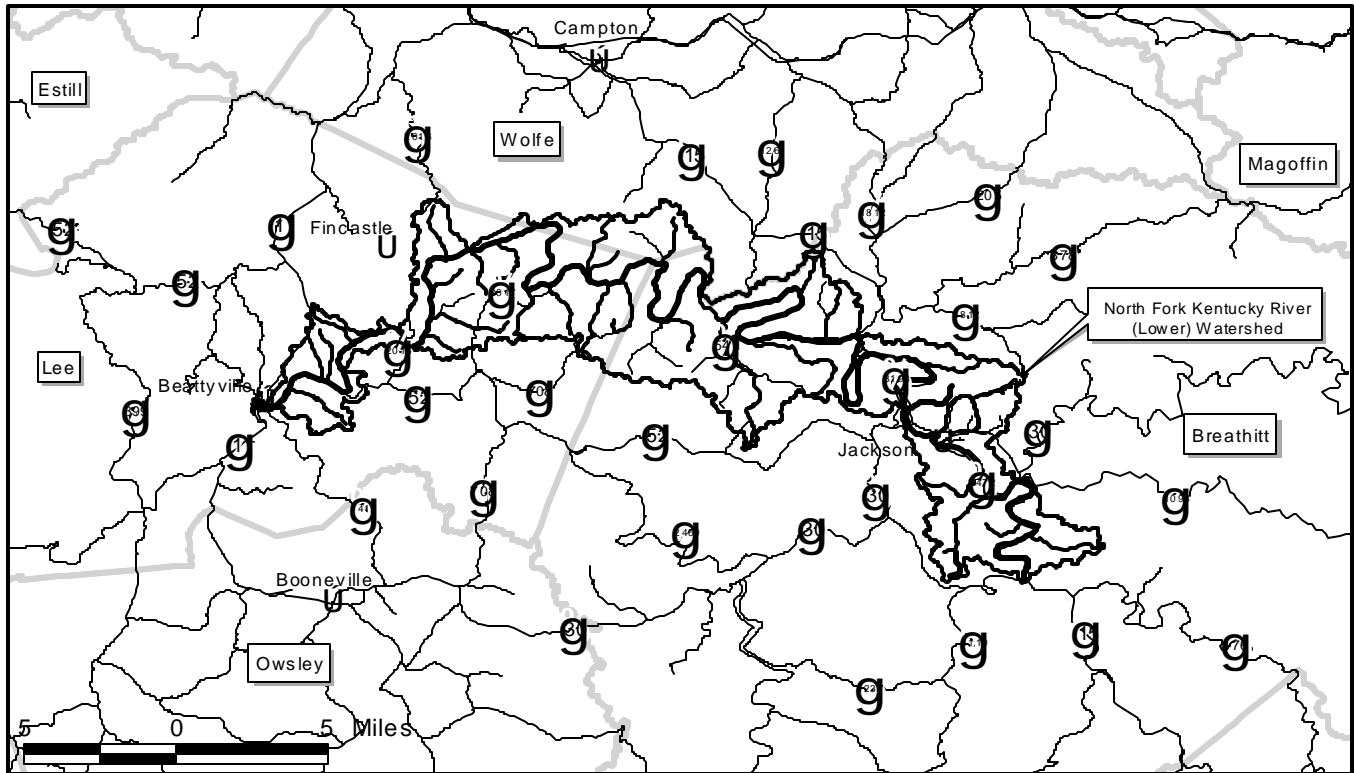


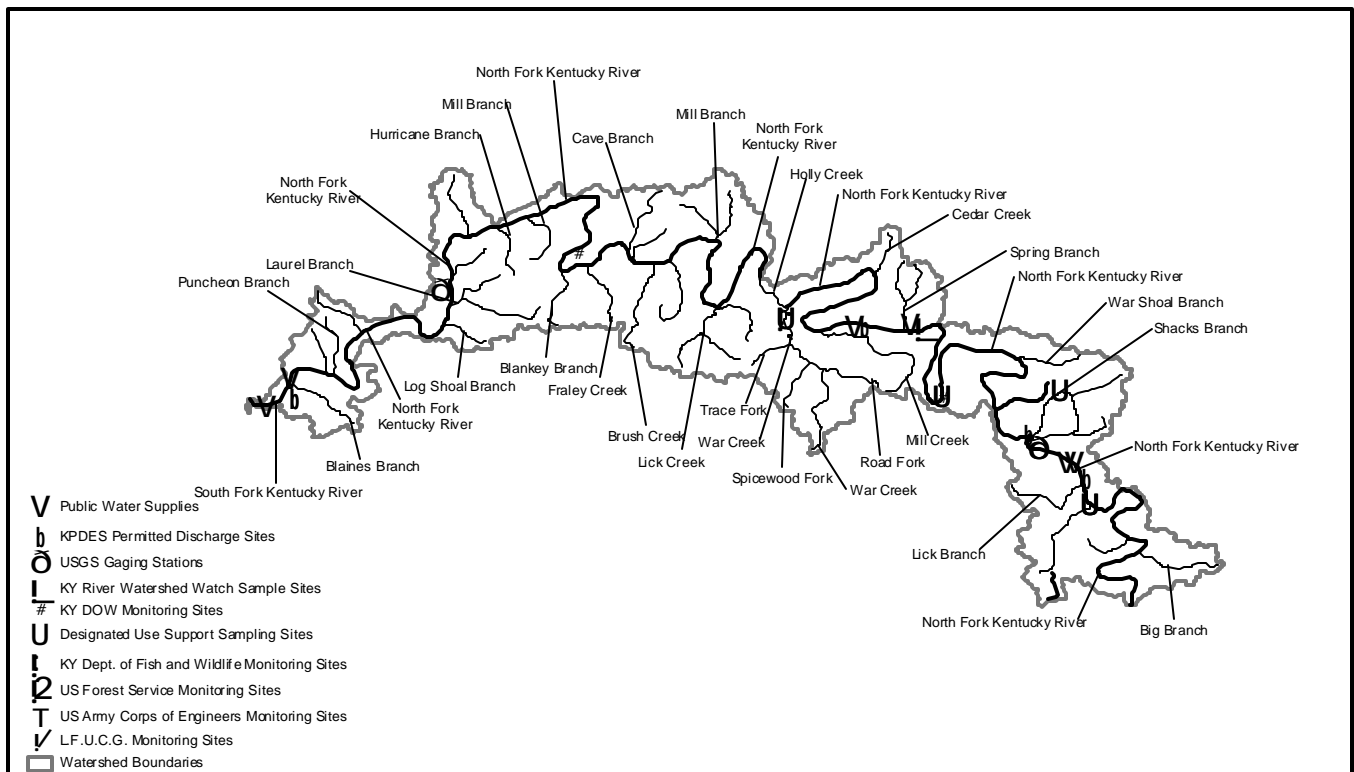
# North Fork Kentucky River (Lower) Watershed

## Watershed Number: 05100201150

### Location Map



### Watershed Features



**Geography.** The North Fork Kentucky River (lower) watershed covers the northern edge of Breathitt County, and a small corner of Wolfe County. The land is in the Eastern Kentucky Coal Field physiographic region, characterized by mountainous terrain, rapid surface runoff, and moderate rates of groundwater drainage. The watershed is underlain by coals, sandstones, and shales: this geology is generally conducive to productive wells, although water quality may be low for wells that draw from coal layers. Parts of the watershed lie over sandstone aquifers.

**Waterways.** This watershed includes the section of the North Fork between the mouth of Troublesome Creek (at Haddix) and Beattyville. Among many creeks that feed it within this watershed are Miller Branch, Mill Creek, War Creek, Big Bloody Creek, Cave Branch, Laurel Branch, and Blaines Branch. Water also flows into this watershed from the following other watersheds: North Fork Kentucky River (middle), Middle Fork Kentucky River (lower), South Fork of Quicksand, Quicksand Creek, Cane Creek, Frozen Creek, Boone Fork, Holly Creek, Upper Devil Creek, Lower Devil Creek, Hell Creek & Walker Creek, and Crystal Creek.

**Land and water use.** Land in the watershed is largely rural and wooded but about 10% agricultural. The surface waters of the watershed supply the drinking water for municipal systems in Beattyville and Jackson. Five businesses and organizations hold permits for discharges into the creeks. See tables for details.

**Agency data assessment.** Four waterway segments were assessed in this watershed, and two do not support some or all of their designated uses, based on biological and/or water-quality data. One segment of the North Fork is impaired by pathogens from animal and human wastes. Panbowl Lake exhibited organic enrichment/low oxygen. See tables for details.

**Watershed rankings.** The ranking formula provides a preliminary ranking by synthesizing a broad spectrum of watershed characteristics, current conditions, and threats. This watershed ranks in the group with the highest need for protection and/or restoration. This rating is for the watershed on average: particular sites and particular waters within the watershed may vary widely. See tables for details.

**Volunteer data.** Data for the North Fork indicate elevated levels of sulfate, antimony, and selenium. See tables for details.

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:**

<i>Total Land Area (Acres):</i>	<input type="text" value="53,487"/>	<i>Acres</i>	<i>% of Total</i>		
<i>Residential Area:</i>	<input type="text" value="267"/>		<input type="text" value="0.5"/>	<i>Number of Mine Permits:</i>	<input type="text" value="14"/>
<i>Commercial Area:</i>	<input type="text" value="154"/>		<input type="text" value="0.3"/>	<i>Total Permitted Mining Area (Acres):</i>	<input type="text" value="83"/>
<i>Industrial Area:</i>	<input type="text" value="70"/>		<input type="text" value="0.1"/>	<i>Number of Identified Wetland Areas:</i>	<input type="text" value="1"/>
<i>Agricultural Area:</i>	<input type="text" value="5,932"/>		<input type="text" value="11.1"/>	<i>Total Wetland Area (Acres):</i>	<input type="text" value="1"/>
<i>Rural and Wooded Area:</i>	<input type="text" value="46,660"/>		<input type="text" value="87.4"/>		
<i>Other Land-use Area:</i>	<input type="text" value="314"/>		<input type="text" value="0.6"/>		

**Withdrawal and Discharge Sites:**

<i>Number of Public Water Supplies and Water Withdrawal Sites:</i>	<input type="text" value="6"/>	<i>Number of KPDES Discharge Permits:</i>	<input type="text" value="5"/>
<i>Surface Water Withdrawals:</i>	<input type="text" value="4"/>		
<i>Groundwater Withdrawals:</i>	<input type="text" value="2"/>		
<i>No. of Potable Water Treatment Facilities:</i>	<input type="text" value="4"/>		

**Sampling Site Statistics:**

<i>Number of USGS Gaging Stations:</i>	<input type="text" value="1"/>
<i>Number of Kentucky Division of Water Sampling Sites:</i>	<input type="text" value="2"/>
<i>Number of Kentucky Dept. of Fish and Wildlife Sampling Sites:</i>	<input type="text" value="1"/>
<i>Number of US Forest Service Sampling Sites:</i>	<input type="text" value="0"/>
<i>Number of US Army Corps of Engineers Sampling Sites:</i>	<input type="text" value="0"/>
<i>Number of Kentucky River Watershed Watch Sampling Sites:</i>	<input type="text" value="1"/>
<i>Number of Lexington-Fayette Urban Co. Gov. Sampling Sites:</i>	<input type="text" value="0"/>

**Watershed Indicators and Ranking Categories:**

Overall Watershed Ranking:

Protection Ranking	Observed Impacts	Potential Impacts	Restoration Ranking
Medium	High	Low	High

High

**Protection Categories:**

Indicator	Value	Units	Range of All Watersheds	Mean of All Watersheds
Wetland Areas	1	Acres	0 - 106	12
Surface Drinking Water Sources	4	No. of sources	0 - 14	2
Ground Drinking Water Sources	2	No. of sources	0 - 17	1
Groundwater Sensitivity	3.00	Score	2 - 5	3.21
KY Dept. of Fish and Wildlife Management Areas	0	Acres	0 - 2951	93
U.S. Forest Service Management Areas	166	Acres	0 - 155253	12,600
Kentucky State Park Areas	0	Acres	0 - 1928	42
Nature Preserves Commission Areas	0	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	1	No. of resources	0 - 8	1
Kentucky Rivers Assessment Scores	4.54	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	7	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	3.00	Score	1 - 3	1.33
Contamination Sites Impacting Human Health	0	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	0	Number of sites	0 - 71	4

**Potential Impact Categories:**

Indicator	Value	Units	Range of All Watersheds	Mean of All Watersheds
Potential Contamination Sites	9	Number of sites	1 - 121	12
Potential Pesticide Loading	2	Est. sales in tons	0 - 45	10
Potential Fertilizer Loading	77	Est. tons applied	0 - 2747	394
Agricultural Erosion Potential	3.33	Est. tons erosion / acre	0 - 9	3.20
Livestock Operations Potential Impact	624	Animal units	55 - 43826	7,021
KPDES Discharge Violations	3	Number of violations	0 - 541	39
KY Division of Water Citizen Complaints	7	Number of complaints	0 - 53	9
Toxic Release Inventory	0	Score	0 - 11547626	231,638
Population Change Projection	75	Number of persons	-149 - 11030	448
Population Not on Public Sewer Systems	1,115	Number of persons	12 - 4511	1,114
Mining Area	86	Acres	0 - 6305	355
Surface Water Runoff Potential	60.77	SCS Curve Number	60 - 79	68
KPDES Permitted Discharges	5	Number of sites	0 - 56	6

**Stream and Waterbody Use Support Summary**

<b>Total Stream Miles:</b> <input type="text" value="123.83"/>	<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>
<b>Segments Assessed:</b>	4	16.9	12.4	0.0	4.5	0.0
<b>Designated Uses</b>						
<b>Aquatic Life:</b>	4	16.9	16.9	0.0	0.0	0.0
<b>Primary Contact:</b>	1	4.5	0.0	0.0	4.5	0.0
<b>Fish Consumption:</b>						
<b>Drinking Water:</b>						

\* Blank values indicate no assessed segments for this category.

<b>Assessed Stream Segments and Waterbodies</b>					
<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>
North Fork Kentucky River	44.7	49.2	4.5	AL, PC	Not Supporting
North Fork Kentucky River	35.4	44.7	9.3	AL	Fully Supporting
Panbowl Lake	0	0	0	AL	Not Supporting
War Creek	0	3.1	3.1	AL	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

<b>Causes for Nonsupport or Impairment of Designated Uses</b>					
<i>Stream or Waterbody Name *</i>	<i>Starting Milepoint</i>	<i>Ending Milepoint</i>	<i>Segment Length (miles)</i>	<i>Impaired or Threatened Designated Use</i>	<i>Level of Support</i>
Panbowl Lake	0	0	0	Aquatic Life Support	Not Supporting
<i>Possible Causes of Impairment:</i> Organic enrichment/Low DO			<i>Possible Sources For Impairment:</i> Internal nutrient cycling (primarily lakes), Land Disposal, Septage Disposal		
North Fork Kentucky River	44.7	49.2	4.5	Primary Contact (Recr)	Not Supporting
<i>Possible Causes of Impairment:</i> Pathogens			<i>Possible Sources For Impairment:</i> Land Disposal, Onsite Wastewater Systems (Septic Tanks)		

\*Abbreviations: UT - Unnamed Tributary

Watershed Name: North Fork Kentucky River

11-Digit Watershed Identity Number: 05100201150

**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>
BEATTYVILLE WATER WORKS	Surface Water	Water Treatment Plant	0650024
BEATTYVILLE WATER WORKS	Surface Water	Water Withdrawal Site	0650024
JACKSON MUNICIPAL WATER WORKS	Surface Water	Water Treatment Plant	0130208
JACKSON MUNICIPAL WATER WORKS	Surface Water	Water Withdrawal Site	0130208
KY MTN BIBLE COLLEGE	Groundwater	Water Treatment Plant	0132994
MT CARMEL HIGH/BOARDING SCHOOL	Groundwater	Water Treatment Plant	0130949

<i>KPDES Permitted Discharge Facilities</i>			<i>KPDES Site ID Number</i>
<i>Facility</i>	<i>Type of Facility</i>		
BEATTYVILLE WTP	WATER SUPPLY	KY0090948	
BEATTYVILLE WTP	WATER SUPPLY	KYG640092	
JACKSON STP	SEWERAGE SYSTEMS	KY0021288	
MT CARMEL HIGH SCHOOL	ELEMENTARY & SECONDARY SCHOOLS	KY0083305	
P & A PROPERTIES INC BP #1	PETROLEUM BULK STATIONS & TERM	KY0097888	

**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>
North Fork Kentucky River	USGS	USGS03280500	Flow
North Fork Kentucky River	US COE	USNWS15-4196-44	Flow
North Fork Kentucky River	USGS	USGS03280000	Flow

<i>KY Division of Water Sampling Sites</i>	
<i>Stream Name</i>	<i>Type of Sampling</i>
North Fork Ky River	Biological Monitoring
Walker Creek	Physical/Chemical Monitoring

<i>KY Dept of Fish and Wildlife Sampling / Assessment Sites</i>					
<i>Stream Segment</i>	<i>Upstream Description</i>	<i>Downstream Description</i>	<i>Total Length of Segment</i>	<i>Upstream Mile Point</i>	<i>Downstream Mile Point</i>
North Fork KY River - War Creek	Spicewood Fork	Mouth	6.2	3.1	0

<i>KY River Watershed Watch Sampling Sites</i>		
<i>Stream Name</i>	<i>KRWW Sample ID No.</i>	<i>Site Description</i>
North Fork KY River	K48	Martha Lane Collins Br (KY 541)

**Results from 1999 KY River Watershed Watch Sampling:**

**Conventional Parameters:**

Sample ID Number: K48 Stream: North Fork KY River

Physical Data (May):	
pH	0
Temperature	0
Dissolved Oxygen	0
Alkalinity	145
Total Hardness	668
Chlorides	20.2
Conductivity	1316
Total Organic Carbon	2.7
Total Suspended Solids	10

Fecal Data (July / August):		
Coliform Count	Strep Count	Coliform/Strep Ratio
July	110	230
August		0.48

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: K48 Stream: North Fork KY River

Ammonia	0.09	Orthophosphate as Phosphate	0.026	Sulfate	620
Ammonia Nitrogen	0.07	Orthophosphate as Phosphorus	0.008		
Total Kjeldahl Nitrogen as NH3	0.08	Total Recoverable Phosphorus			
Total Kjeldahl Nitrogen as N	0.07				
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).

**Metals and Mineral Parameters:**

Sample ID Number: K48 Stream: North Fork KY River

Aluminum	0.14	Calcium	107.40	Lead		Selenium		Thallium	0.02
Antimony	0.16	Chromium		Lithium	0.02	Silicon	1.63	Vanadium	
Barium	0.07	Cobalt	0.009	Magnesium	92.05	Sodium	48.88	Zinc	0.006
Beryllium		Copper		Manganese	0.12	Strontium	1.23		
Boron	0.11	Iron	0.37	Potassium	9.53	Sulfur	128.21		

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

K48	North Fork KY River			
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Note: All indicators are in micrograms per liter which is equivalent to parts per billion (ppb).