalinity	
Temperature	0	Total Hardness	
Dissolved Oxygen	10	Chlorides	
		Conductivity	
		Total Organic Carbon	
		Total Suspended Solids	

Fecal Data (July / August):

	Coliform Count	Strep Count	Coliform/Strep Ratio
July	100	450	0.22
August			

Note: Most indicators are in milligrams per liter (mg/L) which is equivalent to parts per million (ppm). Temperature is in Celsius degrees. Alkalinity and hardness are as mg/L of calcium carbonate. Bacterial counts are in colonies per 100 milliliters. Conductivity units are micro-mhos per centimeter

Nutrient Parameters:

Sample ID Number: K76 Stream: Red River

Ammonia		Orthophosphate as Phosphate	0.062	Sulfate	25.6
Ammonia Nitrogen		Orthophosphate as Phosphorus	0.020		
Total Kjeldahl Nitrogen as NH3		Total Recoverable Phosphorus	0.08		
Total Kjeldahl Nitrogen as N					
Nitrate	0.2				
Nitrate Nitrogen	0.04				

Note: All indicators are in milligrams per liter (mg/L) which is equivalent to parts per million (ppm).

Sample ID Number: K94 Stream: Red River - Lower

Ammonia		Orthophosphate as Phosphate		Sulfate	
Ammonia Nitrogen		Orthophosphate as Phosphorus			
Total Kjeldahl Nitrogen as NH3		Total Recoverable Phosphorus			
Total Kjeldahl Nitrogen as N					
Nitrate					
Nitrate Nitrogen					

Note: All indicators are in milligrams per liter (mg/L) which is equivalent to parts per million (ppm).

Watershed Name:

Red River

11-Digit Watershed Identity Number:

05100204160

Sample ID Number: K95 Stream: Red River

Ammonia	<input type="text"/>	Orthophosphate as Phosphate	<input type="text"/>	Sulfate	<input type="text"/>
Ammonia Nitrogen	<input type="text"/>	Orthophosphate as Phosphorus	<input type="text"/>		
Total Kjeldahl Nitrogen as NH3	<input type="text"/>	Total Recoverable Phosphorus	<input type="text"/>		
Total Kjeldahl Nitrogen as N	<input type="text"/>				
Nitrate	<input type="text"/>				
Nitrate Nitrogen	<input type="text"/>				

Note: All indicators are in milligrams per liter (mg/L) which is equivalent to parts per million (ppm).

Metals and Mineral Parameters:

Sample ID Number: K76 Stream: Red River

Aluminum	<input type="text" value="0.31"/>	Calcium	<input type="text" value="23.48"/>	Lead	<input type="text"/>	Selenium	<input type="text"/>	Thallium	<input type="text"/>
Antimony	<input type="text"/>	Chromium	<input type="text"/>	Lithium	<input type="text"/>	Silicon	<input type="text" value="1.84"/>	Vanadium	<input type="text"/>
Barium	<input type="text" value="0.04"/>	Cobalt	<input type="text" value="0.003"/>	Magnesium	<input type="text" value="7.45"/>	Sodium	<input type="text" value="5.89"/>	Zinc	<input type="text" value="0.02"/>
Beryllium	<input type="text"/>	Copper	<input type="text"/>	Manganese	<input type="text" value="0.40"/>	Strontium	<input type="text" value="0.08"/>		
Boron	<input type="text" value="0.10"/>	Iron	<input type="text" value="1.07"/>	Potassium	<input type="text" value="3.96"/>	Sulfur	<input type="text" value="7.14"/>		

Note: All indicators are in milligrams per liter (mg/L) which is equivalent to parts per million (ppm).

Sample ID Number: K94 Stream: Red River - Lower

Aluminum	<input type="text"/>	Calcium	<input type="text"/>	Lead	<input type="text"/>	Selenium	<input type="text"/>	Thallium	<input type="text"/>
Antimony	<input type="text"/>	Chromium	<input type="text"/>	Lithium	<input type="text"/>	Silicon	<input type="text"/>	Vanadium	<input type="text"/>
Barium	<input type="text"/>	Cobalt	<input type="text"/>	Magnesium	<input type="text"/>	Sodium	<input type="text"/>	Zinc	<input type="text"/>
Beryllium	<input type="text"/>	Copper	<input type="text"/>	Manganese	<input type="text"/>	Strontium	<input type="text"/>		
Boron	<input type="text"/>	Iron	<input type="text"/>	Potassium	<input type="text"/>	Sulfur	<input type="text"/>		

Note: All indicators are in milligrams per liter (mg/L) which is equivalent to parts per million (ppm).

Sample ID Number: K95 Stream: Red River

Aluminum	<input type="text"/>	Calcium	<input type="text"/>	Lead	<input type="text"/>	Selenium	<input type="text"/>	Thallium	<input type="text"/>
Antimony	<input type="text"/>	Chromium	<input type="text"/>	Lithium	<input type="text"/>	Silicon	<input type="text"/>	Vanadium	<input type="text"/>
Barium	<input type="text"/>	Cobalt	<input type="text"/>	Magnesium	<input type="text"/>	Sodium	<input type="text"/>	Zinc	<input type="text"/>
Beryllium	<input type="text"/>	Copper	<input type="text"/>	Manganese	<input type="text"/>	Strontium	<input type="text"/>		
Boron	<input type="text"/>	Iron	<input type="text"/>	Potassium	<input type="text"/>	Sulfur	<input type="text"/>		

Note: All indicators are in milligrams per liter (mg/L) which is equivalent to parts per million (ppm).

Pesticide/Herbicide Parameters:

Sample ID No.	Stream	2,4-D	Chlorpyrifos	Triazines
K76	Red River	<input type="text"/>	<input type="text"/>	<input type="text"/>
K94	Red River - Lower	<input type="text"/>	<input type="text"/>	<input type="text"/>
K95	Red River	<input type="text"/>	<input type="text"/>	<input type="text"/>

Note: All indicators are in micrograms per liter which is equivalent to parts per billion (ppb).