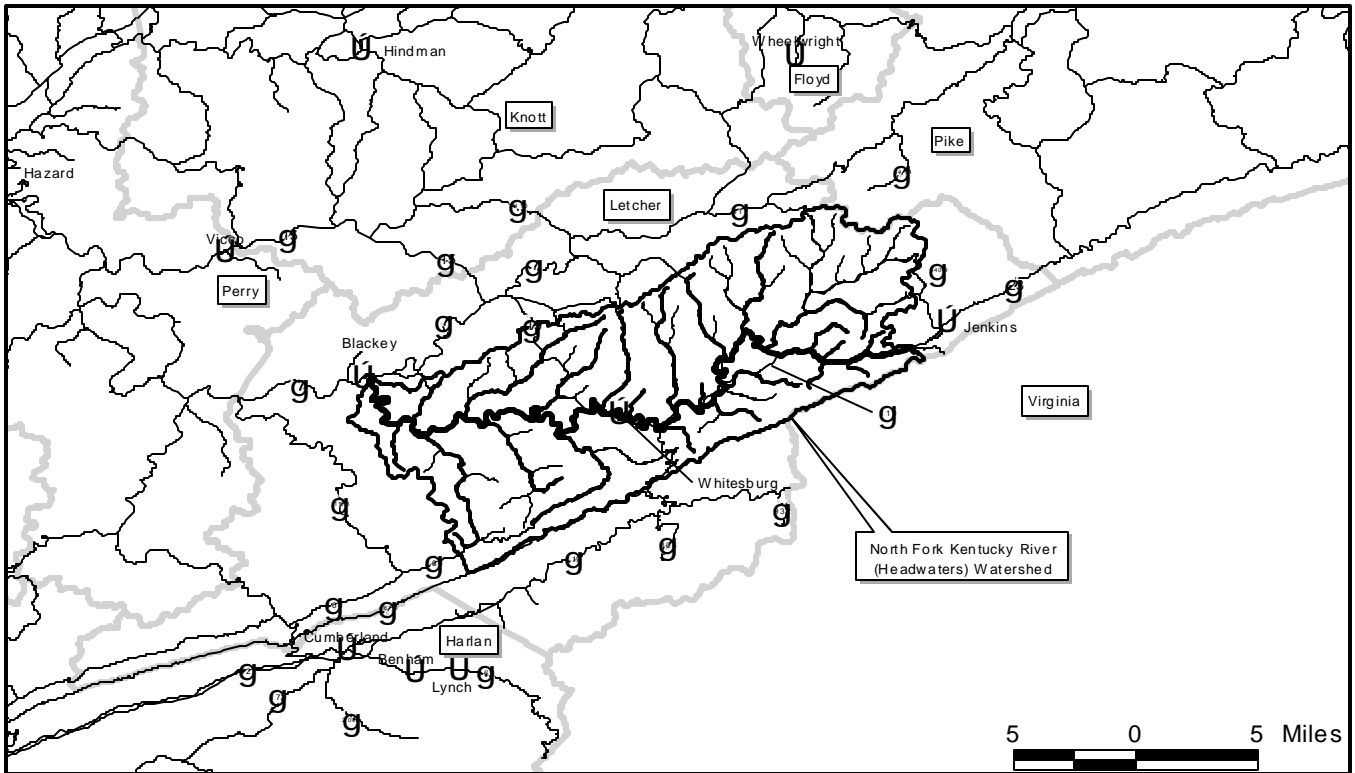


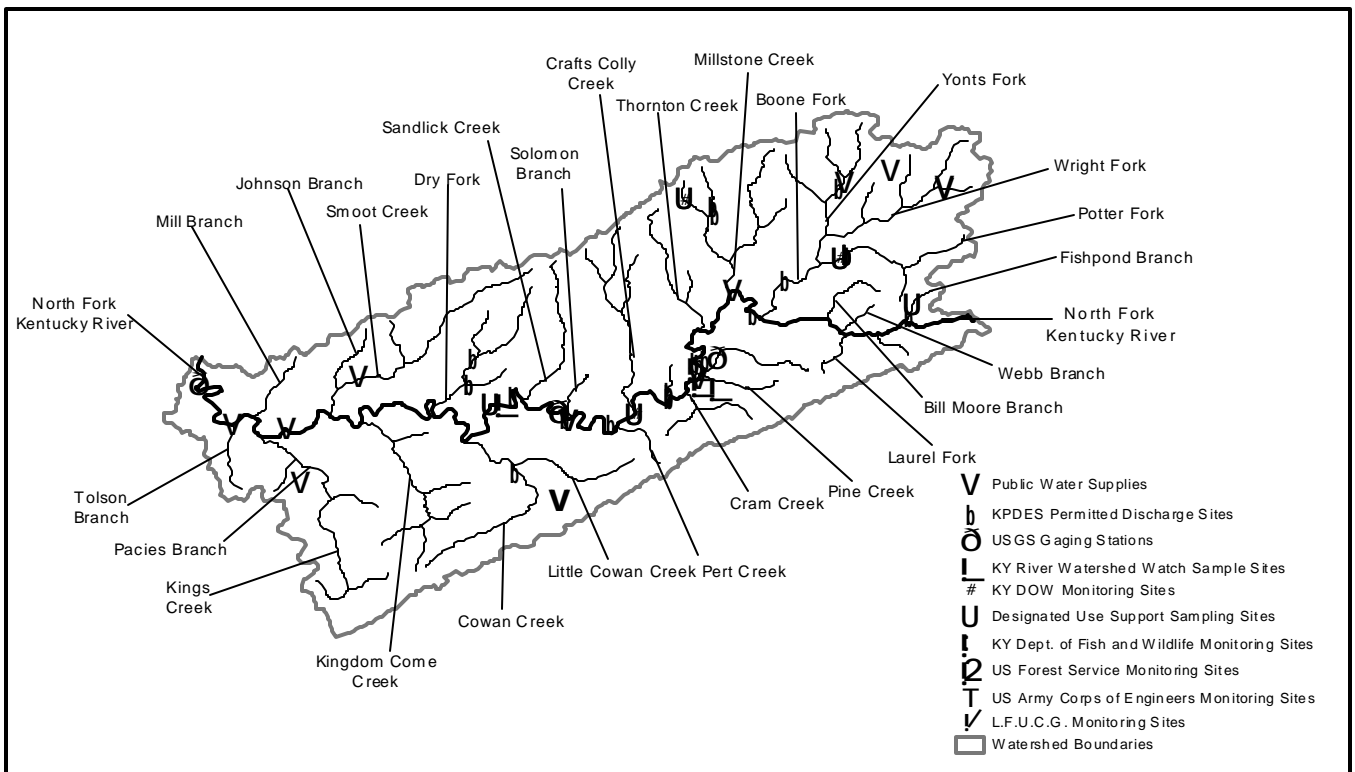
North Fork Kentucky River (Headwaters) Watershed

Watershed Number: 05100201010

Location Map



Watershed Features



Geography. The North Fork Kentucky River (headwaters) watershed occupies central Letcher 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.

Waterways. The North Fork Kentucky River flows east and crosses a watershed boundary near Blackey, where Rockhouse Creek joins it to flow into the North Fork (upper) watershed. Among the many creeks that feed it in the headwaters watershed are Millstone Creek, Potter Fork, Cram Creek, and Pine Creek.

Land and water use. Land in the watershed is nearly all rural and wooded. The surface waters of the watershed supply the drinking water for the municipal systems of Whitesburg and Fleming-Neon. Twenty-four businesses and organizations hold permits for discharges into the creeks. See tables for details.

Agency data assessment. The assessed creek segments in this watershed include four that do not support some or all of their designated uses, based on biological and/or water-quality data. Siltation, pH, and organic enrichment from septic systems contribute to the impairment of these streams. 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. No volunteer data were collected in this watershed in 1999.

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):	84,209	Acres	% of Total		
Residential Area:	324		0.4	Number of Mine Permits:	108
Commercial Area:	182		0.2	Total Permitted Mining Area (Acres):	2,483
Industrial Area:	38		0.0	Number of Identified Wetland Areas:	13
Agricultural Area:	82		0.1	Total Wetland Area (Acres):	3
Rural and Wooded Area:	82,178		98.1		
Other Land-use Area:	992		1.2		

Withdrawal and Discharge Sites:

Number of Public Water Supplies and Water Withdrawal Sites:	14	Number of KPDES Discharge Permits:	24
Surface Water Withdrawals:	5		
Groundwater Withdrawals:	9		
No. of Potable Water Treatment Facilities:	8		

Sampling Site Statistics:

Number of USGS Gaging Stations:	1
Number of Kentucky Division of Water Sampling Sites:	3
Number of Kentucky Dept. of Fish and Wildlife Sampling Sites:	0
Number of US Forest Service Sampling Sites:	0
Number of US Army Corps of Engineers Sampling Sites:	0
Number of Kentucky River Watershed Watch Sampling Sites:	4
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

High

High

High

High

High

Protection Categories:

Indicator	Value	Units	Range of All Watersheds	Mean of All Watersheds
Wetland Areas	3	Acres	0 - 106	12
Surface Drinking Water Sources	5	No. of sources	0 - 14	2
Ground Drinking Water Sources	9	No. of sources	0 - 17	1
Groundwater Sensitivity	3.13	Score	2 - 5	3.21
KY Dept. of Fish and Wildlife Management Areas	0	Acres	0 - 2951	93
U.S. Forest Service Management Areas	9,356	Acres	0 - 155253	12,600
Kentucky State Park Areas	0	Acres	0 - 1928	42
Nature Preserves Commission Areas	674	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	0	No. of resources	0 - 8	1
Kentucky Rivers Assessment Scores	0.65	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	10	Number since 1970	0 - 10	4
Water Supply Inadequacy	2.00	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	3	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	3.00	Score	1 - 3	1.31
Contamination Sites Impacting Ecological Health	3	Number of sites	0 - 71	4

Potential Impact Categories:

Indicator	Value	Units	Range of All Watersheds	Mean of All Watersheds
Potential Contamination Sites	23	Number of sites	1 - 121	12
Potential Pesticide Loading	0	Est. sales in tons	0 - 45	10
Potential Fertilizer Loading	0	Est. tons applied	0 - 2747	394
Agricultural Erosion Potential	1.43	Est. tons erosion / acre	0 - 9	3.20
Livestock Operations Potential Impact	438	Animal units	55 - 43826	7,021
KPDES Discharge Violations	61	Number of violations	0 - 541	39
KY Division of Water Citizen Complaints	28	Number of complaints	0 - 53	9
Toxic Release Inventory	0	Score	0 - 11547626	231,638
Population Change Projection	-28	Number of persons	-149 - 11030	448
Population Not on Public Sewer Systems	4,511	Number of persons	12 - 4511	1,114
Mining Area	2,484	Acres	0 - 6305	355
Surface Water Runoff Potential	60.52	SCS Curve Number	60 - 79	68
KPDES Permitted Discharges	24	Number of sites	0 - 56	6

Stream and Waterbody Use Support Summary

Total Stream Miles: <input type="text" value="156.51"/>	<i>Number of Seaments</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>
Segments Assessed:	5	21.0	0.0	0.0	21.0	0.0
Designated Uses						
Aquatic Life:	5	21.0	0.0	0.0	21.0	0.0
Primary Contact:						
Fish Consumption:						
Drinking Water:						

* Blank values indicate no assessed segments for this category.

Assessed Stream Segments and Waterbodies					
<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>
Fishpond Lake	0	0	0	AL	Fully Supporting
Left Fork Millstone	1.5	2.7	1.2	AL	Not Supporting
North Fork Kentucky River	147.7	158	10.3	AL	Not Supporting
North Fork Kentucky River	142.6	147.7	5.1	AL	Not Supporting
Potter Fork	0	4.4	4.4	AL	Not Supporting

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

Causes for Nonsupport or Impairment of Designated Uses					
<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>
Left Fork Millstone	1.5	2.7	1.2	Aquatic Life Support	Not Supporting
<i>Possible Causes of Impairment:</i> pH, Siltation		<i>Possible Sources For Impairment:</i> Resource Extraction, Source Unknown			
Potter Fork	0	4.4	4.4	Aquatic Life Support	Not Supporting
<i>Possible Causes of Impairment:</i> Organic enrichment/Low DO		<i>Possible Sources For Impairment:</i> Land Disposal, Onsite Wastewater Systems (Septic Tanks)			
North Fork Kentucky River	142.6	147.7	5.1	Aquatic Life Support	Not Supporting
<i>Possible Causes of Impairment:</i> Siltation		<i>Possible Sources For Impairment:</i> Agriculture, Crop-related Sources, Erosion and Sedimentation, Habitat Modification (other than Hydromodification), Land Disposal, Nonirrigated Crop Production, Onsite Wastewater Systems (Septic Tanks), Urban Runoff/Storm Sewers			
North Fork Kentucky River	147.7	158	10.3	Aquatic Life Support	Not Supporting

Watershed Name: North Fork Kentucky River

11-Digit Watershed Identity Number: 05100201010

Possible Causes of Impairment:

Siltation

Possible Sources For Impairment:

Agriculture, Construction, Crop-related Sources, Grazing related Sources, Harvesting, Restoration, Residue Management, Nonirrigated Crop Production, Pasture grazing - Riparian and/or Upland, Silviculture, Urban Runoff/Storm Sewers

**Abbreviations: UT - Unnamed Tributary*

Watershed Name: North Fork Kentucky River

11-Digit Watershed Identity Number:

05100201010

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>
ANR COAL COMPANY, LLCNY	Surface Water	Water Withdrawal Site	WW0827
COWAN ELEMENTARY SCHOOL	Groundwater	Water Treatment Plant	0672291
COWEN HEADSTART	Groundwater	Water Treatment Plant	0673053
FLEMING-NEON WATER COMPANY	Groundwater	Water Withdrawal Site	0670279
FLEMING-NEON WATER COMPANY	Surface Water	Water Treatment Plant	0670279
GOLDEN OAK MINING COMPANY	Groundwater	Water Withdrawal Site	WW1400
JACKHORN WATER SUPPLY	Groundwater	Water Treatment Plant	0670806
KENTUCKY PROCESSING COMPANY	Surface Water	Water Withdrawal Site	WW1310
KINGS CREEK SENIOR CITIZENS	Groundwater	Water Treatment Plant	0673238
MAYKING HEADSTART CENTER	Groundwater	Water Treatment Plant	0672553
MILLSTONE WATER COMPANY	Groundwater	Water Treatment Plant	0670809
WHITESBURG MUN WATER WORKS	Surface Water	Water Treatment Plant	0670466
WHITESBURG MUN WATER WORKS	Surface Water	Water Withdrawal Site	0670466

KPDES Permitted Discharge Facilities

<i>Facility</i>	<i>Type of Facility</i>	<i>KPDES Site ID Number</i>
CHILDERS OIL CO INC	PETROLEUM BULK STATIONS & TERM	KY0082449
CHILDERS OIL CO INC	PETROLEUM BULK STATIONS & TERM	KY0097870
DRY FORK MARKET	GROCERY STORES	KY0095214
FISHPOND LAKE RECREATION	SPORTING & RECREATIONAL CAMPS	KY0089419
FLEMING NEON STP	SEWERAGE SYSTEMS	KY0027405
KTC LETCHER CO MAINT GARAGE	BUS TERMINAL & SERVICE FACILIT	KY0098795
LARK GROUP BUILDINGS	OPER OF NONRESIDENTIAL BLDGS	KY0096181
LARKEY & SONS INC BULK PLT	SPECIAL WAREHOUSING & STORAGE	KY0098213
LETCHER CO BD OF ED	ELEMENTARY & SECONDARY SCHOOLS	KY0100731
LETCHER CO LANDFILL	REFUSE SYSTEMS	KY0092207
MAYKING MALL	OPER OF NONRESIDENTIAL BLDGS	KY0093483
PARKWAY MOTEL	HOTELS AND MOTELS	KY0093360
STANDARD LABORATORIES INC	SEARCH & NAVIGATION EQUIPMENT	KY0086282
WHITESBURG STP	SEWERAGE SYSTEMS	KY0023183
WHITESBURG WTP	WATER SUPPLY	KY0092401

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 (he	USGS	USGS03277290	Flow
North Fork Kentucky River	US COE	USNWS15-8633-N	Flow
North Fork Kentucky River	USGS	USGS03277300	Flow
North Fork Kentucky River	USGS	USGS03277340	Flow

KY Division of Water Sampling Sites

<i>Stream Name</i>	<i>Type of Sampling</i>
North Fork Kentucky River	Physical/Chemical Monitoring
Left Fork Millstone Creek	Physical/Chemical Monitoring

Watershed Name: North Fork Kentucky River 11-Digit Watershed Identity Number: 05100201010

Potter Fork Physical/Chemical Monitoring

KY River Watershed Watch Sampling Sites

<i>Stream Name</i>	<i>KRWW Sample ID No.</i>	<i>Site Description</i>
Cram Creek	K64	At Mouth of Cram Creek & Pert Fork
North Fork KY River	K62	Mayking, at Old Regular Baptist Church
North Fork KY River	K17	Whitesburg, at KY 931/15
Pine Creek	K63	At Mayking Baptist Church

Results from 1999 KY River Watershed Watch Sampling:

Conventional Parameters:

Sample ID Number: K17 Stream: North Fork KY River

Physical Data (May):

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

Fecal Data (July / August):

	Coliform Count	Strep Count	Coliform/Strep Ratio
July			
August			

Sample ID Number: K62 Stream: North Fork KY River

Physical Data (May):

pH	0	Alkalinity	156
Temperature	0	Total Hardness	198
Dissolved Oxygen	14	Chlorides	36.1
		Conductivity	642
		Total Organic Carbon	1.7
		Total Suspended Solids	

Fecal Data (July / August):

	Coliform Count	Strep Count	Coliform/Strep Ratio
July	6000	2700	202
August	100	3600	0.033

Sample ID Number: K63 Stream: Pine Creek

Physical Data (May):

pH	0	Alkalinity	180
Temperature	0	Total Hardness	202
Dissolved Oxygen	0	Chlorides	22.9
		Conductivity	683
		Total Organic Carbon	1.6
		Total Suspended Solids	3

Fecal Data (July / August):

	Coliform Count	Strep Count	Coliform/Strep Ratio
July	16000	4400	3.6
August	50	540	0.093

Sample ID Number: K64 Stream: Cram Creek

Physical Data (May):

pH	8.5	Alkalinity	272
Temperature	0	Total Hardness	208
Dissolved Oxygen	12	Chlorides	22.4
		Conductivity	763
		Total Organic Carbon	3.0
		Total Suspended Solids	-

Fecal Data (July / August):

	Coliform Count	Strep Count	Coliform/Strep Ratio
July	280	1700	0.17
August	3000	1800	1.7

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: K17 Stream: North Fork KY River

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).

Sample ID Number: K62 Stream: North Fork KY River

Ammonia	<input type="text"/>	Orthophosphate as Phosphate	<input type="text" value="0.025"/>	Sulfate	<input type="text" value="127"/>
Ammonia Nitrogen	<input type="text"/>	Orthophosphate as Phosphorus	<input type="text" value="0.008"/>		
Total Kjeldahl Nitrogen as NH3	<input type="text"/>	Total Recoverable Phosphorus	<input type="text" value="0.07"/>		
Total Kjeldahl Nitrogen as N	<input type="text"/>				
Nitrate	<input type="text" value="0.6"/>				
Nitrate Nitrogen	<input type="text" value="0.14"/>				

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

Sample ID Number: K63 Stream: Pine Creek

Ammonia	<input type="text"/>	Orthophosphate as Phosphate	<input type="text" value="0.156"/>	Sulfate	<input type="text" value="146"/>
Ammonia Nitrogen	<input type="text"/>	Orthophosphate as Phosphorus	<input type="text" value="0.051"/>		
Total Kjeldahl Nitrogen as NH3	<input type="text"/>	Total Recoverable Phosphorus	<input type="text" value="0.12"/>		
Total Kjeldahl Nitrogen as N	<input type="text"/>				
Nitrate	<input type="text" value="1.8"/>				
Nitrate Nitrogen	<input type="text" value="0.41"/>				

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

Sample ID Number: K64 Stream: Cram Creek

Ammonia	<input type="text"/>	Orthophosphate as Phosphate	<input type="text" value="-"/>	Sulfate	<input type="text" value="118"/>
Ammonia Nitrogen	<input type="text"/>	Orthophosphate as Phosphorus	<input type="text" value="-"/>		
Total Kjeldahl Nitrogen as NH3	<input type="text"/>	Total Recoverable Phosphorus	<input type="text" value="-"/>		
Total Kjeldahl Nitrogen as N	<input type="text"/>				
Nitrate	<input type="text" value="0.4"/>				
Nitrate Nitrogen	<input type="text" value="0.09"/>				

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: K17 Stream: North Fork KY 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).

Sample ID Number: K62 Stream: North Fork KY River

Aluminum	<input type="text" value="0.28"/>	Calcium	<input type="text" value="62.85"/>	Lead	<input type="text"/>	Selenium	<input type="text"/>	Thallium	<input type="text"/>
Antimony	<input type="text"/>	Chromium	<input type="text" value="0.06"/>	Lithium	<input type="text" value="0.01"/>	Silicon	<input type="text" value="2.12"/>	Vanadium	<input type="text" value="0.06"/>
Barium	<input type="text" value="0.06"/>	Cobalt	<input type="text"/>	Magnesium	<input type="text" value="26.05"/>	Sodium	<input type="text" value="27.23"/>	Zinc	<input type="text" value="0.02"/>
Beryllium	<input type="text"/>	Copper	<input type="text" value="0.01"/>	Manganese	<input type="text" value="0.08"/>	Strontium	<input type="text" value="0.43"/>		
Boron	<input type="text" value="0.12"/>	Iron	<input type="text" value="0.30"/>	Potassium	<input type="text" value="3.39"/>	Sulfur	<input type="text" value="52.84"/>		

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

Watershed Name: North Fork Kentucky River

11-Digit Watershed Identity Number:

05100201010

Sample ID Number: K63		Stream: Pine Creek							
Aluminum	<input type="text"/>	Calcium	<input type="text" value="49.17"/>	Lead	<input type="text"/>	Selenium	<input type="text"/>	Thallium	<input type="text"/>
Antimony	<input type="text"/>	Chromium	<input type="text" value="0.04"/>	Lithium	<input type="text" value="0.02"/>	Silicon	<input type="text" value="2.90"/>	Vanadium	<input type="text" value="0.08"/>
Barium	<input type="text" value="0.06"/>	Cobalt	<input type="text" value="0.002"/>	Magnesium	<input type="text" value="21.19"/>	Sodium	<input type="text" value="87.60"/>	Zinc	<input type="text" value="0.02"/>
Beryllium	<input type="text"/>	Copper	<input type="text" value="0.01"/>	Manganese	<input type="text" value="0.04"/>	Strontium	<input type="text" value="1.04"/>		
Boron	<input type="text" value="0.23"/>	Iron	<input type="text" value="0.24"/>	Potassium	<input type="text" value="4.98"/>	Sulfur	<input type="text" value="49.64"/>		

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

Sample ID Number: K64		Stream: Cram Creek							
Aluminum	<input type="text" value="0.93"/>	Calcium	<input type="text" value="51.00"/>	Lead	<input type="text"/>	Selenium	<input type="text" value="0.01"/>	Thallium	<input type="text"/>
Antimony	<input type="text" value="0.08"/>	Chromium	<input type="text" value="0.04"/>	Lithium	<input type="text" value="0.02"/>	Silicon	<input type="text" value="3.92"/>	Vanadium	<input type="text" value="0.06"/>
Barium	<input type="text" value="0.08"/>	Cobalt	<input type="text" value="0.003"/>	Magnesium	<input type="text" value="20.19"/>	Sodium	<input type="text" value="80.74"/>	Zinc	<input type="text" value="0.02"/>
Beryllium	<input type="text"/>	Copper	<input type="text" value="0.008"/>	Manganese	<input type="text" value="0.12"/>	Strontium	<input type="text" value="0.97"/>		
Boron	<input type="text" value="0.21"/>	Iron	<input type="text" value="2.13"/>	Potassium	<input type="text" value="5.04"/>	Sulfur	<input type="text" value="26.06"/>		

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
K17	North Fork KY River	<input type="text"/>	<input type="text"/>	<input type="text"/>
K62	North Fork KY River	<input type="text"/>	<input type="text"/>	<input type="text"/>
K63	Pine Creek	<input type="text"/>	<input type="text"/>	<input type="text"/>
K64	Cram Creek	<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).