

**In cooperation with the Kentucky Natural Resources and
Environmental Protection Cabinet—Division of Water**

Estimated Loads and Yields of Suspended Solids and Water-Quality Constituents in Kentucky Streams

Water-Resources Investigations Report 01-4075

Much appreciation is extended to the following U.S. Geological Survey employees for their contributions:

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U.S. Department of the Interior
U.S. Geological Survey

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By Angela S. Crain

Water-Resources Investigations Report 01-4075

**In cooperation with the Kentucky Natural Resources and
Environmental Protection Cabinet—Division of Water**

Louisville, Kentucky
2001

U.S. DEPARTMENT OF THE INTERIOR

GALE A. NORTON, Secretary

U.S. GEOLOGICAL SURVEY

Charles G. Groat, Director

This report supersedes U.S. Geological Survey Open-File Report 98-411.

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CONVERSION FACTORS AND ABBREVIATIONS

CONVERSION FACTORS

Multiply	By	To obtain
cubic foot per second (ft ³ /s)	0.02832	cubic meter per second
mile	1.606	kilometers
square mile (mi ²)	2.590	square kilometer
ton	907.2	kilogram
ton per square mile (ton/mi ²)	350.3	kilogram per square kilometer
ton per year (ton/yr)	907.2	kilogram per year
ton per square mile per year (ton/mi ²)/yr	350.3	kilogram per square kilometer per year

Degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) by use of the following equation:

$$^{\circ}\text{F} = (9/5)^{\circ}\text{C} + 32$$

ABBREVIATIONS

Abbreviated water-quality units used in this report: Chemical concentrations and water temperature are given in metric units. Chemical concentration of constituents in solution or suspension is given in milligrams per liter (mg/L) or micrograms per liter ($\mu\text{g/L}$). Milligrams per liter is a unit expressing the concentration of chemical constituents in solution as weight (milligrams) of solute per unit of volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Estimated loads and yields are expressed in tons per square mile (ton/mi^2). Bacteria densities are expressed as number of colonies per 100 milliliters of water (col/100 mL).

Water year: The 12-month period from October 1 through September 30. The water year is designated by the calendar year in which it ends.

Estimated Loads and Yields of Suspended Solids and Water-Quality Constituents in Kentucky Streams

By Angela S. Crain

Abstract

Loads and yields of suspended solids, nutrients, major ions, trace elements, organic carbon, fecal coliform, dissolved oxygen, and alkalinity were estimated for 22 streams in 11 major river basins in Kentucky. Mean daily discharge was estimated at ungaged stations or stations with incomplete discharge records using drainage-area ratio, regression analysis, or a combination of the two techniques. Streamflow was partitioned into total and base flow and used to estimate loads and yields for suspended solids and water-quality constituents by use of the ESTIMATOR and FLUX computer programs. The relative magnitude of constituent transport to streams from ground- and surface-water sources was determined for the 22 stations. Nutrient and suspended solids yields for drainage basins with relatively homogenous land use were used to estimate the total-flow and base-flow yields of nutrient and suspended solids for forested, agricultural, and urban land.

Yields of nutrients—nitrite plus nitrate, ammonia plus organic nitrogen, and total phosphorus—in forested drainage basins were generally less than 1 ton per square mile per year ((ton/mi²)/yr) and were generally less than 2 (ton/mi²)/yr in agricultural drainage basins. The smallest total-flow yields for nitrogen (nitrite plus nitrate) was estimated at Levisa Fork at Paintsville in which 95 percent of the land is forested. This site also had one of the smallest total-flow yields for ammonia plus

organic nitrogen. In general, nutrient yields from forested lands were lower than those from urban and agricultural land.

Some of the largest estimated total-flow yields of nutrients among agricultural basins were for streams in the Licking River Basin, the North Fork Licking River near Milford, and the South Fork Licking River at Cynthiana. Agricultural land constitutes greater than 75 percent of the drainage area in these two basins. Possible sources of nutrients discharging into the Licking River are farm and residential fertilizers. Estimated base-flow yields of suspended solids and nutrients at several basins in the larger Green River and Lower Cumberland River Basins were about half of their estimated total-flow yields. The karst terrain in these basins makes the ground water highly susceptible to contamination, especially if a confining unit is thin or absent.

INTRODUCTION

According to the Kentucky Environmental Quality Commission (1992), nonpoint-source runoff from agriculture, logging, mining, and urban development results in about 62 percent of the water-pollution problems in Kentucky. This runoff results in increased levels of suspended solids, nutrients, and trace elements in streams, which can have detrimental effects on the environment. Therefore, reductions of these chemical-constituent or contaminant loads are vital to the health of the aquatic ecosystem.

In July 1996, the U.S. Geological Survey (USGS), in cooperation with the Kentucky Natural Resources and Environmental Protection

Cabinet—Division of Water, began a study to estimate the loads and yields of suspended solids and selected water-quality constituents for 44 Kentucky streamflow stations for total flow and periods of base flow. These streams constitute the Kentucky Ambient Surface-Water Monitoring Network. Estimated loads and yields for 20 of these stations were published in 1998 (Garcia and Crain, 1998) (phase I); results for these stations are included in the appendixes of this report. In continuing this study (phase II), the loads and yields were estimated for 22 of the remaining 24 stations. No loads or yields were estimated for two stations (Tradewater River at Olney and Mayfield Creek near Blandville) because of problems in estimating discharge as a result of backwater from the Ohio and Mississippi Rivers.

Both point sources and nonpoint sources of chemical constituents, or contaminants, contribute to the total load of a stream. Generally, the inflow of point-source contaminants to streams remains relatively constant, and can be considered a component of stream-water quality at base flow. By contrast, nonpoint-source contaminants are transported to streams primarily during storm runoff periods. Thus, information about the relative magnitude of suspended solids and water-quality constituent loads in streams at base flow, which largely originates from ground-water sources, and at total surface-water flow (storm-water runoff) will be

helpful to those responsible for the planning and management of nonpoint-source pollution control programs.

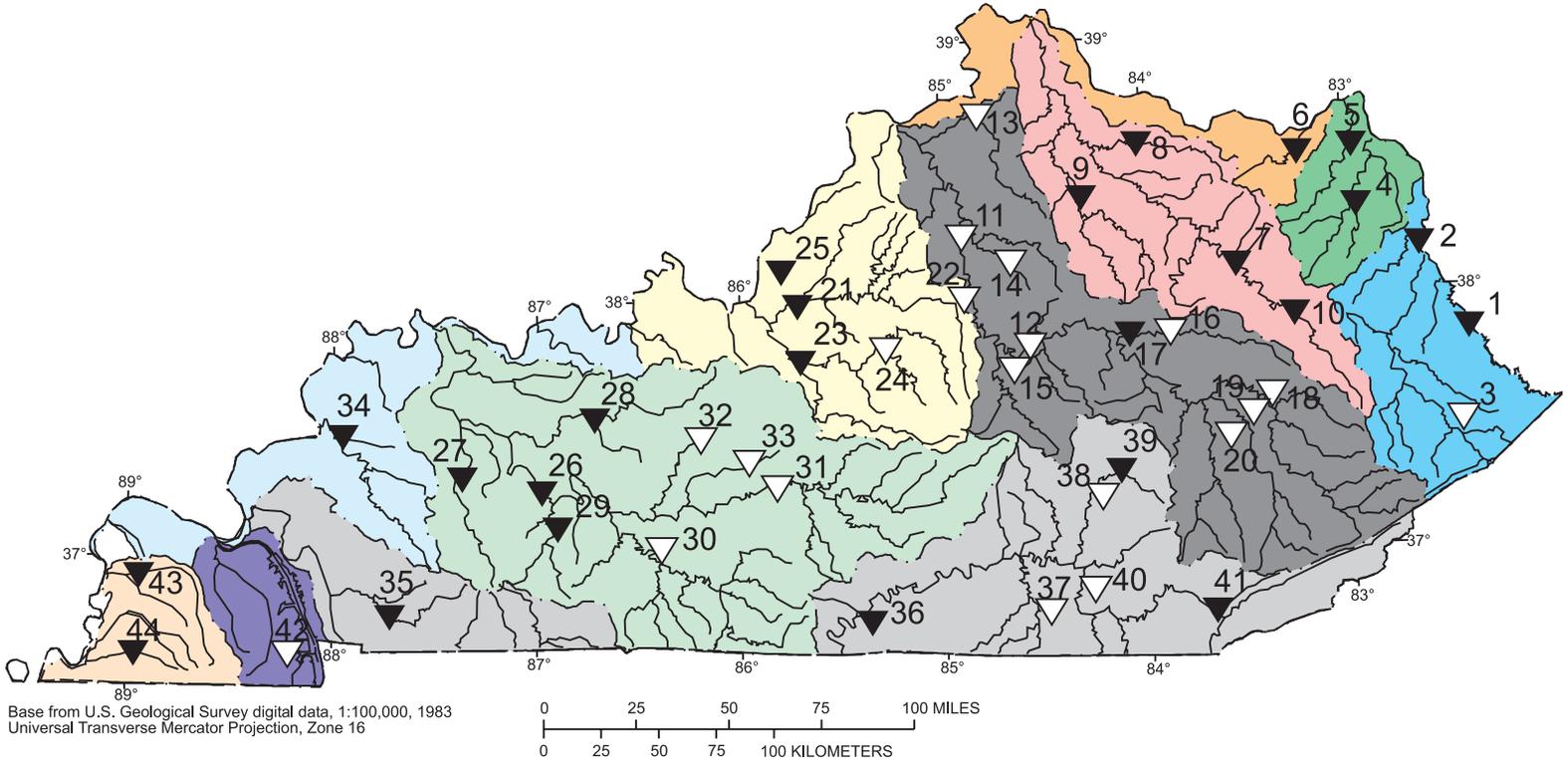
Purpose and Scope

This report describes the methods used to evaluate streamflow, suspended solids, and water-quality information for 44 stream stations in Kentucky (fig. 1). These stations (table 1) were selected from the Kentucky Ambient Surface-Water Monitoring Network to determine the relative magnitude of the loads and yields of suspended solids and selected water-quality constituents (table 2) transported in surface and ground water. Constituents for which estimated loads and yields are reported include suspended solids, nutrients, major ions, trace elements, organic carbon, and fecal coliform. It is not within the scope of this report to provide detailed analyses of the factors that affect the constituent concentrations measured in each of the selected streams.

Selected Study Stations

The 24 stations included in phase II of this study are located in 11 major drainage basins (fig. 2). Stations from phase I also are located in these drainage basins (appendix 1).

Drainage basin	Number of stations (phase I)	Number of stations (phase II)
Big Sandy River	1	2
Kentucky River	10	1
Salt River	1	3
Green River	4	4
Cumberland River	3	4
Tennessee River	1	0
Middle Ohio–Raccoon River	0	2
Middle Ohio–Little Miami River	0	1
Lower Ohio River	0	1
Hatchie–Obion River	0	2
Licking River	0	4



EXPLANATION

- | | | | |
|-----------------------|------------------------|--------------------------------------|---------------------------|
| Big Sandy River Basin | Green River Basin | Middle Ohio-Raccoon River Basin | Hatchie-Obion River Basin |
| Kentucky River Basin | Cumberland River Basin | Middle Ohio-Little Miami River Basin | Licking River Basin |
| Salt River Basin | Tennessee River Basin | Lower Ohio River Basin | |
- Drainage basin boundary
 30 Phase 1 surface-water-quality sampling station and identifier (see table 1)
 34 Phase 2 surface-water-quality sampling station and identifier (see table 1)

Figure 1. Major drainage basins and ambient surface-water monitoring network in Kentucky, phases I and II.

Table 1. Streamflow and water-quality stations in the ambient surface-water monitoring network in Kentucky, phases I and II

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; *, KDOW water-quality sampling stations in close proximity with USGS stream-gaging stations]

Map number (figure 1)	USGS station number	KDOW water-quality station number	USGS/KDOW* station name
Phase I			
3	03209500	PRI006	Levisa Fork near Pikeville
11	03287500	PRI024	Kentucky River at Frankfort
12	03284500	PRI025	Kentucky River at Camp Nelson
13	03291500	PRI022	Eagle Creek at Glencoe
14	03289300	PRI034	S. Elkhorn Creek near Midway
15	03285000	PRI045	Dix River near Danville
16	03283500	PRI046	Red River at Clay City
18	03280000	PRI031	North Fork Kentucky River at Jackson
19	03281000	PRI032	Middle Fork Kentucky River at Tallega
20	03281500	PRI033	South Fork Kentucky River at Booneville
22	03295400	PRI052	Salt River at Glensboro
24	03300400	PRI041	Beech Fork near Maud
30	03314500	PRI017	Barren River at Bowling Green
31	03308500	PRI018	Green River at Munfordville
32	03310300	PRI021	Nolin River at White Mills
33	03310400	PRI020	Bacon Creek near Priceville
37	03410500	*PRI008	South Fork Cumberland River near Stearns South Fork Cumberland River at Blue Heron*
38	03406500	PRI010	Rockcastle River at Billows
40	03404500	PRI009	Cumberland River at Cumberland Falls
42	03610200	PRI038	Clarks River at Almo

Table 1. Streamflow and water-quality stations in the ambient surface-water monitoring network in Kentucky, phases I and II—*Continued*
 [USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; *, KDOW water-quality sampling stations in close proximity with USGS stream-gaging stations]

Map number (figure 1)	USGS station number	KDOW water-quality station number	USGS/KDOW* station name
Phase II			
1	03214500	PRI002	Tug Fork at Kermit, West Virginia
2	03215000	*PRI064	Levisa Fork at Paintsville Levisa Fork near Louisa*
4	03216500	PRI049	Little Sandy River near Argillite
5	03216800	PRI048	Tygarts Creek near Load
6	03237250	PRI063	Kinniconick Creek near Tannery
7	03249500	PRI061	Licking River at Claysville
8	03251400	PRI060	North Fork Licking River at Milford
9	03252500	*PRI059	South Fork Licking River at Cynthiana South Fork Licking River at Morgan*
10	03248640	PRI062	Licking River at West Liberty
17	03282300	PRI026	Kentucky River near Trapp
21	03298500	PRI029	Salt River at Shepherdsville
23	03301500	PRI057	Rolling Fork near Lebanon Junction
25	03302000	PRI030	Pond Creek near Louisville
26	03316500	*PRI055	Green River at Paradise Green River near Island*
27	03321060	*PRI012	Pond River near Madisonville Pond River near Sacramento*
28	03319000	PRI014	Rough River near Dundee
29	03316275	PRI056	Mud River near Gus
34	03384180	*PRI053	Tradewater River at Olney Tradewater River near Sullivan*
35	03438000	PRI043	Little River near Cadiz
36	03414110	PRI007	Cumberland River at Burkesville
39	03405842	PRI051	Horse Lick Creek near Lamero
41	03402900	PRI011	Cumberland River at Pineville
43	07023100	*PRI042	Mayfield Creek near Blandville Mayfield Creek near Magee Springs*
44	07024000	PRI037	Bayou de Chien near Clinton

Table 2. Selected constituents for suspended solids, water-quality analysis, and load estimation

U.S. Environmental Protection Agency STORET Code	Constituents
Major ions, total (in milligrams per liter)	
00916	Calcium
00940	Chloride
00927	Magnesium
00937	Potassium
00929	Sodium
00946	Sulfate
Nutrients, total (in milligrams per liter)	
00610	Ammonia
00625	Ammonia plus organic nitrogen
00630	Nitrite plus nitrate
00665	Phosphorus, total
Trace elements, total (in micrograms per liter)	
01105	Aluminum
01002	Arsenic
01007	Barium
01027	Cadmium
01034	Chromium
01042	Copper
01045	Iron
01051	Lead
71900	Mercury
01055	Manganese
01092	Zinc
Suspended solids	
00530	Residue on evaporation at 105 degrees Celsius (nonfilterable)
Carbon (in milligrams per liter)	
00680	Total organic carbon
Bacteria (in colonies per 100 milliliters)	
31616	Fecal coliform
Additional constituents	
00410	Alkalinity
00310	Biological oxygen demand – 5 day
00300	Dissolved oxygen

Because the morphology of each station is different, geographic location can affect the water-quality at that station. Of the 24 stations in phase II, 7 have more than 60 percent of their drainage area within the Eastern Coalfield Region (fig. 3), where water-quality is affected by the effects of coal mining (Leist and others, 1981; Quinones and others, 1981). Four stations have more than 50 percent of their drainage area within the Inner and Outer Bluegrass Regions, where water quality is affected by activities associated with urbanization and agriculture (table 3). Six stations have greater than 60 percent of their drainage area within the Mississippian Plateaus Region, which is characterized by karst topography. The water-quality in this region is primarily affected by agricultural activities. The locations of the selected stations from phase I in the different physiographic regions can be found in appendix 2.

Land use also affects the presence and concentrations of constituents in water and is important in assessing loads and yields. Land use was characterized into six categories: urban, agriculture, forest, water, wetland, and barren (table 3, fig. 4, and appendix 3). Forest was the largest represented category in the Eastern Coalfield, with a mean of 89 percent. Agriculture was the largest represented category for the other physiographic regions in Kentucky, with a mean of 52 percent. Water (major rivers and reservoirs) was the least represented category across Kentucky, with a mean of less than 1 percent.

METHODS FOR ESTIMATING LOADS AND YIELDS OF SUSPENDED SOLIDS AND SELECTED WATER-QUALITY CONSTITUENTS

The load of a water-quality constituent in a stream—the weight of material transported during a specific time period—is determined by multiplying the concentration of the constituent by the stream discharge; the yield is determined by dividing the load by the drainage area of the basin. Water-quality, suspended solids, and stream-discharge data

were used to estimate the annual loads and yields for streams for total flow and base flow. Specific methods used in this study are described in the following sections.

Selection of Stations and Assembly of Data Sets

Stations were selected from the Kentucky Ambient Surface-Water Monitoring Network, which were originally established on the basis of the U.S. Environmental Protection Agency (USEPA) criteria for sampling major rivers and significant tributaries at the mouths of major streams (U.S. Environmental Protection Agency, 1977). Suspended solids and water-quality data were collected by the Kentucky Division of Water (KDOW) and analyzed by the Kentucky Division of Environmental Services. Streamflow data were collected by USGS Kentucky District personnel. Suspended solids and water-quality data for the period October 1979–September 1997 were retrieved from the USEPA Storage and Retrieval (STORET) data base. The list of constituents is presented in table 2. The STORET data were reformatted and entered into the USGS National Information System (NWIS) data base to facilitate formats required by the ESTIMATOR (Baier and others, 1992) and FLUX (Walker, 1987) computer programs to estimate total and base-flow load estimates.

Daily discharge records matching the period of suspended solids and water-quality data were retrieved from NWIS. Daily base flow was determined from the daily discharge records through use of a stream hydrograph partitioning program developed by Rutledge (1998). No additional daily discharge record manipulation was required for estimating total loads by use of the ESTIMATOR computer program; however, the partitioned daily discharge records were reformatted for use in determining loads by use of the FLUX computer program.

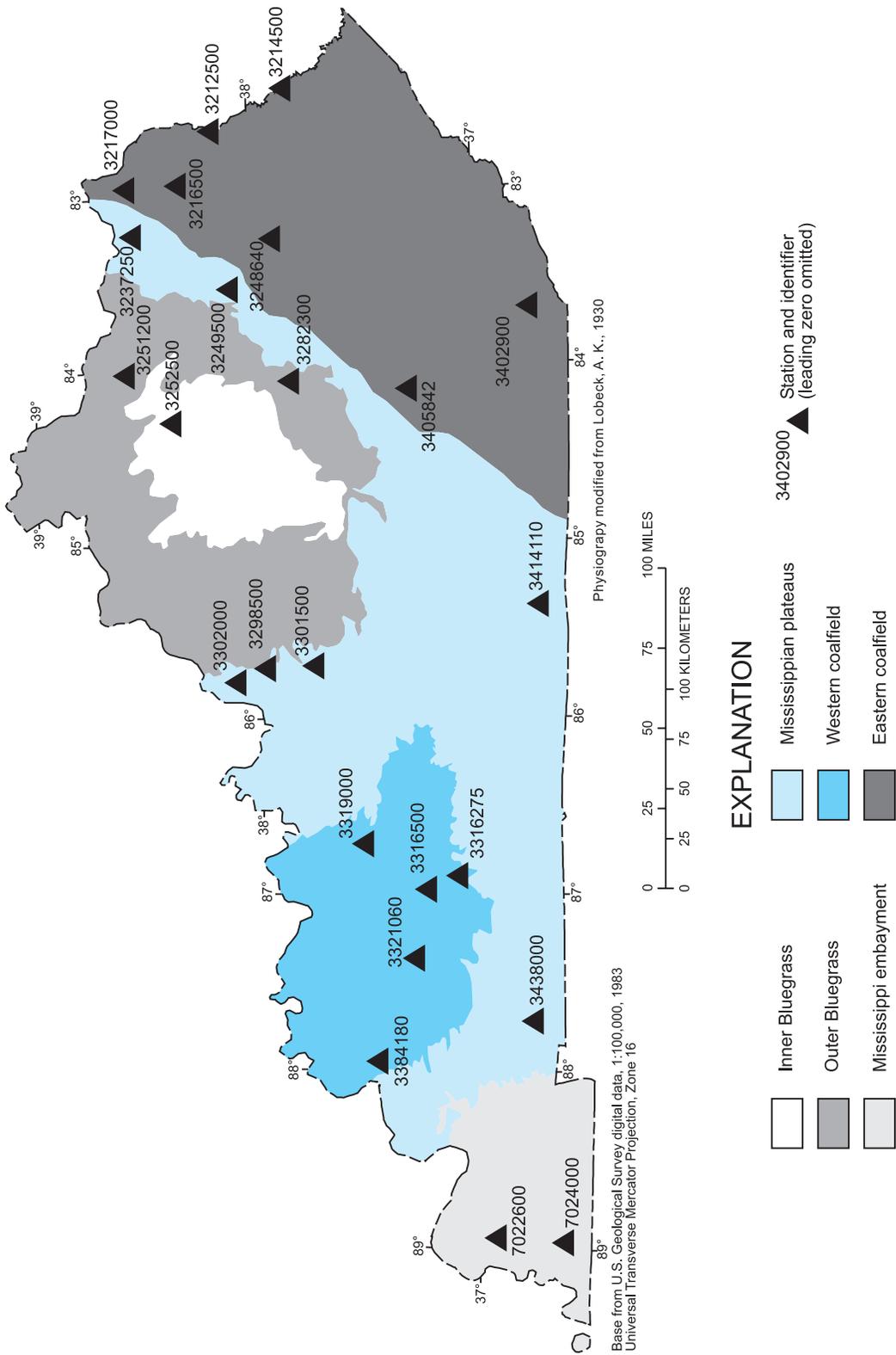


Figure 3. Physiographic regions of Kentucky and locations of selected study stations, phase II.

Table 3. Percent land use and physiographic region within drainage areas for selected ambient surface-water monitoring stations in Kentucky, phases I and II

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; mi², square miles; Urb, urban; Ag, agriculture; For, forestry; Wa, water; Wet, wetland; Bar, barren; IB, ininter bluegrass; OB, outer bluegrass; ME, Mississippi embayment; WC, western coalfield; MP, Mississippian plateaus; EC, eastern coalfield; <, less than; ---, not applicable]

Map number (figure 1)	USGS/KDOW station name ¹	Drainage area (mi ²)	Land use (nearest percent)						Physiographic region (nearest percent)					
			Urb	Ag	For	Wa	Wet	Bar	IB	OB	ME	WC	MP	EC
PHASE I														
3	Levisa Fork near Pikeville	1,232	<1	<1	98	<1	<1	2	---	---	---	---	---	100
11	Kentucky River at Frankfort	5,411	2	29	67	<1	<1	1	13	16	---	---	10	61
12	Kentucky River at Camp Nelson	4,528	2	20	77	<1	<1	2	3	16	---	---	8	73
13	Eagle Creek at Glencoe	437	5	57	38	<1	<1	<1	33	67	---	---	---	---
14	S. Elkhorn Creek near Midway	105	27	72	<1	<1	<1	1	100	---	---	---	---	---
15	Dix River near Danville	318	3	69	28	<1	<1	<1	2	47	---	---	51	---
16	Red River at Clay City	362	1	15	84	<1	<1	<1	---	---	---	---	25	75
18	North Fork Kentucky River at Jackson	1,101	<1	<1	95	<1	<1	4	---	---	---	---	---	100
19	Middle Fork Kentucky River at Tallega	537	<1	1	96	<1	<1	3	---	---	---	---	---	100
20	South Fork Kentucky River at Booneville	722	<1	6	93	<1	<1	1	---	---	---	---	---	100
22	Salt River at Glensboro	172	6	85	9	<1	<1	<1	67	31	---	---	1	---
24	Beech Fork near Maud	436	2	79	18	<1	<1	<1	7	91	---	---	2	---
30	Barren River at Bowling Green	1,849	5	76	18	1	1	<1	---	---	---	---	100	---
31	Green River at Munfordville	1,673	3	59	37	<1	<1	<1	---	1	---	---	99	---
32	Nolin River at White Mills	357	8	84	8	<1	<1	<1	---	---	---	---	100	---
33	Bacon Creek near Priceville	85.4	3	52	45	<1	<1	<1	---	---	---	---	100	---
37	South Fork Cumberland River near Stearns / South Fork Cumberland River at Blue Heron	954	<1	<1	99	<1	<1	1	---	---	---	---	---	100
38	Rockcastle River at Billows	604	2	24	70	<1	<1	4	---	---	---	---	23	77
40	Cumberland River at Cumberland Falls	1,977	3	7	86	<1	<1	5	---	---	---	---	---	100
42	Clarks River at Almo	134	5	91	4	<1	<1	<1	---	---	100	---	---	---

Table 3. Percent land use and physiographic region within drainage areas for selected ambient surface-water monitoring stations in Kentucky, phases I and II—*Continued*
 [USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; mi², square miles; Urb, urban; Ag, agriculture; For, forestry; Wa, water; Wet, wetland; Bar, barren; IB, inner bluegrass; OB, outer bluegrass; ME, Mississippi embayment; WC, western coalfield; MP, Mississippian plateau; EC, eastern coalfield; <, less than; ---, not applicable]

Map number (figure 1)	USGS/KDOW station name ¹	Drainage area (mi ²)	Land use (nearest percent)						Physiographic region (nearest percent)					
			Urb	Ag	For	Wa	Wet	Bar	IB	OB	ME	WC	MP	EC
PHASE II														
1	Tug Fork at Kermit, West Virginia	1,280	<1	<1	96	---	---	3	---	---	---	---	---	100
2	Levisa Fork at Paintsville / Levisa Fork near Louisa	3,897	1	<1	95	<1	---	3	---	---	---	---	---	100
4	Little Sandy River near Argillite	400	<1	15	83	<1	---	1	---	---	---	---	---	100
5	Tygarts Creek near Load	242	1	18	80	<1	---	<1	---	---	---	---	33	67
6	Kinniconick Creek near Tannery	201	<1	7	93	---	---	<1	---	---	---	---	100	---
7	Licking River at Claysville	827	<1	15	82	2	---	2	---	---	---	---	8	92
8	North Fork Licking River at Milford	226	1	77	22	---	---	<1	---	93	---	---	7	---
9	South Fork Licking River at Cynthiana / South Fork Licking River at Morgan	621	4	94	2	<1	---	<1	71	29	---	---	---	---
10	Licking River at West Liberty	327	<1	8	89	---	---	3	---	---	---	---	---	100
17	Kentucky River near Trapp	3,246	1	6	91	<1	---	2	---	3	---	---	6	91
21	Salt River at Shepherdsville	1,197	8	76	16	<1	---	<1	10	88	---	---	2	---
23	Rolling Fork near Lebanon Junction	1,299	3	63	34	<1	<1	<1	2	59	---	---	39	---
25	Pond Creek near Louisville	64	62	19	17	<1	---	<1	---	37	---	---	63	---
26	Green River at Paradise / Green River near Island	6,183	4	62	32	1	<1	<1	---	<1	---	16	84	---
27	Pond River near Madisonville / Pond River near Sacramento	469	5	39	44	<1	5	6	---	---	---	66	34	---
28	Rough River near Dundee	757	2	59	37	<1	<1	<1	---	---	---	30	70	---
29	Mud River near Gus	268	3	51	45	<1	<1	<1	---	---	---	20	80	---
34	Tradewater River at Olney / Tradewater River near Sullivan	861	4	48	38	<1	5	5	---	---	---	77	23	---
35	Little River near Cadiz	244	9	78	11	<1	<1	<1	---	---	---	---	100	---
36	Cumberland River at Burkesville	6,053	3	22	69	2	<1	3	---	---	---	---	34	66
39	Horse Lick Creek near Lamero	61.7	1	10	87	---	---	2	---	---	---	---	17	83
41	Cumberland River at Pineville	770	2	2	91	<1	---	5	---	---	---	---	---	100
43	Mayfield Creek near Blandville / Mayfield Creek near Magee Springs	295	3	88	6	<1	3	<1	---	---	100	---	---	---
44	Bayou de Chien near Clinton	68.7	1	87	8	<1	3	<1	---	---	100	---	---	---

¹If only one station name is listed, it is both the USGS and KDOW station name. If two station names are listed, the first is the USGS station name and the second is the KDOW station name.

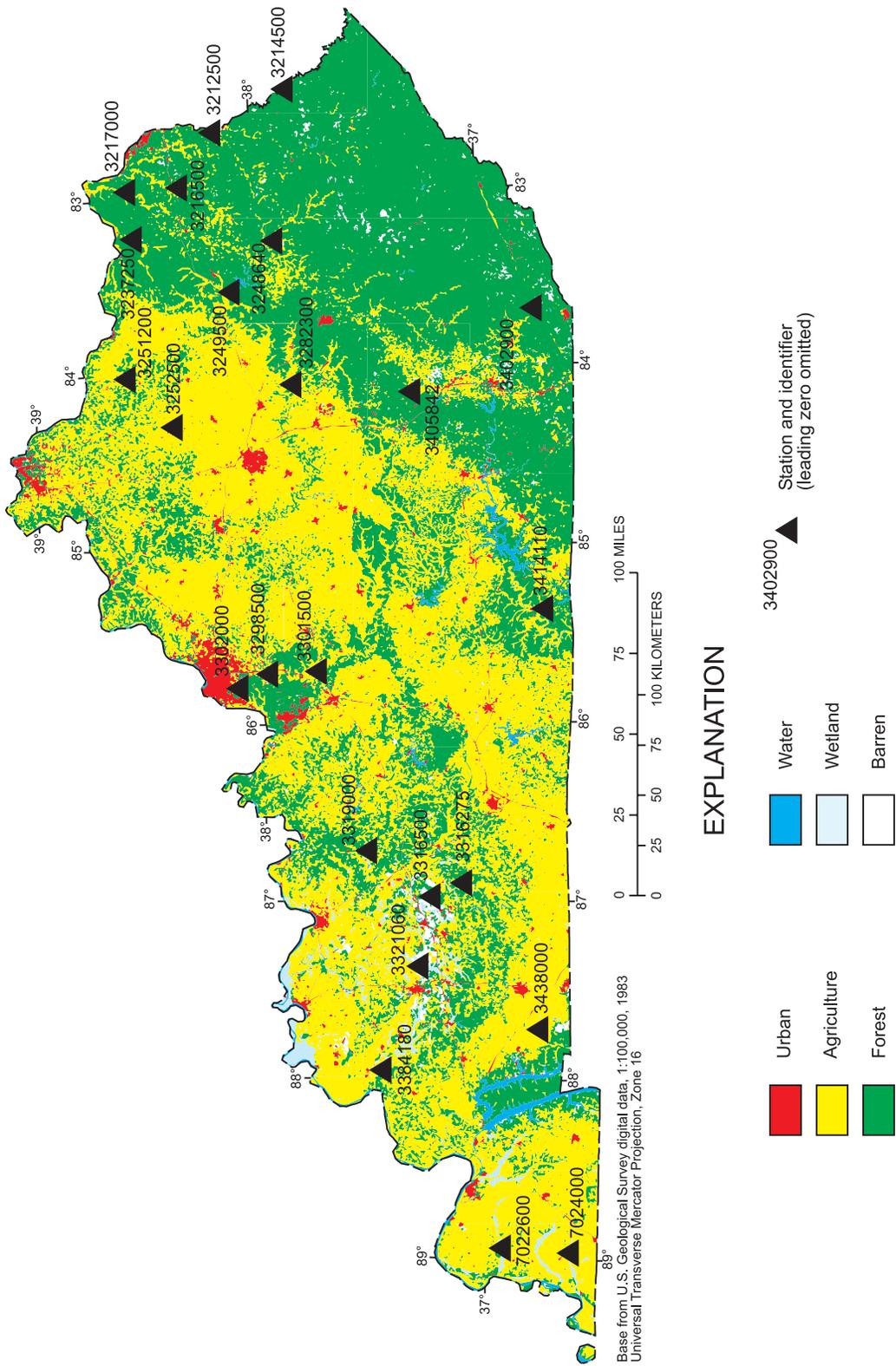


Figure 4. Land use in Kentucky and locations of selected study stations, phase II.

State boundary and hydrologic coverages were from USGS 1:100,000-scale digital line graphs (U.S. Geological Survey, unpub. digital data, 1983). Drainage-basin boundaries were from 1:24,000-scale 14-digit hydrologic unit boundary coverages (Forbes and others, 1997; Nelson and others, 1997a-e). The coverage for site location was generated in ARC/INFO from latitude and longitude coordinates.

The physiographic regions were modified from a coverage created from a hand-drawn map by Lobeck (1930). The procedure for generating the coverages and calculating the physiographic-region percentages in each drainage basin was similar to that used for land use.

Land-use coverage was obtained from USGS 1:250,000-scale digital land-use and land-cover data (U.S. Geological Survey, unpub. digital data, 1986). Land-use coverages for each drainage basin were created in ARC/INFO. Land-use percentages were determined by data generated by ARC/INFO to obtain the total percentage for each land-use category.

Daily Discharge Synthesis

Daily mean discharge was estimated for three stations. Daily mean discharge at an ungaged station or a station with incomplete discharge records (missing data) was estimated using drainage-area ratio, multiple-regression analysis, or a combination of the two techniques. For stations on the same stream or in proximity to one another, a drainage-area ratio was used for determining daily mean discharge. Commonly, the equation for drainage-area ratio is expressed as

$$\frac{Q_u}{Q_a} = \left[\frac{Q_b(DAu/DAb) + Q_c(DAu/DAc)}{2} \right] \quad (1)$$

where

- Q is the daily mean discharge at a given station,
- DA is the drainage area for a given station,
- u is the station where discharge is unknown,
- b is the station downstream, and
- a is the station upstream.

Daily mean discharge for Cumberland River near Burkesville was determined by directly applying a ratio to the daily mean discharge from Cumberland River at Rowena. The drainage-area ratio between these two stations was 1.04.

Multiple-regression analysis was used to determine daily mean discharge for Horse Lick Creek near Lamero using the available daily mean discharge at Buck Creek near Shopville. The multiple-regression equation with logarithmic transformation was:

$$\ln(Q_{HLC}) = 2.559(Q \ln BC_{2\text{day lag}}) - 2.035(Q \ln BC_{3\text{day lag}}) + 0.245(Q \ln BC_{7\text{day lag}}) - 0.117, \quad (2)$$

where

- \ln is the natural logarithm function,
- Q is the daily mean discharge at a given station,
- HLC is the streamflow station at Horse Lick Creek near Lamero, and
- BC is the streamflow station at Buck Creek at Shopville.

The adjusted R^2 was 0.93 and the standard error of the estimate was equal to 0.284 for this equation.

Kentucky River near Trapp required synthesis of daily mean discharge. Daily mean discharge records from Kentucky River at Lock 10 and Red River at Clay City were used to synthesize the daily mean discharge at the Trapp station. The equation used by the KDOW was applied to estimate the discharge at Trapp (Giles Miller, Kentucky Division of Water, written commun., 1996). The equation used by the KDOW is:

$$Q_{\text{Trapp}} = Q_{\text{LD10}} - 1.13(Q_{\text{RRCC}}), \quad (3)$$

where

- Q is the daily mean discharge at a given station,
- LD10 is the abbreviation for Kentucky River at Lock 10, and
- RRCC is the abbreviation for Red River at Clay City.

Hydrograph Separation

Nonpoint-source contaminants are generally transported to receiving waters during storm runoff periods (U.S. Environmental Protection Agency, 1996). Thus, the partitioning of constituent loading into surface-runoff and base-flow components can provide a means of measuring the effects nonpoint-source contaminants have on water quality and suspended solids. The partitioning of the base-flow data began with the retrieval of daily-mean discharge records to match the period of water-quality data. A computerized method was used to estimate base flow from the long-term daily-discharge record (Rutledge, 1998). Missing record was synthesized as needed by use of the techniques described previously.

Rutledge's (1998) program for determining periods of base streamflows is based on antecedent streamflow recessions, whereas antecedent rainfall conditions are specified in other methods. A one-dimensional array filled with daily mean streamflow record is evaluated for days fitting an antecedent recession requirement. On these days, base flow is equal to streamflow if it is not followed by a daily decline greater than 0.1 log cycle. The partitioning program continues searching the array and determines base flow for the remaining days by linear interpolation. Base flows that exceed antecedent streamflow can be generated, but these flows are corrected during the last step of the program.

Rutledge's (1998) program executes three times, once in which the time base of surface-runoff is the largest integer less than the result of the following empirical equation (Linsley and others, 1982):

$$(N=A^{0.2}), \quad (4)$$

where

N is number of days after the peak, and

A is drainage area in mi^2 .

A second-order polynomial expression is generated for base flow using the results in equation 2. Results are calculated with equation 4 based on the polynomial expression (Rutledge, 1998).

After the base flows were determined, the values were entered into the NWIS data base. An example of a hydrograph separation for Kinniconick Creek near Tannery (03237250) is presented in figure 5.

Selection of Base-Flow Samples

A component of the study objective was to estimate the contribution of constituent transport during base flow. To accomplish this objective, suspended solids and water-quality records meeting a predetermined base-flow criterion were selected for specific days. The partitioned discharge data set provided the means for selected suspended solids and water-quality records determined to represent base-flow samples. Analytical results for those water samples were retained in the data set if base flow for the day in question was less than 0.9 times the total flow for the same day. The matching records were retrieved for use in estimating loads and yields for the base-flow component.

Estimates of Loads

The computer programs, ESTIMATOR and FLUX (Baier and others, 1992; Walker, 1987), were used to estimate loads on the basis of mean daily discharge and water-quality data. Yields were determined by dividing the estimated load by the drainage area of the basin.

ESTIMATOR is a statistical-regression model that is used to estimate loads on days that are not sampled. This model includes an adjusted maximum-likelihood estimator (AMLE), which allows the use of data sets containing censored values (Cohn, 1988, 1995). The AMLE provides a means to measure uncertainty in estimated loads.

ESTIMATOR has a maximum of seven independent parameters: an intercept, two discharge parameters, and four time parameters. Independent parameters in the model are both linear and nonlinear. A quadratic discharge parameter is included to account for the possibility of a nonlinear log relation between concentration and discharge.

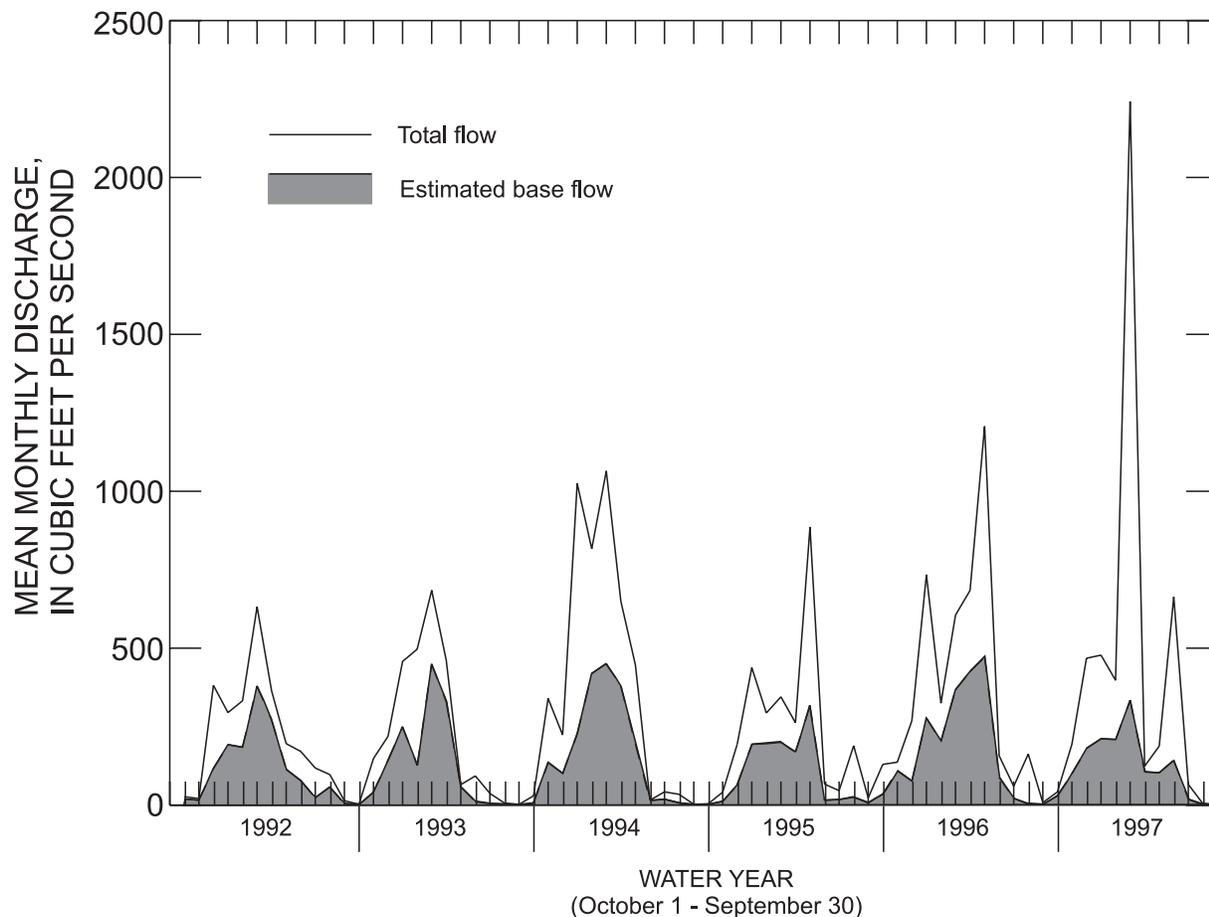


Figure 5. Separation of flow components at Kinniconick Creek (03237250) near Tannery, Kentucky, water years 1992–97.

Similarly, linear and quadratic time parameters are included to account for possible nonlinear trends in the long-term average concentration of a constituent. Cyclical variations in concentration often occur on a seasonal basis; thus, trigonometric functions are included to account for possible seasonal effects. The “centering” parameters— \bar{Q} and \bar{T} —are defined to reduce covariance among the independent parameters and enhance estimate precision. In the ESTIMATOR computer program, daily streamflow data and water-quality data were used to calibrate a multiple-regression equation of the form:

$$\begin{aligned} \ln(C) = & \beta_0 + \beta_1 \ln[Q / \bar{Q}] + \\ & \beta_2 \{ \ln[Q / \bar{Q}] \}^2 + \beta_3 [T - \bar{T}] + \\ & \beta_4 [T - \bar{T}]^2 + \beta_5 \sin[2\pi T] + \\ & \beta_6 \cos[2\pi T] + \varepsilon, \end{aligned} \quad (5)$$

where

- \ln is the natural logarithm function;
- β_0 is a constant;
- $\beta_1 - \beta_6$ are the beta coefficients of the explanatory variables;
- C is the measured concentration (mg/L);
- Q is the mean daily discharge on the day the sample was taken (ft^3/s);
- \bar{Q} is the centered discharge (ft^3/s);
- T is time, converted to decimal form (yr);
- \bar{T} is centered time, converted to decimal form (yr); and
- ε is the combined independent random error, assumed to be normally distributed with zero mean and variance.

For each water-quality constituent, the ESTIMATOR computer program provides an output file with regression diagnostics, diagnostics plots, and computed loads for the time period selected by the user. Estimated monthly and annual mean daily loads, in kilograms per day, are calculated by the program for each calendar year and water year. The standard error and the standard error of prediction for each mean daily load estimate also are calculated by the program. Estimated mean annual loads for each station were determined by the sum of the daily loads for all years and then dividing that sum by the number of years of available data. Estimated mean annual loads were converted to units of ton/yr for data presentations in this report.

The computer program FLUX (Walker, 1987) was used to estimate loads when the regression diagnostic coefficient of determination (R^2) from the ESTIMATOR computer program was less than or equal to 50 percent. One of two methods (International Joint Commission or regression-1) available in FLUX was used to estimate the load for each constituent at each station that did not meet the R^2 criterion as described above. The International Joint Commission method applies a flow-weighted mean concentration to the mean flow with a bias adjustment factor for situations in which concentration varies with flow. The regression-1 method regresses the logarithm of concentration against the logarithm of mean daily discharge. The method with the lowest estimated coefficient of variation was used to obtain estimates of mean annual loads. The constituents by site for total and base flow that had loads run by use of the FLUX computer program are listed in appendix 4 (phase II stations) and appendix 5 (phase I stations).

A comparison of the same data set results from the ESTIMATOR and FLUX computer programs for selected sites is presented in table 4. In general, the total- and base-flow loads estimated by the FLUX program were larger than the loads estimated by use of the ESTIMATOR program.

LOADS AND YIELDS OF SUSPENDED SOLIDS AND SELECTED WATER-QUALITY CONSTITUENTS

A statistical summary of the aggregated total yields for all constituents is presented in table 5 for the phase II stations. Aggregated total yields for phase I are summarized in appendix 6. Estimates of mean annual total-flow and base-flow loads and yields of suspended solids and selected water-quality constituents are presented in table 6 for phase II stations. The mean annual total-flow and base-flow loads and yields from phase I are presented in appendix 7. The discussions of constituent loads and yields that follow are all referenced to table 6 unless otherwise noted.

Descriptive statistics for selected ambient monitoring stations in Kentucky are presented in table 7 for phase II stations. Phase I descriptive statistics are presented in appendix 8. Where 5 percent of the observations reported were at concentrations less than the detection limit, summary statistics were generated from a combination of the observations above the detection limit with below-limit values extrapolated on the basis of a log-probability regression procedure (Helsel and Cohn, 1988; Helsel, 1990). The estimated distribution parameters (percentiles) are presented in table 7 (phase II stations) and appendix 7 (phase I stations).

Table 4. A comparison of total- and base-flow loads at selected sites using the ESTIMATOR and FLUX computer programs, phase II
 [<, less than; ---, not applicable]

Constituent	Total loads			Base loads		
	ESTIMATOR	FLUX	Relative difference (in percent)	ESTIMATOR	FLUX	Relative difference (in percent)
03414110 Cumberland River at Burkesville						
Alkalinity	3,340	3,340	<1	1,000	1,000	<1
Aluminum	6.484	15.90	42	3.930	6.010	21
Ammonia	1.71	3.54	35	.530	1.36	44
Ammonia plus organic nitrogen	14.2	20.4	18	4.33	7.89	29
Arsenic	.10	.13	12	.033	.050	20
Barium	2.1	3.4	24	.63	1.8	48
Cadmium	---	.15	---	---	.050	---
Calcium	1,320	1,330	<1	399	400	<1
Chloride	296	391	14	88.0	147	25
Chromium	.11	.14	13	.034	.050	19
Copper	.25	.39	22	.076	.12	23
Dissolved oxygen	640	650	1	190	190	<1
Fecal coliform	120	200	25	39	63	24
Iron	16.46	23.25	17	4.688	8.460	29
Lead	.21	.56	46	.064	.16	43
Magnesium	400	390	1	120	120	<1
Manganese	2.6	2.9	5	.75	1.0	14
Mercury	.011	.010	5	<.010	<.010	<1
Nitrite plus nitrate	24.5	35.5	18	7.54	13.4	28
Organic carbon	130	130	<1	41	42	1
Potassium	96.8	97.1	<1	29.6	29.7	<1
Sodium	321	322	<1	102	102	<1
Sulfate	2,110	2,110	<1	646	648	<1
Suspended solids	556	838	20	154	297	32
Total phosphorus	.814	1.42	27	.231	.460	33
Zinc	1.2	2.1	27	.39	.85	37

Table 4. A comparison of total- and base-flow loads at selected sites using the ESTIMATOR and FLUX computer programs, phase II—*Continued*
 [<, less than; ---, not applicable]

Constituent	Total loads			Base loads		
	ESTIMATOR	FLUX	Relative difference (in percent)	ESTIMATOR	FLUX	Relative difference (in percent)
03319000 Rough River at Dundee						
Alkalinity	742.00	743.00	<1	395.00	396.00	<1
Aluminum	17.93	21.28	9	10.17	9.790	2
Ammonia	1.79	1.86	2	.864	.860	<1
Ammonia plus organic nitrogen	7.99	8.01	<1	4.01	4.02	<1
Arsenic	.020	.020	1	.011	.010	3
Barium	.62	.62	<1	.30	.30	<1
Cadmium	<.010	<.010	---	<.010	<.010	---
Calcium	298	298	<1	168	168	<1
Chloride	71.2	59.0	9	34.9	31.9	5
Chromium	.040	.040	1	.017	.020	9
Copper	.069	.070	1	.037	.040	4
Dissolved oxygen	120	120	<1	62	63	<1
Fecal coliform	124	49	43	11	20	30
Iron	26.06	31.01	9	13.63	15.39	6
Lead	.20	.13	22	.049	.050	1
Magnesium	45.8	45.9	<1	24.0	24.1	1
Manganese	3.0	3.0	<1	1.7	1.7	<1
Mercury	<.010	<.010	<1	<.010	<.010	<1
Nitrite plus nitrate	8.11	8.13	<1	4.35	4.36	<1
Organic carbon	52	52	<1	28	28	<1
Potassium	27	27	<1	14	14	<1
Sodium	31.3	31.4	<1	17.6	17.6	<1
Sulfate	284	285	<1	132	132	<1
Suspended solids	1,048	941	5	472	488	2
Total phosphorus	1.22	1.04	8	.510	.540	3
Zinc	.68	.75	5	.30	.41	16

Table 5. Aggregate total yields summary statistics for sediment and water-quality constituents for 22 ambient monitoring stations in Kentucky, phase II

[Yields are in tons per square mile except for fecal coliform (10¹⁵ colonies per square mile); N, number of stations at which yields were estimated; %, percent; chemical constituents are total analysis except chloride and sulfate, which are dissolved]

Constituent	N	Mean	Maximum	75% Quartile	Median	25% Quartile	Minimum
Alkalinity, total	22	95.3	212	138	90.1	46.7	16.4
Aluminum	22	3.640	13.02	4.670	2.790	1.190	.2600
Ammonia	22	.130	1.24	.080	.060	.050	.020
Ammonia plus organic nitrogen	22	.960	3.16	1.21	.640	.460	.200
Arsenic	22	<.010	<.010	<.010	<.010	<.010	<.010
Barium	22	.070	.15	.080	.060	.050	.020
Cadmium	22	<.010	<.010	<.010	<.010	<.010	<.010
Calcium	22	41.9	92.1	58.6	39.4	23.0	9.80
Chloride	22	9.33	35.3	9.20	7.38	5.75	2.69
Chromium	22	<.010	<.010	<.010	<.010	<.010	<.010
Copper	22	.010	.020	<.010	<.010	<.010	<.010
Dissolved oxygen	22	13	21	16	14	11	5.6
Fecal coliform	22	.41	4.8	.28	.15	.070	.010
Iron	22	15.67	166.4	14.24	5.180	2.370	.3300
Lead	22	.010	.020	.020	.010	.010	<.010
Magnesium	22	10.3	21.8	13.3	9.67	6.54	3.89
Manganese	22	1.000	12.81	.5500	.3500	.2000	<.0100
Mercury	22	<.010	<.010	<.010	<.010	<.010	<.010
Nitrite plus nitrate	22	1.24	4.30	1.69	.790	.530	.280
Organic carbon	22	5.4	12	7.5	4.4	3.3	1.3
Phosphorus	22	.370	1.31	.650	.120	.0500	.0100
Potassium	22	25.5	488	4.86	3.08	2.32	1.60
Sodium	22	9.19	34.8	9.11	5.75	4.51	1.50
Sulfate	22	69.1	354	82.2	45.0	33.9	16.1
Suspended solids	22	271	1,980	341	124	51.8	13.7
Zinc	22	.040	.200	.050	.030	.020	.010

Suspended Solids

Suspended solids is that part of a sample retained on a glass-fiber filter after the water from the sample is drawn through the filter. The filter is then dried and weighed to determine the suspended solid concentration. Suspended solids may also be referred to as “nonfilterable residue” at 105°C. The effectiveness of suspended solids in sorbing and transporting some metals, pesticides, and other organic compounds can be detrimental to a stream’s ecology (Kuwabara and others, 1989; Domagalski and Kuivila, 1993; Flegal and others, 1996). In addition, high concentrations of suspended solids are aesthetically unsatisfactory and can adversely affect the biological community within the streams (Luoma and others, 1985; Brown and Luoma, 1995; Luoma, 1996).

Samples analyzed for suspended solids were collected at 24 sites. Concentrations ranged from 0.5 mg/L at Cumberland River at Burkesville to 2,640 mg/L at Rolling Fork near Lebanon Junction (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from 850 ton/yr at Horse Lick Creek near Lamero to 771,000 ton/yr at Green River at Paradise (table 6). Mean annual base-flow loads ranged from 10 ton/yr at Horse Lick Creek near Lamero to 345,000 ton/yr at Green River at Paradise (table 6). Mean annual total-flow yields ranged from 13.8 ton/mi² at Horse Lick Creek near Lamero to 1,980 ton/mi² at Tygarts Creek near Load (table 6). Mean annual base-flow yields ranged from 0.16 ton/mi² at Horse Lick Creek near Lamero to 144 ton/mi² at Little River near Cadiz (table 6). The mean and median aggregate total-flow yields were 272 and 125 ton/mi², respectively (table 5).

Fecal-Coliform Bacteria

The presence of fecal-coliform bacteria in surface water indicates fecal contamination from warm-blooded animals and (or) humans and is an indicator that a potential health risk exists for individuals exposed to the water (Christensen and Pope, 1997). Kentucky’s water-quality criteria for fecal-coliform bacteria densities are: 2,000 colonies per 100 milliliters of water (col/100 mL) for

domestic water supply (pre-treatment), 1,000 col/100 mL for boating and fishing, and 200 col/100 mL for swimming (Kentucky Natural Resources and Environmental Protection Cabinet, 1990).

Samples analyzed for fecal coliform were collected at 24 sites. Concentrations ranged from 1.0 col/100 mL at several sites to 99,000 col/100 mL at Tug Fork at Kermit, West Virginia (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from 4.47 col/100 mL at Pond River near Madisonville to 1,203 col/100 mL at Tug Fork at Kermit, West Virginia (table 6). Mean annual base-flow loads ranged from 0.01 * 10¹⁵ colonies per 100 milliliters (10¹⁵ col/100 mL) at Horse Lick Creek near Lamero to 990 * 10¹⁵ col/100 mL at Tug Fork at Kermit, West Virginia (table 6). Mean annual total-flow yields ranged from 0.01 * 10¹⁵ colonies per square mile (10¹⁵ col/mi²) at Pond River near Madisonville to 5 * 10¹⁵ col/mi² at North Fork Licking River at Milford (table 6). Mean annual base-flow yields ranged from 0.01 * 10¹⁵ colonies per 100 milliliters per square mile ((10¹⁵ col/100 mL)/mi²) at several sites to 0.8 * 10¹⁵ col/mi² at Tug Fork at Kermit, West Virginia (table 6). The mean and median aggregate total-flow yields were 0.4 * and 0.2 * 10¹⁵ col/mi², respectively (table 5).

Major Ions

Water contains varying concentrations of dissolved ions. The major positively charged ions (cations) occurring in natural waters are calcium, magnesium, potassium, and sodium (Peters and others, 1998). Three dominant negatively charged ions (anions) are sulfate, chloride, and bicarbonate (Peters and others, 1998).

Calcium and Magnesium

Calcium and magnesium are essential elements for plant and animal life (Britannica.com Inc., 2000). Calcium is the most common cation occurring in natural stream water. Both calcium and magnesium may be considered as having similar

effects in some aspects of water chemistry such as their contributions to water hardness (Hem, 1989, p. 93-97).

Samples analyzed for calcium were collected at 24 sites. Concentrations ranged from 0.1 mg/L at Horse Lick Creek near Lamero to 443 mg/L at Pond River near Madisonville (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from 8.2 ton/yr at Bayou de Chien near Clinton to 3,607 ton/yr at Green River at Paradise (table 6). Mean annual base-flow loads ranged from 1 ton/yr at Horse Lick Creek near Lamero to 2,473 ton/yr at Green River at Paradise (table 6). Mean annual total-flow yields ranged from 10 ton/mi² at Kinniconick Creek near Tannery to 92 ton/mi² at South Fork Licking River at Cynthiana (table 6). Mean annual base-flow yields ranged from 2 ton/mi² at Horse Lick Creek near Lamero to 41 ton/mi² at Little River near Cadiz (table 6). The mean and median aggregate total-flow yields were 42 and 39 ton/mi², respectively (table 5).

Samples analyzed for magnesium were collected at 24 sites. Concentrations ranged from 1 mg/L at Mayfield Creek near Blandville to 185 mg/L at Pond River near Madisonville (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from 3 ton/yr at Bayou de Chien near Clinton to 650 ton/yr at Green River at Paradise (table 6). Mean annual base-flow loads ranged from 0.3 ton/yr at Horse Lick Creek near Lamero to 436.6 ton/yr at Green River at Paradise (table 6). Mean annual total-flow yields ranged from 3.8 ton/mi² at Bayou de Chien near Clinton to 21.9 ton/mi² at Pond Creek near Louisville (table 6). Mean annual base-flow yields ranged from 0.5 ton/mi² at Horse Lick Creek near Lamero to 10.5 ton/mi² at Cumberland River at Pineville (table 6). Both the mean and median aggregate total-flow yields were 10 ton/mi² (table 5).

Potassium and Sodium

Potassium and sodium have many similar chemical properties and are both from the alkali-metal group of the periodic table. Both elements are extremely reactive and therefore do not occur freely in nature (Britannica.com Inc., 2000).

Samples analyzed for potassium were collected at 24 sites. Concentrations ranged from 0.6 mg/L at Horse Lick Creek near Lamero to 94.3 mg/L at Horse Lick Creek near Lamero (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from 1 ton/yr at Horse Lick Creek near Lamero to 176 ton/yr at Green River at Paradise (table 6). Mean annual base-flow loads ranged from 0.1 ton/yr at Horse Lick Creek near Lamero to 59.1 ton/yr at Kinniconick Creek near Tannery (table 6). Mean annual total-flow yields ranged from 1.6 ton/mi² at Cumberland River at Pineville to 6.7 ton/mi² at Pond Creek near Louisville (table 6). Mean annual base-flow yields ranged from 0.1 ton/mi² at Horse Lick Creek near Lamero to 2.3 ton/mi² at Little River near Cadiz (table 6). The mean and median aggregate total-flow yields were 25 and 3 ton/mi², respectively (table 5).

Samples analyzed for sodium were collected at 24 sites. Concentrations ranged from 0.1 mg/L at Horse Lick Creek near Lamero to 637 mg/L at Tradewater River at Olney (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from 1 ton/yr at Horse Lick Creek near Lamero to 447 ton/yr at Tug Fork at Kermit, West Virginia (table 6). Mean annual base-flow loads ranged from 0.1 ton/yr at Horse Lick Creek near Lamero to 277 ton/yr at Tug Fork at Kermit, West Virginia (table 6). Mean annual total-flow yields ranged from 1.5 ton/mi² at Horse Lick Creek near Lamero to 35 ton/mi² at Tug Fork at Kermit, West Virginia (table 6). Mean annual base-flow yields ranged from 0.1 ton/mi² at Horse Lick Creek near Lamero to 22 ton/mi² at Tug Fork at Kermit, West Virginia (table 6). The mean and median aggregate total-flow yields were 9 and 6 ton/mi², respectively (table 5).

Chloride

Chloride is present in all natural waters. Potential sources of chloride are from point sources and from the use of salt for deicing highways (Caudill and others, 2000). Public Drinking Water Standards require chloride levels not to exceed 250 mg/L. Criteria for protection of aquatic life require levels of less than 600 mg/L for chronic (long-term) exposure and 1,200 mg/L for short-term exposure (Caudill and others, 2000).

Samples analyzed for chloride were collected at 24 sites. Concentrations ranged from 0.1 mg/L at several sites to 141 mg/L at Horse Lick Creek near Lamero (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from 2 ton/yr at Horse Lick Creek near Lamero to 495 ton/yr at Green River at Paradise (table 6). Mean annual base-flow loads ranged from 0.5 ton/yr at Horse Lick Creek near Lamero to 337 ton/yr at Green River at Paradise (table 6). Mean annual total-flow yields ranged from 3 ton/mi² at Horse Lick Creek near Lamero to 35 ton/mi² at Pond Creek near Louisville (table 6). Mean annual base-flow yields ranged from 1 ton/mi² at Horse Lick Creek near Lamero to 16 ton/mi² at Pond Creek near Louisville (table 6). The mean and median aggregate total-flow yields were 9 and 7 ton/mi², respectively (table 5).

Sulfate

Sulfur is an essential plant nutrient. The most common form of sulfur in well-oxygenated water is sulfate (Caudill and others, 2000). Sulfate can occur naturally in stream water from the breakdown of leaves in streams or water flowing through rock or soil containing gypsum (Caudill and others, 2000). Point sources (wastewater-treatment plants and pulp mills) and nonpoint sources (agriculture and acid-mine drainage) also can contribute sulfate to water bodies. High concentrations of sulfates in water bodies can result in decreased pH (Caudill and others, 2000). This is because sulfates have the ability to form strong acids.

Samples analyzed for sulfate were collected at 24 sites. Concentrations ranged from 2 mg/L at Bayou de Chien near Clinton to 1,900 mg/L at Pond River near Madisonville (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from 13 ton/yr at Horse Lick Creek near Lamero to 3,505 ton/yr at Green River at Paradise (table 6). Mean annual base-flow loads ranged from 3 ton/yr at Horse Lick Creek near Lamero to 2,262 ton/yr at Green River at Paradise (table 6). Mean annual total-flow yields ranged from 18 ton/mi² at Bayou de Chien near Clinton to 355 ton/mi² at North Fork Licking River at Milford (table 6). Mean annual base-flow yields ranged from 4 ton/mi² at Bayou de Chien near Clinton to

72 ton/mi² at Pond River near Madisonville (table 6). The mean and median aggregate total-flow yields were 69 and 45 ton/mi², respectively (table 5).

Alkalinity

The alkalinity of water may be defined as the capacity for solutes in water to react with and neutralize acid (Hem, 1989). Alkalinity is one of the best measures of the sensitivity of a stream to acid inputs (U.S. Environmental Protection Agency, 1999). The alkalinity of natural water is primarily caused by dissolved bicarbonate and carbonate (Hem, 1989), except for water with high pH or unusual chemical composition.

Samples analyzed for total alkalinity were collected at 24 sites. Concentrations ranged from 1.00 mg/L (milligrams per liter) at Pond River near Madisonville to 548 mg/L at Tradewater River near Olney (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from 23.1 ton/yr (tons per year) at Bayou de Chien near Clinton to 7,830 ton/yr at Green River at Paradise (table 6). Mean annual base-flow loads ranged from 3.96 ton/yr at Horse Lick Creek near Lamero to 5,540 ton/yr at Green River at Paradise (table 6). Mean annual total-flow yields ranged from 16.4 ton/mi² at Kinniconick Creek near Tannery to 212 ton/mi² at South Fork Licking River at Cynthiana (table 6). Mean annual base-flow yields ranged from 6.42 ton/mi² at Horse Lick Creek near Lamero to 96.3 ton/mi² at Little River near Cadiz (table 6). The mean and median aggregate total-flow yields were 95.4 and 90.2 ton/mi², respectively (table 5).

Nutrients and Organics

Nutrients are typically defined as nitrogen and phosphorus species. Nitrogen and phosphorus are important elements necessary for the growth of plants and animals (Caudill and others, 2000). Concentrations of nitrogen and phosphorus compounds are highly dynamic because they may be utilized, stored, transformed, and excreted rapidly and repeatedly by various aquatic organisms (Wetzel and Likens, 1979). Forms of nitrogen in water include organic nitrogen, ammonia, nitrite,

and nitrate. Phosphorus occurs in a number of inorganic and organic compounds in both particulate and dissolved forms.

The USEPA drinking-water standard for nitrite is 1 mg/L and for nitrate is 10 mg/L. The Kentucky domestic water supply standard for nitrate is 10 mg/L; however, Kentucky does not have a nitrite standard. Both the USEPA and Kentucky do not have a drinking-water standard for nitrite plus nitrate.

Nitrogen

Nitrogen in streams can originate from numerous point and nonpoint sources. The major entry routes of nitrogen into streams are wastewater-treatment plants, septic tanks, feed lot discharges, and fertilizers from agricultural and residential areas.

Samples analyzed for nitrite plus nitrate were collected at 24 sites. Concentrations ranged from 0.01 mg/L at several sites to 9.8 mg/L at Pond Creek near Louisville (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from 0.2 ton/yr at Horse Lick Creek near Lamero to 101 ton/yr at Green River at Paradise (table 6). Mean annual base-flow loads ranged from 0.01 ton/yr at Horse Lick Creek near Lamero to 67 ton/yr at Green River at Paradise (table 6). Mean annual total-flow yields ranged from 0.3 ton/mi² at Pond River near Madisonville to 4.3 ton/mi² at Little River near Cadiz (table 6). Mean annual base-flow yields ranged from 0.2 ton/mi² at Horse Lick Creek near Lamero to 2 ton/mi² at Little River near Cadiz (table 6). The mean and median aggregate total-flow yields were 1 and 0.8 ton/mi², respectively (table 5).

Samples analyzed for ammonia were collected at 24 sites. Concentrations ranged from 0.01 mg/L at Little River near Cadiz to 28 mg/L at Tradewater River at Olney (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from 0.04 ton/yr at Horse Lick Creek near Lamero to 4 ton/yr at Salt River at Shepherdsville (table 6). Mean annual base-flow loads ranged from less than 0.01 ton/yr at Horse Lick Creek near Lamero to 2 ton/yr at Green River at Paradise (table 6). Mean annual total-flow yields ranged from 0.2 ton/mi² at Levisa Fork at Paintsville to 1 ton/mi² at Pond Creek near

Louisville (table 6). Mean annual base-flow yields ranged from <0.01 ton/mi² at Horse Lick Creek near Lamero to 0.1 ton/mi² at Rough River near Dundee (table 6). The mean and median aggregate total-flow yields were 0.1 and 0.6 ton/mi², respectively (table 5).

Samples analyzed for ammonia plus organic nitrogen were collected at 24 sites. Concentrations ranged from 0.02 mg/L at Cumberland River at Burkesville to 29 mg/L at Tradewater River at Olney (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from 0.3 ton/yr at Horse Lick Creek near Lamero to 62 ton/yr at Green River at Paradise (table 6). Mean annual base-flow loads ranged from <0.01 ton/yr at Horse Lick Creek near Lamero to 30 ton/yr at Green River at Paradise (table 6). Mean annual total-flow yields ranged from 0.2 ton/mi² at Levisa Fork at Paintsville to 2 ton/mi² at North Fork Licking River at Milford (table 6). Mean annual base-flow yields ranged from <0.01 ton/mi² at Horse Lick Creek near Lamero to 0.7 ton/mi² at Pond Creek near Louisville (table 6). The mean and median aggregate total-flow yields were 1 and 0.6 ton/mi², respectively (table 5).

Phosphorus

Phosphorus is a common element in igneous and sedimentary rocks; other sources of phosphorus include sewage effluent, detergents, and leachates from septic tanks (Caudill and others, 2000). Of the major nutrients, phosphorus is the most frequently limiting nutrient to aquatic organisms (Wetzel and Likens, 1979); however, no federal or state water-quality criteria have been established for phosphorus species.

Samples analyzed for total phosphorus were collected at 24 sites. Concentrations ranged from 0.003 mg/L at Cumberland River at Burkesville to 5 mg/L at Pond Creek near Louisville (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from <0.01 ton/yr at Horse Lick Creek near Lamero to 16 ton/yr at Salt River at Shepherdsville (table 6). Mean annual base-flow loads ranged from <0.01 ton/yr at Horse Lick Creek near Lamero to 1.3 ton/yr at Green River at Paradise (table 6).

Mean annual total-flow yields ranged from <0.01 ton/mi² at Horse Lick Creek near Lamero to 1.3 ton/mi² at Salt River at Shepherdsville (table 6). Mean annual base-flow yields ranged from <0.01 ton/mi² at Horse Lick Creek near Lamero to 0.3 ton/mi² at Pond Creek near Louisville (table 6). The mean and median aggregate total-flow yields were 0.4 and 0.1 ton/mi², respectively (table 5).

Organic Carbon

Total organic carbon enrichment of natural waters is often a result of effluent from wastewater-treatment plants or effluent from industrial waste (Caudill and others, 2000).

Samples analyzed for total organic carbon were collected at 24 sites. Concentrations ranged from 0.1 mg/L at Horse Lick Creek near Lamero and Salt River at Shepherdsville to 98 mg/L at Green River at Paradise (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from 1 ton/yr at Horse Lick Creek near Lamero to 482 ton/yr at Green River at Paradise (table 6). Mean annual base-flow loads ranged from 0.1 ton/yr at Horse Lick Creek near Lamero to 185 ton/yr at Green River at Paradise (table 6). Mean annual total-flow yields ranged from 1 ton/mi² at Levisa Fork at Paintsville to 12 ton/mi² at Pond Creek near Louisville (table 6). Mean annual base-flow yields ranged from 0.1 ton/mi² at Horse Lick Creek near Lamero to 4 ton/mi² at Pond Creek near Louisville (table 6). The mean and median aggregate total-flow yields were 5.5 and 4.5 ton/mi², respectively (table 5).

Major Metals and Trace Elements

The major problems associated with excessive amounts of trace metals in the environment are that metals are nondegradable, tend to be persistent contaminants, and can potentially accumulate in plants and animals (Haag and others, 1995). In addition, each metal has a specific chemical form that can determine its solubility in water, and consequently its ability to incorporate into aquatic life (Hem, 1989).

Trace elements and metals are found throughout the Earth in rocks and soils (Hem, 1989). The processes of weathering and erosion can contribute low amounts of metals to streams and the atmosphere; however, many metal pollutants are primarily distributed in the air and water by the combustion of fossil fuels and domestic and industrial wastewater (Evaldi and others, 1993). The major metals and trace elements analyzed were aluminum, arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, and zinc.

Aluminum

Although aluminum is one of the most abundant elements in the Earth's crust, it rarely occurs in high concentrations in waters at near-neutral pH (Hem, 1989, p. 73). However, the exception is water bodies with a very low pH (pH <4). Water bodies containing high concentrations of aluminum can become toxic to aquatic life (U.S. Environmental Protection Agency, 1999).

Samples analyzed for aluminum were collected at 24 sites. Concentrations ranged from 0.5 μ g/L at Cumberland River at Burkesville to 49,000 μ g/L at Green River at Paradise (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from 0.2 ton/yr at Horse Lick Creek near Lamero to 243 ton/yr at Green River at Paradise (table 6). Mean annual base-flow loads ranged from <0.01 ton/yr at Horse Lick Creek near Lamero to 80 ton/yr at Green River at Paradise (table 6). Mean annual total-flow yields ranged from 0.3 ton/mi² at Cumberland River at Burkesville and Horse Lick Creek near Lamero to 13 ton/mi² at North Fork Licking River at Milford (table 6). Mean annual base-flow yields ranged from <0.01 ton/mi² at Horse Lick Creek near Lamero to 3.1 ton/mi² at Little River near Cadiz (table 6). The mean and median aggregate total-flow yields were 4 and 3 ton/mi², respectively (table 5).

Arsenic

Arsenic is a nonmetallic element and in low concentrations can be toxic to humans and other organisms. Recognized as a toxic element for centuries, arsenic today also is a human-health concern because it can contribute to skin, bladder, and other cancers (National Research Council, 1999). It occurs as a result of geological processes, manufacturing, smelting, and agriculture (U.S. Environmental Protection Agency, 1999). The USEPA maximum contaminant level (MCL) for arsenic in drinking water is 10 µg/L (U.S. Environmental Protection Agency, 2001). In this study, most of the measured total arsenic concentrations were below the detection limit of 1.0 µg/L (table 7). The mean annual total-flow yields for all stations were below 0.01 ton/mi².

Samples analyzed for arsenic were collected at 24 sites. Concentrations ranged from 0.1 µg/L at Tradewater River at Olney to 33 µg/L at Pond Creek near Louisville (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from <0.01 ton/yr at several sites to 0.1 ton/yr at Cumberland River at Pineville (table 6). Mean annual base-flow loads ranged from <0.01 ton/yr at several sites to 0.01 ton/yr at Green River at Paradise (table 6). Mean annual total-flow yields were <0.01 ton/mi² at all sites (table 6). Mean annual base-flow yields were <0.01 ton/mi² at all sites (table 6). The mean and median aggregate total-flow yields were <0.01 and <0.01 ton/mi², respectively (table 5).

Barium

Barium is an alkaline-earth metal that can be found in igneous and carbonate sedimentary rocks (U.S. Environmental Protection Agency, 1999). Barium is present in low concentrations in natural waters and in treated drinking water (U.S. Environmental Protection Agency, 1999). The USEPA MCL for barium in drinking water is 200 µg/L. Kentucky criterion for barium in domestic water supplies is 1,000 µg/L.

Samples analyzed for barium were collected at 24 sites. Concentrations ranged from 0.5 µg/L at Cumberland River at Burkesville to 480 µg/L at Tradewater River at Olney (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-

flow loads ranged from 0.02 ton/yr at Horse Lick Creek near Lamero to 3.7 ton/yr at Green River at Paradise (table 6). Mean annual base-flow loads ranged from <0.01 ton/yr at Horse Lick Creek near Lamero to 2.1 ton/yr at Green River at Paradise (table 6). Mean annual total-flow yields ranged from 0.02 ton/mi² at Pond River near Madisonville to 0.1 ton/mi² at North Fork Licking River at Milford (table 6). Mean annual base-flow yields ranged from <0.01 ton/mi² at Horse Lick Creek near Lamero to 0.06 ton/mi² at Little River near Cadiz (table 6). The mean and median aggregate total-flow yields were 0.07 and 0.06 ton/mi², respectively (table 5).

Cadmium

Cadmium is a natural element that is found in the Earth's crust (U.S. Environmental Protection Agency, 1999). It is usually found as a mineral combined with other elements such as oxygen, chlorine, or sulfur (Hem, 1989, p. 142). Cadmium is a widely distributed in the environment at low concentrations; however, high concentrations of cadmium are usually attributed to contamination from mining or industrial waste (U.S. Environmental Protection Agency, 1999). Cadmium can bioaccumulate in plant and animal tissue and is considered a potential carcinogen (U.S. Environmental Protection Agency, 1999). The USEPA drinking-water standard for cadmium is 5 µg/L. The standard of cadmium for Kentucky domestic water supply is <100 µg/L. This criterion established for cadmium was not exceeded by any of the 24 water-quality stations in this study.

Samples analyzed for cadmium were collected at 24 sites. Concentrations ranged from 0.5 µg/L at Horse Lick Creek near Lamero to 82 µg/L at Tradewater River at Olney (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from <0.01 ton/yr at several sites to 0.1 ton/yr at Cumberland River at Burkesville (table 6). Mean annual base-flow loads ranged from <0.01 ton/yr at Horse Lick Creek near Lamero to 2.1 ton/yr at Green River at Paradise (table 6). Mean annual total-flow yields were <0.01 ton/mi² at all sites (table 6). Mean annual base-flow yields were <0.01 ton/mi² at all sites (table 6). The mean and median aggregate total-flow yields were <0.01 and <0.01 ton/mi², respectively (table 5).

Chromium

Chromium is ubiquitous in the environment, occurring naturally in the atmosphere, water, and rocks (Hem, 1989, p. 138). It is used in metal plating, steel manufacturing, photography, and in the manufacturing of paints, ceramics, and explosives (U.S. Environmental Protection Agency, 1999). Acute toxicity can result from high exposure to certain forms of chromium, and there is high potential for accumulation in aquatic life (U.S. Environmental Protection Agency, 1999).

Samples analyzed for chromium were collected at 24 sites. Concentrations ranged from 0.5 µg/L at Cumberland River at Burkesville to 121 µg/L at Tygarts Creek near Load (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from <0.01 ton/yr at several sites to 3 ton/yr at Salt River at Shepherdsville (table 6). Mean annual base-flow loads ranged from <0.01 ton/yr at several sites to 0.1 ton/yr at Green River at Paradise (table 6). Mean annual total-flow yields ranged from <0.01 ton/mi² at 14 sites to 0.01 ton/mi² at 8 sites (table 6). Mean annual base-flow yields were <0.01 ton/mi² at all sites (table 6). The mean and median aggregate total-flow yields were <0.01 and <0.01 ton/mi², respectively (table 5).

Copper

Copper is an essential element for plant photosynthesis and for animal metabolism. The toxicity of copper to aquatic organisms is dependent on the alkalinity of the water. Copper is much more toxic to organisms found in waters with low alkalinity than in waters with high alkalinity (U.S. Environmental Protection Agency, 1976). The USEPA recommends that the concentration of copper not exceed 13 µg/L in water with a mean alkalinity of 100 mg CaCO₃/L for aquatic organisms and an action level of 1,300 µg/L for drinking water. The chronic aquatic-life standard in Kentucky is 12 µg/L, assuming a mean alkalinity of 100 mg CaCO₃/L. The Kentucky domestic water supply criteria is the same as USEPA's (1,300 µg/L) standard.

Samples analyzed for copper were collected at 24 sites. Concentrations ranged from 0.5 µg/L at Cumberland River at Burkesville to 88 µg/L at

Tradewater River at Olney (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from <0.01 ton/yr at several sites to 0.9 ton/yr at Bayou de Chien near Clinton (table 6). Mean annual base-flow loads ranged from <0.01 ton/yr at several sites to 0.2 ton/yr at Green River at Paradise (table 6). Mean annual total-flow yields ranged from <0.01 ton/mi² at several sites to 0.02 ton/mi² at Salt River at Shepherdsville and Pond Creek near Louisville (table 6). Mean annual base-flow yields were <0.01 ton/mi² at all sites (table 6). The mean and median aggregate total-flow yields were 0.01 and <0.01 ton/mi², respectively (table 5).

Iron

Iron is an essential element to the metabolism of plants and animals. The solubility of iron in water depends strongly on the amount of oxygen present in the system as well as the pH (Hem, 1989, p. 76). If present in high concentrations, iron can cause taste or stain problems in domestic and industrial water supplies (Hem, 1989, p. 76). The chronic criterion of 1,000 µg/L of iron in streams has been established by the KDOW as a criterion for warmwater aquatic habitats in Kentucky.

Samples analyzed for iron were collected at 24 sites. Concentrations ranged from 2.3 µg/L at Mayfield Creek near Blandville to 49,000 µg/L at Green River at Paradise (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from 0.2 ton/yr at Horse Lick Creek near Lamero to 334 ton/yr at Kinniconick Creek near Tannery (table 6). Mean annual base-flow loads ranged from 0.04 ton/yr at Horse Lick Creek near Lamero to 131 ton/yr at Green River at Paradise (table 6). Mean annual total-flow yields ranged from 0.3 ton/mi² at Horse Lick Creek near Lamero to 166 ton/mi² at Kinniconick Creek near Tannery (table 6). Mean annual base-flow yields ranged from 0.1 ton/mi² at Horse Lick Creek near Lamero to 4 ton/mi² at Little River near Cadiz (table 6). The mean and median aggregate total-flow yields were 16 and 5 ton/mi², respectively (table 5).

Lead

Lead is widely distributed throughout the environment. The toxicity of lead depends on its solubility, which in turn depends on pH (Hem, 1989, p. 143). Lead enters natural water from the atmosphere, runoff, or wastewater; little is transferred from natural ores. Lead may enter the environment during mining, refining use, recycling, and combustion of coal for fuel (U.S. Environmental Protection Agency, 1999). The USEPA drinking-water standard for lead is 15 µg/L; most of the sites had maximum concentration values greater than 15 µg/L (table 7).

Samples analyzed for lead were collected at 24 sites. Concentrations ranged from 0.3 µg/L at Levisa Fork at Paintsville to 4.5 µg/L at Rough River near Dundee (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from <0.01 ton/yr at several stations to 1 ton/yr at Tygarts Creek near Load (table 6). Mean annual base-flow loads ranged from <0.01 ton/yr at several sites to 0.1 ton/yr at Green River at Paradise (table 6). Mean annual total-flow yields ranged from <0.01 ton/mi² at several sites to 0.2 ton/mi² at Salt River at Shepherdsville, Pond Creek near Louisville, Rough River near Dundee, and Cumberland River at Pineville (table 6). Mean annual base-flow yields ranged from <0.01 ton/mi² at most sites to 0.01 ton/mi² at Salt River at Shepherdsville, Rough River near Dundee, and Little River near Cadiz (table 6). The mean and median aggregate total-flow yields were 0.01 and 0.01 ton/mi², respectively (table 5).

Manganese

Water supply companies consider manganese an undesirable element because in high concentrations it can cause stains and objectionable tastes (Hem, 1989, p. 84); however, it is an important element in natural waters to plant and animal metabolism. Streams near coal mines usually have elevated concentrations of manganese because of acid-mine drainage (Handy, 1982).

Samples analyzed for manganese were collected at 24 sites. Concentrations ranged from 1.0 µg/L at Kinniconick Creek near Tannery, Cumberland River at Burkesville, Horse Lick Creek

near Lamero, and Cumberland River at Pineville to 4.6 µg/L at Mayfield Creek at Blandville (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from <0.01 ton/yr at Horse Lick Creek near Lamero to 31 ton/yr at Tygarts Creek near Load (table 6). Mean annual base-flow loads ranged from <0.01 ton/yr at Horse Lick Creek near Lamero to 4.1 ton/yr Kinniconick Creek near Tannery (table 6). Mean annual total-flow yields ranged from <0.01 ton/mi² at Horse Lick Creek near Lamero to 13 ton/mi² at Tygarts Creek near Load (table 6). Mean annual base-flow yields ranged from <0.01 ton/mi² at Horse Lick Creek near Lamero and Green River at Paradise to 0.2 ton/mi² at Rough River near Dundee and Bayou de Chien near Clinton (table 6). The mean and median aggregate total-flow yields were 1 and 0.3 ton/mi², respectively (table 5).

Mercury

Mercury is ubiquitous in the environment and occurs in several different forms—from elemental to dissolved inorganic and organic species (U.S. Environmental Protection Agency, 1999). Industry and agriculture are ways that mercury can enter natural waters (U.S. Environmental Protection Agency, 1999). The USEPA drinking-water standard is 2 µg/L for inorganic mercury. Less than 20 percent of the 2,525 analyses among the 24 stations for total mercury exceeded 0.1 µg/L.

Samples analyzed for mercury were collected at 24 sites. Concentrations ranged from 0.5 µg/L at Cumberland River at Burkesville to 8 µg/L at Salt River at Shepherdsville (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from <0.01 ton/yr at most sites to 0.01 ton/yr at Cumberland River at Burkesville (table 6). Mean annual base-flow loads were <0.01 ton/yr at all sites (table 6). Mean annual total-flow yields were <0.01 ton/mi² at all sites (table 6). Mean annual base-flow yields were <0.01 ton/mi² at all sites (table 6). The mean and median aggregate total-flow yields were <0.01 and <0.01 ton/mi², respectively (table 5).

Zinc

Zinc is found in moderate abundance in sedimentary rocks (Hem, 1989, p. 142); however, modern industrial civilization has greatly enhanced the presence of zinc in natural waters. It is used extensively in metallurgy for galvanizing steel and in making paints and rubber products (Hem, 1989, p. 142). The Kentucky warmwater-aquatic habitat criterion for zinc is dependent on the hardness of the water. The recommended USEPA drinking-water standard is 5,000 µg/L.

Samples analyzed for zinc were collected at 24 sites. Concentrations ranged from 0.5 µg/L at Cumberland River at Burkesville to 1,650 µg/L at Mayfield Creek at Blandville (table 7). Loads were determined for 22 of the 24 sites. Mean annual total-flow loads ranged from 0.01 ton/yr at Horse Lick Creek near Lamero to 2.1 ton/yr at Cumberland River at Burkesville (table 6). Mean annual base-flow loads ranged from <0.01 ton/yr at Horse Lick Creek near Lamero, Bayou de Chien near Clinton, and Mud River near Gus to 0.5 ton/mi² at Green River at Paradise (table 6). Mean annual total-flow yields ranged from 0.01 ton/mi² at Mud River near Gus and Pond River near Madisonville to 0.1 ton/mi² at Rough River near Dundee (table 6). Mean annual base-flow yields ranged from <0.01 ton/mi² at most sites to 0.05 ton/mi² at Rough River near Dundee (table 6). The mean and median aggregate total-flow yields were 0.04 and 0.03 ton/mi², respectively (table 5).

COMPARISON OF SUSPENDED SOLIDS AND NUTRIENT YIELDS TO PREDOMINANT LAND USE

The major land-use categories in the basins studied were forest (12 basins), agriculture (9 basins), and urban (1 basin). The distribution of constituents in the water in most of these basins somewhat reflects the effect of multiple land uses. Except for six basins, all sites have at least

20 percent of their land use as forest, and six basins have more than 70 percent of their land use as agriculture (table 3). In general, the loads of nutrients and suspended solids in agricultural basins equal or exceed those in forested basins of similar size.

Annual total-flow and base-flow yields of nitrite plus nitrate, ammonia plus organic nitrogen, total phosphorus, and suspended solids for the period of record at each station are summarized in box plots (6, 7, 8, and 9). Stations are grouped according to their drainage basin size for comparisons of yields in basins of similar size and different land uses. The years of total-flow and base-flow yield estimates range from 3 to 18 years for the stations.

Forested Drainage Basins

Twelve drainage basins were categorized/classified as being forested, with forests covering from 44 to 96 percent of the basin land area. Total-flow and base-flow yields of nutrients (ammonia plus organic nitrogen, nitrite plus nitrate, and total phosphorus) were generally less than 1 (ton/mi²)/yr in forested drainage basins (figs. 6, 7, and 8). Typically, nutrient yields from undisturbed forested land are lower than those from urban and agricultural land. According to the U.S. Department of Agriculture (1992), forests can reduce the amount of nitrogen in surface-water runoff and shallow ground water by as much as 80 percent. The smallest total-flow yields for nitrite plus nitrate were estimated at Levisa Fork Basin, in which 95 percent of the land is forested. This basin also had one of the smallest total-flow yields of ammonia plus organic nitrogen and total phosphorus. Total-flow yields of suspended solids were generally lower in forested basins than agricultural and urban basins. Median annual total-flow yields of suspended solids were 65 and 177 (ton/mi²)/yr within the forested land use basins and agricultural land use basins, respectively.

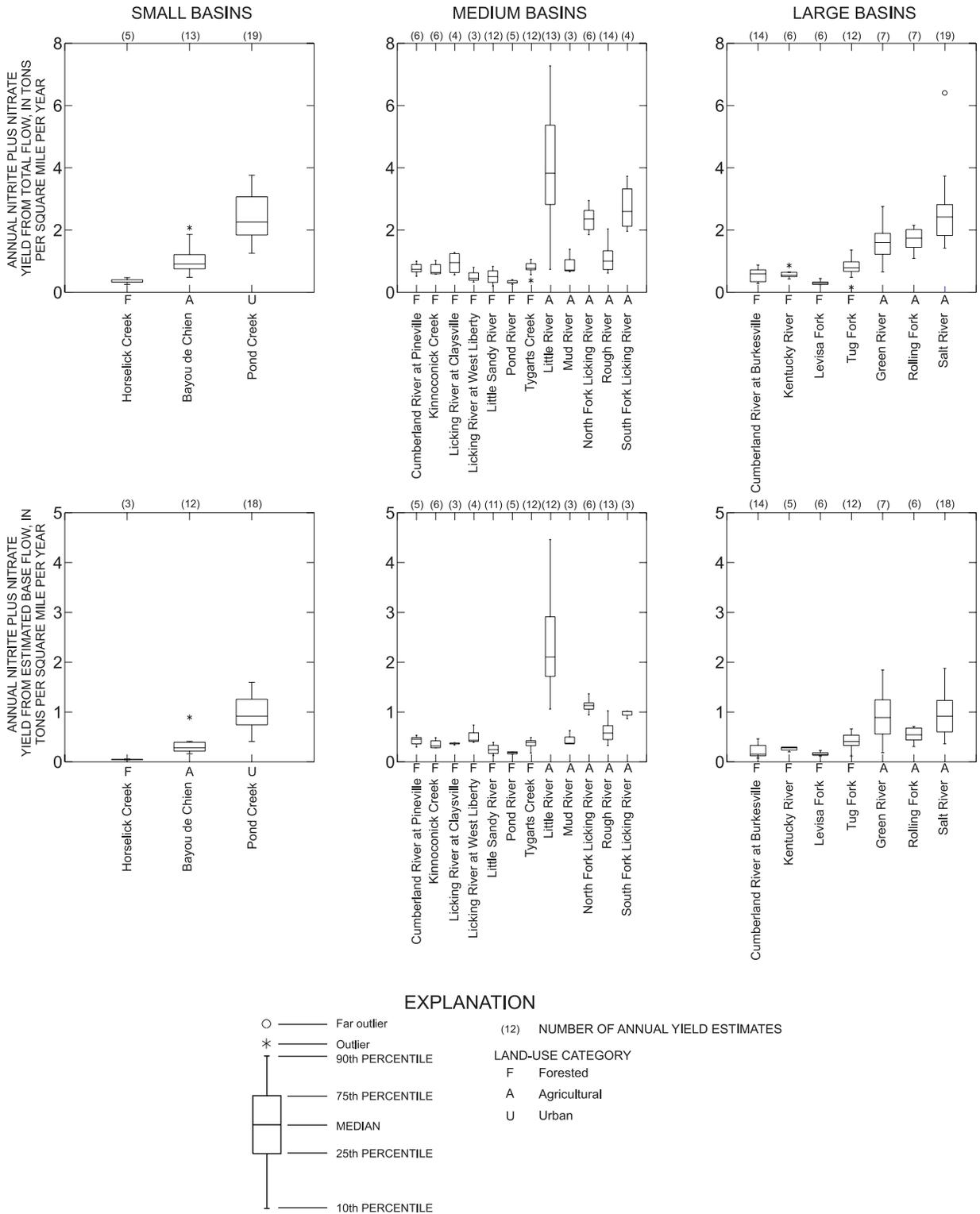


Figure 6. Distribution of estimated annual nitrite plus nitrate yields in small-, medium-, and large-size drainage basins in Kentucky, phase II.

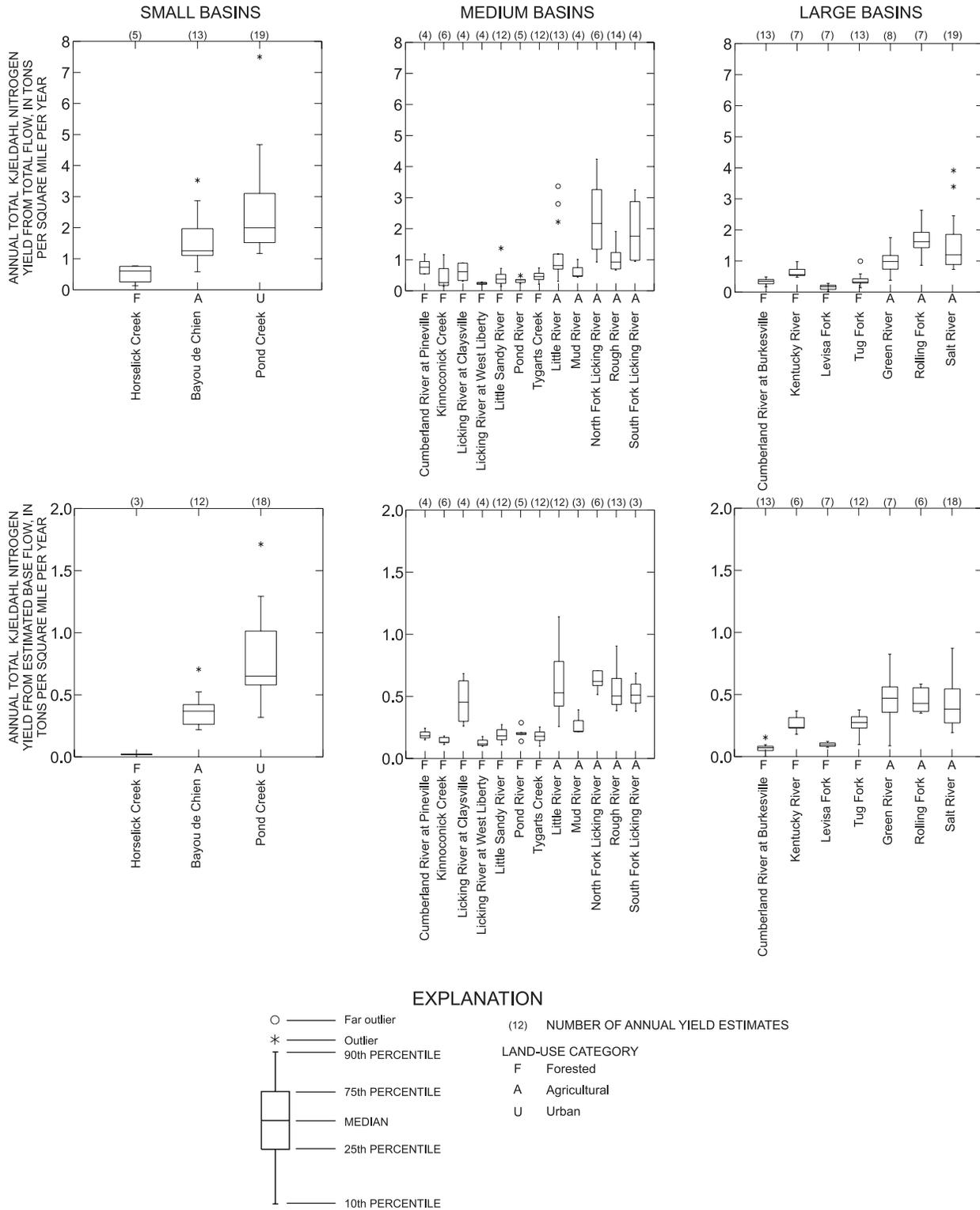


Figure 7. Distribution of estimated annual ammonia plus organic nitrogen yields in small-, medium-, and large-size drainage basins in Kentucky, phase II.

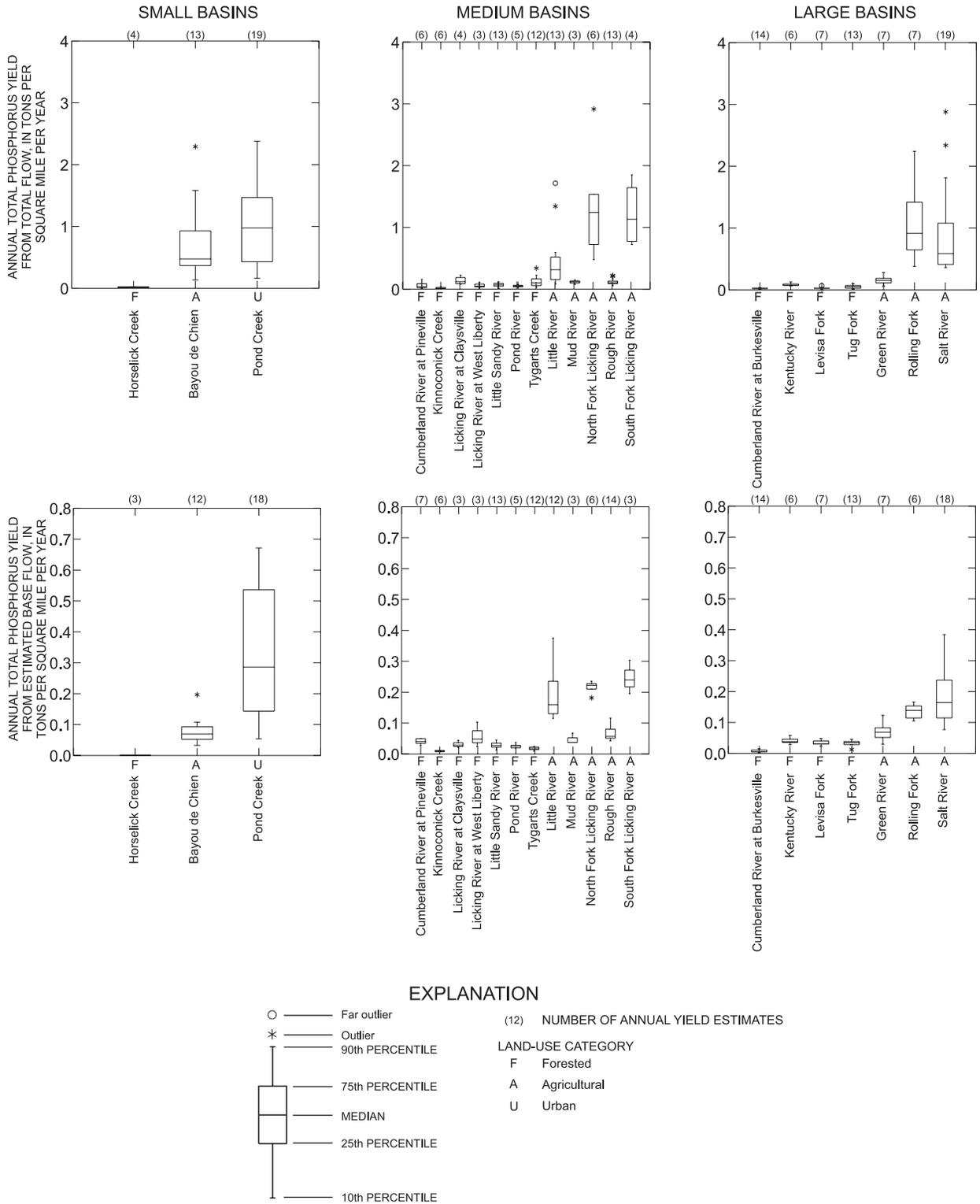


Figure 8. Distribution of estimated annual total phosphorus yields in small-, medium-, and large-size drainage basins in Kentucky, phase II.

Agricultural Drainage Basins

In most of the basins, total-flow yields for nutrients (ammonia plus organic nitrogen, nitrite plus nitrate, and total phosphorus) were generally less than 2 (ton/mi²)/yr. In general, nutrient base-flow yields of agricultural land followed a similar pattern as total-flow yields.

Some of the largest estimated total-flow yields of nutrients and suspended solids among agricultural basins were for streams in the Licking River Basin, the North Fork Licking River near Milford, and the South Fork Licking River at Cynthiana. Agricultural land constitutes 77 and 94 percent of the drainage area in the North Fork and South Fork Licking River Basins, respectively. Possible sources of nutrients discharging into the Licking River are agricultural and residential fertilizers, and other sources.

Estimated base-flow yields of nutrients and suspended solids at Little River near Cadiz, Rough River near Dundee, Green River at Paradise, and Mud River near Gus were nearly half of their estimated total-flow yields (fig. 9). These four basins are located in karst terrain making the ground water much more susceptible to contamination from

overlying land uses. The pipe-like-solutional openings (conduits) and fractures that make up the subsurface karst drainage system are a factor in the relatively rapid transport of nutrients and suspended solids by ground water to surface water.

Urban Drainage Basins

Urban land constituted 62 percent of the drainage area of Pond Creek. This was the only site categorized as urban; all other sites had less than 10 percent urban land (table 3). In general, nutrient (ammonia plus organic nitrogen, nitrite plus nitrate, and total phosphorus) total-flow and base-flow yields were higher in this urban basin than in the forested or agricultural basins (figs. 6, 7, and 8). However, the total-flow and base-flow yields of suspended solids in the urban basin equaled or exceeded those in the agricultural basins of equal or greater size. Potential factors that affect the magnitude of suspended solids yields include point-source discharges and their magnitude as well as the percentage of industrial and residential sources located within the urban setting.

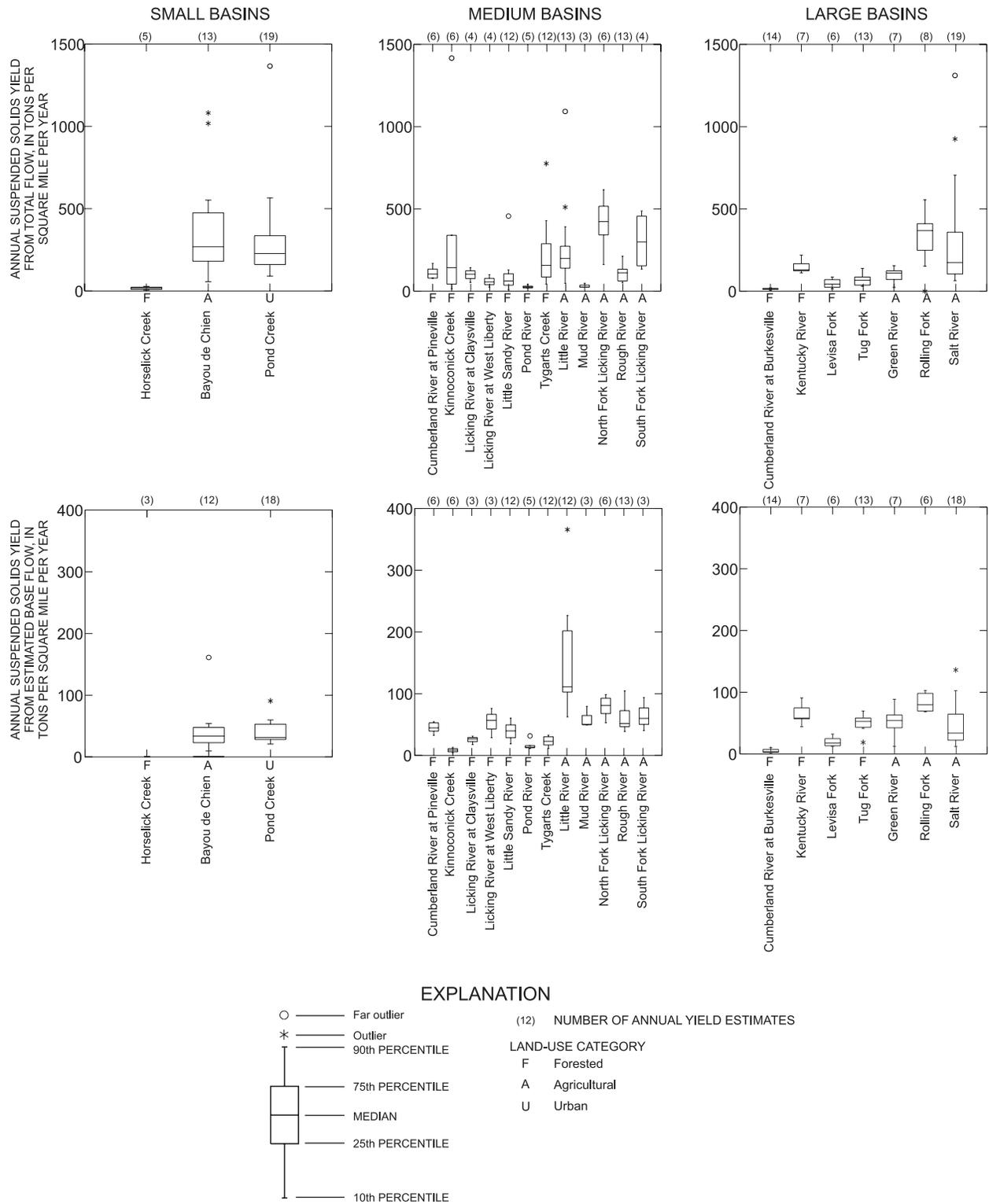


Figure 9. Distribution of estimated annual suspended solids yields in small-, medium-, and large-size drainage basins in Kentucky, phase II.

SUMMARY

Loads and yields of suspended solids and selected water-quality constituents were estimated for 22 of the 44 stations in the Kentucky Ambient Surface-Water Monitoring Network to determine the relative methods of constituent transport as total flow or base flow. Suspended solids and water-quality data were retrieved from the U.S. Environmental Protection Agency's (USEPA) Storage and Retrieval (STORET) data base for samples collected by the Kentucky Division of Water, and daily discharge data were obtained from U.S. Geological Survey (USGS) streamflow records. Daily mean discharge for ungaged stations or for stations with incomplete records (missing data) were synthesized using drainage-area ratio, regression analysis, or a combination of the two techniques. Stream discharge was partitioned into base-flow and surface-runoff components by the use of USGS software, and loads were estimated by the use of ESTIMATOR and FLUX computer programs. Principal results of the analyses are as follows:

- *Suspended solids*—Mean annual total-flow loads for suspended solids ranged from 850 tons per year (ton/yr) at Horse Lick Creek near Lamero to 771,000 ton/yr at Green River at Paradise. Mean annual base-flow loads for suspended solids ranged from 10 ton/yr at Horse Lick Creek near Lamero to 345,000 ton/yr at Green River at Paradise.
- *Fecal-coliform bacteria*—Kentucky's primary- and secondary-contact recreation water criteria for fecal-coliform bacteria are 200 and 100 colonies per 100 milliliters (col/100 mL), respectively, as a geometric mean based on no less than five samples per month. Approximately 45 and 82 percent of the median fecal-coliform densities were above the primary and secondary recreational contact standards, respectively. Tug Fork at Kermit, West Virginia, had the highest median densities of fecal coliform (630 col/100 mL). Many sites had densities of less than 1 col/100 mL.
- *Major ions*—The major ions analyzed were calcium, magnesium, potassium, sodium,

chloride, and sulfate. Bayou de Chien near Clinton had the smallest mean annual total-flow loads for calcium (8.2 ton/yr) and magnesium (3.0 ton/yr). The mean annual total-flow loads for the other major ions were smallest at Horse Lick Creek near Lamero. Green River at Paradise had the largest mean annual total-flow loads for all major ions, except sodium. Mean annual base-flow loads for all major ions were smallest at Horse Lick Creek near Lamero.

- *Nutrients*—Nutrients analyzed were ammonia, ammonia plus organic nitrogen, nitrite plus nitrate, and total phosphorus; total organic carbon also was analyzed. Horse Lick Creek near Lamero had the smallest mean annual total-flow and base-flow loads for those nutrients and total organic carbon. Mean annual total-flow loads for ammonia and total phosphorus were largest at Salt River at Shepherdsville. Green River at Paradise had the largest mean annual total-flow loads for nitrite plus nitrate, ammonia plus organic nitrogen, and total organic carbon. Mean annual base-flow loads for all nutrients and total organic carbon were smallest at Horse Lick Creek near Lamero and largest at Green River at Paradise.
- *Major metals and trace elements*—The major metals and trace elements analyzed were aluminum, arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, and zinc. The median concentrations for total lead at Salt River at Shepherdsville and Pond Creek near Louisville exceeded the U.S. Environmental Protection Agency drinking water standard. Horse Lick Creek near Lamero had the smallest mean annual total-flow and base-flow loads for all major metals and trace elements. The mean annual total-flow and base-flow yields of most metals and trace elements at most sites were equally low.

The loads and yields nutrients and suspended solids in streams are related to land-use practices. As the intensity of the land use increases, so do the loads and yields of nutrients and suspended solids.

Major sources of nutrients include wastewater-treatment plant discharges, fertilizers from agricultural and residential areas, and faulty septic tanks. In Kentucky, the largest sources of suspended solids include construction sites, erosion from agricultural land, logging operations, and surface mining.

Estimated total-flow yields of nutrients (ammonia plus organic nitrogen, nitrite plus nitrate, and total phosphorus) were generally less than 1 ton per square mile per year ($(\text{ton}/\text{mi}^2)/\text{yr}$) in forested basins. In general, the total-flow yields for ammonia plus organic nitrogen and nitrite plus nitrate were generally smaller in forested basins. The median annual total-flow yields of suspended solids were smaller in forested basins ($65 (\text{ton}/\text{mi}^2)/\text{yr}$) than in agricultural basins ($177 (\text{ton}/\text{mi}^2)/\text{yr}$).

Fertilizers from agricultural nonpoint sources may contribute substantial nutrient inputs into some basins; however, this does not always result in large loads of nutrients in streams. Estimates of total-flow yields of nutrients (ammonia plus organic nitrogen, nitrite plus nitrate, and total phosphorus) were typically less than $2 (\text{ton}/\text{mi}^2)/\text{yr}$. Some of the largest total-flow yields of nutrients and suspended solids were estimated in the Licking River Basin. Estimated base-flow yields of suspended solids at several basins located in the larger Green River and Lower Cumberland River Basins were about half of their estimated total-flow yields of suspended solids. The karst terrain in which these basins are located makes them much more susceptible to ground-water contamination, especially if a confining unit is thin or absent.

Of the 24 stations in phase II, only one station had greater than 50 percent urban land use. In general, the estimated nutrient yields in this urban basin were larger than in the forested or agricultural basins. Additional monitoring is needed to quantify nonpoint source nutrient yields from the various urban land uses, because nonpoint source information for urban basins is limited.

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Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase II

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; mg/L, milligrams per liter; mL, milliliter; <, less than; µg/L, micrograms per liter]

Map number (figure 1)	USGS/KDOW station name ¹	Drainage area (in square miles)	Mean annual load		Yield	
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow
Dissolved oxygen, in mg/L [00300]						
1	Tug Fork at Kermit, West Virginia	1,280	140	77	11	6.0
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	300	150	7.8	3.8
4	Little Sandy River near Argillite	400	58	29	15	7.3
5	Tygarts Creek near Load	242	38	17	16	7.2
6	Kinniconick Creek near Tannery	201	34	15	17	7.7
7	Licking River at Claysville	827	120	69	15	8.4
8	North Fork Licking River at Milford	226	28	10	13	4.6
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	95	25	15	4.1
10	Licking River at West Liberty	327	52	37	16	11
17	Kentucky River near Trapp	3,246	580	210	18	6.4
21	Salt River at Shepherdsville	1,197	160	66	14	5.5
23	Rolling Fork near Lebanon Junction	1,299	78	58	6.0	4.5
25	Pond Creek near Louisville	64	8.3	2.7	13	4.2
26	Green River at Paradise/Green River near Island	6,183	680	32	11	.51
27	Pond River near Madisonville/Pond River near Sacramento	469	26	14	5.6	3.0
28	Rough River near Dundee	757	120	63	16	8.3
29	Mud River near Gus	268	32	14	12	5.2
35	Little River near Cadiz	244	36	20	15	8.1
36	Cumberland River at Burkesville	6,053	650	200	11	3.2
39	Horse Lick Creek near Lamero	61.7	8.0	.8	13	1.3
41	Cumberland River at Pineville	770	160	27	21	3.5
44	Bayou de Chien near Clinton	68.7	6.9	2.6	10	3.8
Fecal-coliform bacteria, colonies per 100 mL [31616]						
1	Tug Fork at Kermit, West Virginia	1,280	1,200	990	.94	.77
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	330	120	.085	.031
4	Little Sandy River near Argillite	400	62	19	.15	.049
5	Tygarts Creek near Load	242	61	11	.25	.047
6	Kinniconick Creek near Tannery	201	11	2.9	.053	.014
7	Licking River at Claysville	827	150	11	.18	.013
8	North Fork Licking River at Milford	226	1,100	67	4.79	.30
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	190	66	.31	.107
10	Licking River at West Liberty	327	52	36	.16	.11

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase II—*Continued*
 [USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; mg/L, milligrams per liter; mL, milliliter; <, less than; µg/L, micrograms per liter]

Map number (figure 1)	USGS/KDOW station name ¹	Drainage area (in square miles)	Mean annual load		Yield	
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow
17	Kentucky River near Trapp	3,246	260	120	0.082	0.036
21	Salt River at Shepherdsville	1,197	350	82	.29	.069
23	Rolling Fork near Lebanon Junction	1299	570	120	.44	.096
25	Pond Creek near Louisville	64	38	7.4	.59	.12
26	Green River at Paradise/Green River near Island	6,183	140	84	.023	.014
27	Pond River near Madisonville/Pond River near Sacramento	469	4.5	2.6	.010	<.010
28	Rough River near Dundee	757	49	20	.065	.027
29	Mud River near Gus	268	6.3	2.9	.023	.011
35	Little River near Cadiz	244	44	4.2	.18	.017
36	Cumberland River at Burkesville	6,053	200	63	.033	.010
39	Horse Lick Creek near Lamero	61.7	5.9	<.010	.10	<.010
41	Cumberland River at Pineville	770	69	29	.090	.037
44	Bayou de Chien near Clinton	68.7	6.1	3.3	.089	.048
Alkalinity, total as CaCO₃ [00410]						
1	Tug Fork at Kermit, West Virginia	1,280	1,024	714	80.0	55.8
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	1,450	749	37.2	19.2
4	Little Sandy River near Argillite	400	131	72.5	32.8	18.1
5	Tygarts Creek near Load	242	198	95.6	81.6	39.5
6	Kinniconick Creek near Tannery	201	33.0	14.7	16.4	7.31
7	Licking River at Claysville	827	746	337	90.2	40.7
8	North Fork Licking River at Milford	226	323	114	143	50.7
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	1,320	350	212	56.4
10	Licking River at West Liberty	327	149	108	45.5	33.2
17	Kentucky River near Trapp	3,246	2,710	1,390	83.4	42.7
21	Salt River at Shepherdsville	1,197	2,090	841	174	70.2
23	Rolling Fork near Lebanon Junction	1,299	2,290	744	177	57.2
25	Pond Creek near Louisville	64	92.2	39.3	144	61.4
26	Green River at Paradise/Green River near Island	6183	7,830	5,540	127	89.5
27	Pond River near Madisonville/Pond River near Sacramento	469	191	121	40.8	25.9
28	Rough River near Dundee	757	743	395	98.2	52.2
29	Mud River near Gus	268	277	141	103	52.5
35	Little River near Cadiz	244	415	235	170	96.3
36	Cumberland River at Burkesville	6,053	3,340	1,000	55.3	16.6
39	Horse Lick Creek near Lamero	61.7	31.0	3.96	50.3	6.42
41	Cumberland River at Pineville	770	791	411	103	53.4
44	Bayou de Chien near Clinton	68.7	23.1	8.75	33.7	12.7

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; mg/L, milligrams per liter; mL, milliliter; <, less than; µg/L, micrograms per liter]

Map number (figure 1)	USGS/KDOW station name ¹	Drainage area (in square miles)	Mean annual load		Yield	
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow
Chloride, dissolved as Cl [00940]						
1	Tug Fork at Kermit, West Virginia	1,280	142	80.4	11.1	6.28
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	245	137	6.30	3.52
4	Little Sandy River near Argillite	400	45.3	20.1	11.3	5.02
5	Tygarts Creek near Load	242	17.9	7.23	7.38	2.99
6	Kinniconick Creek near Tannery	201	7.94	3.67	3.95	1.83
7	Licking River at Claysville	827	47.4	38.5	5.73	4.66
8	North Fork Licking River at Milford	226	12.1	4.02	5.36	1.78
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	58.0	16.0	9.33	2.57
10	Licking River at West Liberty	327	28.8	17.6	8.81	5.38
17	Kentucky River near Trapp	3,246	230.9	113	7.11	3.48
21	Salt River at Shepherdsville	1,197	147	55.1	12.3	4.60
23	Rolling Fork near Lebanon Junction	1,299	88.0	32.8	6.78	2.52
25	Pond Creek near Louisville	64	22.6	10.1	35.3	15.8
26	Green River at Paradise/Green River near Island	6,183	495	337	8.00	5.44
27	Pond River near Madisonville/Pond River near Sacramento	469	18.3	10.4	3.90	2.22
28	Rough River near Dundee	757	59.0	31.9	7.80	4.22
29	Mud River near Gus	268	70.2	8.27	26.2	3.09
35	Little River near Cadiz	244	19.9	12.1	8.15	4.95
36	Cumberland River at Burkesville	6,053	392	147	6.47	2.44
39	Horse Lick Creek near Lamero	61.7	1.66	.51	2.69	.828
41	Cumberland River at Pineville	770	44.7	27.7	5.80	3.60
44	Bayou de Chien near Clinton	68.7	3.67	1.39	5.35	2.02
Sulfate, dissolved in mg/L as SO₄ [00946]						
1	Tug Fork at Kermit, West Virginia	1,280	1,340	905	105	70.7
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	2,690	1,410	69.0	36.1
4	Little Sandy River near Argillite	400	201	105	50.3	26.2
5	Tygarts Creek near Load	242	81.4	42.6	33.6	17.6
6	Kinniconick Creek near Tannery	201	63.2	28.6	31.4	14.2
7	Licking River at Claysville	827	348	253	42.1	30.6
8	North Fork Licking River at Milford	226	802	28.1	355	12.4
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	225	62.5	36.2	10.1
10	Licking River at West Liberty	327	238	162	72.6	49.4
17	Kentucky River near Trapp	3,246	2,860	1,490	88.3	45.8

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase II—*Continued*
 [USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; mg/L, milligrams per liter; mL, milliliter; <, less than; µg/L, micrograms per liter]

Map number (figure 1)	USGS/KDOW station name ¹	Drainage area (in square miles)	Mean annual load		Yield	
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow
21	Salt River at Shepherdsville	1,197	439	164	36.6	13.7
23	Rolling Fork near Lebanon Junction	1,299	586	185	45.1	14.2
25	Pond Creek near Louisville	64	54.7	22.0	85.4	34.3
26	Green River at Paradise/Green River near Island	6,183	3,510	2,260	56.7	36.6
27	Pond River near Madisonville/Pond River near Sacramento	469	607	337	129	71.7
28	Rough River near Dundee	757	285	132	37.6	17.5
29	Mud River near Gus	268	70.2	32.1	26.2	12.0
35	Little River near Cadiz	244	39.5	23.1	16.2	9.48
36	Cumberland River at Burkesville	6,053	2,110	648	34.9	10.7
39	Horse Lick Creek near Lamero	61.7	12.7	3.0	20.6	4.81
41	Cumberland River at Pineville	770	1,020	645	132	83.7
44	Bayou de Chien near Clinton	68.7	12.5	3.1	18.2	4.49
Residue, total nonfilterable [00530]						
1	Tug Fork at Kermit, West Virginia	1,280	910	651	71.1	50.8
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	1,770	729	45.4	18.7
4	Little Sandy River near Argillite	400	481	154	120	38.5
5	Tyarts Creek near Load	242	4,780	56.4	1,980	23.3
6	Kinniconick Creek near Tannery	201	703	16.8	350	8.35
7	Licking River at Claysville	827	833	155	101	18.8
8	North Fork Licking River at Milford	226	802	153	355	67.7
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	1,890	301	305	48.5
10	Licking River at West Liberty	327	148	132	45.1	40.4
17	Kentucky River near Trapp	3,246	4,810	2,100	148	64.7
21	Salt River at Shepherdsville	1,197	6,420	530	537	44.3
23	Rolling Fork near Lebanon Junction	1,299	4,840	925	373	71.2
25	Pond Creek near Louisville	64	203	24.3	318	38.0
26	Green River at Paradise/Green River near Island	6,183	7,710	3,450	125	55.9
27	Pond River near Madisonville/Pond River near Sacramento	469	107	65.4	22.7	13.9
28	Rough River near Dundee	757	941	488	124	64.4
29	Mud River near Gus	268	87.3	40.4	32.6	15.1
35	Little River near Cadiz	244	602	350	247	144
36	Cumberland River at Burkesville	6,053	838	297	13.9	4.91
39	Horse Lick Creek near Lamero	61.7	8.50	.101	13.8	.163
41	Cumberland River at Pineville	770	1,990	334	259	43.4
44	Bayou de Chien near Clinton	68.7	270	27.3	393	39.8

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; mg/L, milligrams per liter; mL, milliliter; <, less than; µg/L, micrograms per liter]

Map number (figure 1)	USGS/KDOW station name ¹	Drainage area (in square miles)	Mean annual load		Yield	
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow
Carbon, organic, total as C [00680]						
1	Tug Fork at Kermit, West Virginia	1,280	26	15	2.0	1.2
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	52	24	1.3	.62
4	Little Sandy River near Argillite	400	15	6.2	3.7	1.5
5	Tygarts Creek near Load	242	11	3.5	4.5	1.5
6	Kinniconick Creek near Tannery	201	7.6	2.1	3.8	1.1
7	Licking River at Claysville	827	38	14	4.6	1.8
8	North Fork Licking River at Milford	226	13	4.7	5.8	2.1
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	52	11	8.3	1.8
10	Licking River at West Liberty	327	6.5	6.2	2.0	1.9
17	Kentucky River near Trapp	3,246	120	61	3.6	1.9
21	Salt River at Shepherdsville	1,197	130	32	11	2.6
23	Rolling Fork near Lebanon Junction	1,299	150	27	11	2.1
25	Pond Creek near Louisville	64	7.7	2.4	12	3.8
26	Green River at Paradise/Green River near Island	6,183	480	180	7.8	3.0
27	Pond River near Madisonville/Pond River near Sacramento	469	15	8.3	3.2	1.8
28	Rough River near Dundee	757	52	28	6.8	3.7
29	Mud River near Gus	268	18	7.5	6.6	2.8
35	Little River near Cadiz	244	13	6.8	5.4	2.8
36	Cumberland River at Burkesville	6,053	130	42	2.2	.69
39	Horse Lick Creek near Lamero	61.7	1.1	.069	1.8	.11
41	Cumberland River at Pineville	770	28	12	3.7	1.5
44	Bayou de Chien near Clinton	68.7	6.4	2.0	9.3	2.8
Calcium, recoverable, total as Ca [00916]						
1	Tug Fork at Kermit, West Virginia	1,280	418	266	32.7	20.8
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	818	417	21.0	10.7
4	Little Sandy River near Argillite	400	81.2	41.8	20.3	10.5
5	Tygarts Creek near Load	242	86.6	41.5	35.8	17.2
6	Kinniconick Creek near Tannery	201	19.7	8.9	9.80	4.45
7	Licking River at Claysville	827	348	150	42.1	18.1
8	North Fork Licking River at Milford	226	143	53.1	63.2	23.5
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	572	161	92.2	26.0
10	Licking River at West Liberty	327	87.2	64.0	26.7	19.6
17	Kentucky River near Trapp	3,246	1,160	578	35.6	17.8

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase II—*Continued*
 [USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; mg/L, milligrams per liter; mL, milliliter; <, less than; µg/L, micrograms per liter]

Map number (figure 1)	USGS/KDOW station name ¹	Drainage area (in square miles)	Mean annual load		Yield	
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow
21	Salt River at Shepherdsville	1,197	801	334	66.9	27.9
23	Rolling Fork near Lebanon Junction	1,299	930	289	71.6	22.2
25	Pond Creek near Louisville	64	37.6	15.8	58.7	24.7
26	Green River at Paradise/Green River near Island	6,183	3,610	2,470	58.3	40.0
27	Pond River near Madisonville/Pond River near Sacramento	469	175	92.5	37.2	19.7
28	Rough River near Dundee	757	298	168	39.4	22.2
29	Mud River near Gus	268	120	61.2	44.8	22.9
35	Little River near Cadiz	244	173	100	70.9	41.1
36	Cumberland River at Burkesville	6,053	1,330	400	21.9	6.61
39	Horse Lick Creek near Lamero	61.7	13.5	1.2	21.8	2.00
41	Cumberland River at Pineville	770	305	186	39.6	24.2
44	Bayou de Chien near Clinton	68.7	8.2	2.6	12.0	3.73
Magnesium, total as Mg [00927]						
1	Tug Fork at Kermit, West Virginia	1,280	180	110	14	8.8
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	380	190	9.7	4.8
4	Little Sandy River near Argillite	400	33	16	8.2	3.9
5	Tygart Creek near Load	242	16	7.3	6.7	3.0
6	Kinniconick Creek near Tannery	201	9.9	4.2	4.9	2.1
7	Licking River at Claysville	827	82	60	9.9	7.3
8	North Fork Licking River at Milford	226	19	6.4	8.2	2.8
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	56	14	8.9	2.2
10	Licking River at West Liberty	327	44	32	14	9.9
17	Kentucky River near Trapp	3,246	611	300	19	9.1
21	Salt River at Shepherdsville	1,197	150	59	13	4.9
23	Rolling Fork near Lebanon Junction	1,299	200	62	16	4.8
25	Pond Creek near Louisville	64	14	6.1	22	9.5
26	Green River at Paradise/Green River near Island	6,183	650	440	10	7.1
27	Pond River near Madisonville/Pond River near Sacramento	469	58	31	12	6.5
28	Rough River near Dundee	757	46	24	6.1	3.2
29	Mud River near Gus	268	12	5.8	4.4	2.2
35	Little River near Cadiz	244	17	9.3	6.9	3.8
36	Cumberland River at Burkesville	6,053	390	120	6.5	2.0
39	Horse Lick Creek near Lamero	61.7	2.9	.29	4.6	.46
41	Cumberland River at Pineville	770	160	81	20	10
44	Bayou de Chien near Clinton	68.7	2.7	.76	3.9	1.1

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; mg/L, milligrams per liter; mL, milliliter; <, less than; µg/L, micrograms per liter]

Map number (figure 1)	USGS/KDOW station name ¹	Drainage area (in square miles)	Mean annual load		Yield	
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow
Potassium, total as K [00937]						
1	Tug Fork at Kermit, West Virginia	1,280	39.4	23.5	3.08	1.83
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	74.4	36.9	1.91	.946
4	Little Sandy River near Argillite	400	10.8	4.88	2.70	1.22
5	Tygarts Creek near Load	242	7.36	2.77	3.04	1.14
6	Kinniconick Creek near Tannery	201	5.60	2.03	2.79	1.01
7	Licking River at Claysville	827	26.9	14.5	3.25	1.75
8	North Fork Licking River at Milford	226	12.4	3.77	5.50	1.67
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	36.4	7.57	5.87	1.22
10	Licking River at West Liberty	327	6.80	6.52	2.08	1.99
17	Kentucky River near Trapp	3,246	123	59.1	3.78	1.82
21	Salt River at Shepherdsville	1,197	59.7	18.1	4.99	1.51
23	Rolling Fork near Lebanon Junction	1,299	67.6	15.7	5.20	1.21
25	Pond Creek near Louisville	64	4.29	1.35	6.70	2.11
26	Green River at Paradise/Green River near Island	6,183	176	7.92	2.85	.128
27	Pond River near Madisonville/Pond River near Sacramento	469	8.29	4.56	1.77	.972
28	Rough River near Dundee	757	26.6	14.3	3.51	1.89
29	Mud River near Gus	268	5.88	3.62	2.19	1.35
35	Little River near Cadiz	244	10.9	5.55	4.48	2.27
36	Cumberland River at Burkesville	6,053	97.0	29.7	1.60	.491
39	Horse Lick Creek near Lamero	61.7	1.04	.06	1.68	.099
41	Cumberland River at Pineville	770	32.1	15.9	4.17	2.07
44	Bayou de Chien near Clinton	68.7	335	.789	4.88	1.15
Sodium, recoverable, total as Na [00929]						
1	Tug Fork at Kermit, West Virginia	1,280	447	278	34.9	21.7
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	431	240	11.1	6.16
4	Little Sandy River near Argillite	400	30.1	15.5	7.54	3.88
5	Tygarts Creek near Load	242	11.4	5.29	4.70	2.18
6	Kinniconick Creek near Tannery	201	6.89	3.09	3.43	1.54
7	Licking River at Claysville	827	37.1	26.1	4.48	3.15
8	North Fork Licking River at Milford	226	6.73	2.44	2.98	1.08
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	35.7	8.71	5.75	1.40
10	Licking River at West Liberty	327	16.5	15.1	5.05	4.63
17	Kentucky River near Trapp	3,246	287	149	8.83	4.60

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase II—*Continued*
 [USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; mg/L, milligrams per liter; mL, milliliter; <, less than; µg/L, micrograms per liter]

Map number (figure 1)	USGS/KDOW station name ¹	Drainage area (in square miles)	Mean annual load		Yield	
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow
21	Salt River at Shepherdsville	1,197	67.6	27.9	5.65	2.33
23	Rolling Fork near Lebanon Junction	1,299	120	19.5	9.20	1.50
25	Pond Creek near Louisville	64	17.2	7.61	26.9	11.9
26	Green River at Paradise/Green River near Island	6,183	370	259	5.99	4.19
27	Pond River near Madisonville/Pond River near Sacramento	469	57.2	31.8	12.2	6.78
28	Rough River near Dundee	757	31.4	17.6	4.14	2.33
29	Mud River near Gus	268	10.5	5.42	3.93	2.02
35	Little River near Cadiz	244	14.7	8.45	6.01	3.46
36	Cumberland River at Burkesville	6,053	321	102	5.31	1.69
39	Horse Lick Creek near Lamero	61.7	.928	.0834	1.50	.135
41	Cumberland River at Pineville	770	215	129	28.0	16.7
44	Bayou de Chien near Clinton	68.7	3.16	1.62	4.60	2.36

Ammonia, total as N [00610]

1	Tug Fork at Kermit, West Virginia	1,280	.496	.322	.0388	.0252
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	.757	.369	.0194	<.0100
4	Little Sandy River near Argillite	400	.202	.100	.0504	.0250
5	Tygart's Creek near Load	242	.105	.0405	.0434	.0168
6	Kinniconick Creek near Tannery	201	.0745	.0318	.0371	.0158
7	Licking River at Claysville	827	.426	.287	.0515	.0347
8	North Fork Licking River at Milford	226	.100	.0759	.0444	.0336
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	.491	.143	.0791	.0229
10	Licking River at West Liberty	327	.148	.108	.0453	.0331
17	Kentucky River near Trapp	3,246	2.10	.959	.0647	.0295
21	Salt River at Shepherdsville	1,197	3.99	.646	.333	.0540
23	Rolling Fork near Lebanon Junction	1,299	1.14	.307	.0875	.0237
25	Pond Creek near Louisville	64	.795	.230	1.24	.360
26	Green River at Paradise/Green River near Island	6,183	3.26	2.05	.0528	.0332
27	Pond River near Madisonville/Pond River near Sacramento	469	.216	.122	.0460	.0260
28	Rough River near Dundee	757	1.86	.860	.246	.114
29	Mud River near Gus	268	.178	.0668	.0666	.0249
35	Little River near Cadiz	244	.187	.109	.0768	.0446
36	Cumberland River at Burkesville	6,053	3.54	1.36	.0584	.0225
39	Horse Lick Creek near Lamero	61.7	.0403	<.0100	.0654	<.0100
41	Cumberland River at Pineville	770	.457	.282	.0594	.0366
44	Bayou de Chien near Clinton	68.7	.0791	.0275	.115	.0401

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; mg/L, milligrams per liter; mL, milliliter; <, less than; µg/L, micrograms per liter]

Map number (figure 1)	USGS/KDOW station name ¹	Drainage area (in square miles)	Mean annual load		Yield	
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow
Nitrite plus nitrate, total as N [00630]						
1	Tug Fork at Kermit, West Virginia	1,280	9.38	4.94	0.733	0.386
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	12.2	6.18	.312	.159
4	Little Sandy River near Argillite	400	2.05	1.05	.512	.264
5	Tygarts Creek near Load	242	1.92	.903	.795	.373
6	Kinniconick Creek near Tannery	201	1.47	.706	.730	.351
7	Licking River at Claysville	827	7.78	2.26	.940	.274
8	North Fork Licking River at Milford	226	4.57	2.20	2.02	.973
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	16.9	4.49	2.72	.724
10	Licking River at West Liberty	327	1.30	1.28	.397	.390
17	Kentucky River near Trapp	3,246	16.4	5.76	.506	.177
21	Salt River at Shepherdsville	1,197	31.2	11.3	2.61	.942
23	Rolling Fork near Lebanon Junction	1,299	22.1	5.97	1.70	.460
25	Pond Creek near Louisville	64	1.56	.588	2.43	.919
26	Green River at Paradise/Green River near Island	6,183	101	66.6	1.64	1.08
27	Pond River near Madisonville/Pond River near Sacramento	469	1.30	.706	.276	.151
28	Rough River near Dundee	757	8.13	4.36	1.07	.576
29	Mud River near Gus	268	2.33	1.03	.868	.385
35	Little River near Cadiz	244	1.5	5.33	4.30	2.18
36	Cumberland River at Burkesville	6,053	35.5	13.4	.586	.222
39	Horse Lick Creek near Lamero	61.7	.184	.0142	.299	.023
41	Cumberland River at Pineville	770	5.85	2.74	.760	.356
44	Bayou de Chien near Clinton	68.7	.723	.212	1.05	.308
Ammonia and organic, total as N [00625]						
1	Tug Fork at Kermit, West Virginia	1,280	5.31	3.50	.415	.274
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	7.88	3.67	.202	.094
4	Little Sandy River near Argillite	400	1.98	.766	.495	.192
5	Tygarts Creek near Load	242	1.10	.431	.456	.178
6	Kinniconick Creek near Tannery	201	1.08	.275	.538	.137
7	Licking River at Claysville	827	5.35	3.76	.647	.455
8	North Fork Licking River at Milford	226	4.55	1.21	2.01	.536
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	12.0	2.45	1.93	.394
10	Licking River at West Liberty	327	.753	.422	.230	.129
17	Kentucky River near Trapp	3,246	20.9	8.54	.643	.263

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase II—*Continued*
 [USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; mg/L, milligrams per liter; mL, milliliter; <, less than; µg/L, micrograms per liter]

Map number (figure 1)	USGS/KDOW station name ¹	Drainage area (in square miles)	Mean annual load		Yield	
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow
21	Salt River at Shepherdsville	1,197	22.5	4.90	1.88	0.410
23	Rolling Fork near Lebanon Junction	1,299	21.9	5.03	1.69	.387
25	Pond Creek near Louisville	64	2.02	.48	3.16	.750
26	Green River at Paradise/Green River near Island	6,183	62.3	30.2	1.01	.488
27	Pond River near Madisonville/Pond River near Sacramento	469	1.33	.801	.284	.171
28	Rough River near Dundee	757	8.01	4.02	1.06	.531
29	Mud River near Gus	268	1.71	.744	.640	.277
35	Little River near Cadiz	244	2.97	1.38	1.22	.566
36	Cumberland River at Burkesville	6,053	20.4	7.89	.337	.130
39	Horse Lick Creek near Lamero	61.7	.282	<.0100	.457	.010
41	Cumberland River at Pineville	770	5.57	1.54	.724	.200
44	Bayou de Chien near Clinton	68.7	.803	.407	1.17	.592
Phosphorus, total as P [00665]						
1	Tug Fork at Kermit, West Virginia	1,280	.670	.430	.0523	.0336
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	1.20	.559	.0307	.0144
4	Little Sandy River near Argillite	400	.29	.111	.0713	.0278
5	Tygart's Creek near Load	242	.302	.0436	.125	.0180
6	Kinniconick Creek near Tannery	201	.0485	.0179	.0241	<.0100
7	Licking River at Claysville	827	1.15	.237	.139	.0287
8	North Fork Licking River at Milford	226	2.63	.420	1.16	.186
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	7.51	1.15	1.21	.185
10	Licking River at West Liberty	327	.157	.143	.0479	.0439
17	Kentucky River near Trapp	3,246	2.84	1.34	.0874	.0414
21	Salt River at Shepherdsville	1,197	15.7	2.11	1.31	.177
23	Rolling Fork near Lebanon Junction	1,299	14.2	1.52	1.10	.117
25	Pond Creek near Louisville	64	.651	.199	1.02	.311
26	Green River at Paradise/Green River near Island	6,183	9.75	4.41	.158	.0713
27	Pond River near Madisonville/Pond River near Sacramento	469	.205	.102	.0438	.0216
28	Rough River near Dundee	757	1.04	.538	.138	.0711
29	Mud River near Gus	268	.299	.126	.112	.0470
35	Little River near Cadiz	244	1.06	.419	.436	.172
36	Cumberland River at Burkesville	6,053	1.42	.456	.0234	<.0100
39	Horse Lick Creek near Lamero	61.7	<.0100	<.0100	.0114	<.0100
41	Cumberland River at Pineville	770	.960	.300	.125	.0389
44	Bayou de Chien near Clinton	68.7	.497	.0509	.724	.0741

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; mg/L, milligrams per liter; mL, milliliter; <, less than; µg/L, micrograms per liter]

Map number (figure 1)	USGS/KDOW station name ¹	Drainage area (in square miles)	Mean annual load		Yield	
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow
Aluminum, total, in µg/L as Al [01105]						
1	Tug Fork at Kermit, West Virginia	1,280	16.14	10.57	1.261	0.8254
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	32.88	13.79	.8436	.3539
4	Little Sandy River near Argillite	400	5.883	2.318	1.471	.5796
5	Tygart's Creek near Load	242	8.179	1.213	3.380	.5012
6	Kinniconick Creek near Tannery	201	2.350	.3319	1.169	.1651
7	Licking River at Claysville	827	23.06	4.450	2.789	.5381
8	North Fork Licking River at Milford	226	29.43	5.227	13.020	2.313
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	50.57	9.295	8.144	1.497
10	Licking River at West Liberty	327	3.339	2.343	1.021	.7165
17	Kentucky River near Trapp	3,246	115.5	13.36	3.560	.4115
21	Salt River at Shepherdsville	1,197	65.24	15.27	5.451	1.276
23	Rolling Fork near Lebanon Junction	1,299	117.4	19.83	9.037	1.527
25	Pond Creek near Louisville	64	3.075	.4762	4.804	.7441
26	Green River at Paradise/Green River near Island	6,183	242.9	80.09	3.928	1.295
27	Pond River near Madisonville/Pond River near Sacramento	469	4.819	2.690	1.028	.5737
28	Rough River near Dundee	757	21.28	9.786	2.811	1.293
29	Mud River near Gus	268	4.560	1.994	1.701	.7441
35	Little River near Cadiz	244	17.35	7.634	7.109	3.129
36	Cumberland River at Burkesville	6,053	15.90	6.005	.2627	.09922
39	Horse Lick Creek near Lamero	61.7	.1863	<.01000	.3020	.01125
41	Cumberland River at Pineville	770	20.22	6.470	2.626	.8403
44	Bayou de Chien near Clinton	68.7	2.932	.9511	4.268	1.384
Arsenic, total, in µg/L as As [01002]						
1	Tug Fork at Kermit, West Virginia	1,280	.026	.015	<.010	<.010
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	.030	.016	<.010	<.010
4	Little Sandy River near Argillite	400	<.010	<.010	<.010	<.010
5	Tygart's Creek near Load	242	<.010	<.010	<.010	<.010
6	Kinniconick Creek near Tannery	201	<.010	<.010	<.010	<.010
7	Licking River at Claysville	827	.020	.011	<.010	<.010
8	North Fork Licking River at Milford	226	<.010	<.010	<.010	<.010
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	.013	<.010	<.010	<.010
10	Licking River at West Liberty	327	<.010	<.010	<.010	<.010
17	Kentucky River near Trapp	3,246	.086	.037	<.010	<.010

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase II—*Continued*
 [USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; mg/L, milligrams per liter; mL, milliliter; <, less than; µg/L, micrograms per liter]

Map number (figure 1)	USGS/KDOW station name ¹	Drainage area (in square miles)	Mean annual load		Yield	
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow
21	Salt River at Shepherdsville	1,197	0.058	0.013	<0.010	<0.010
23	Rolling Fork near Lebanon Junction	1,299	.042	.013	<.010	<.010
25	Pond Creek near Louisville	64	<.010	<.010	<.010	<.010
26	Green River at Paradise/Green River near Island	6,183	.17	.082	<.010	<.010
27	Pond River near Madisonville/Pond River near Sacramento	469	<.010	<.010	<.010	<.010
28	Rough River near Dundee	757	.020	.013	<.010	<.010
29	Mud River near Gus	268	<.010	<.010	<.010	<.010
35	Little River near Cadiz	244	<.010	<.010	<.010	<.010
36	Cumberland River at Burkesville	6,053	.13	.050	<.010	<.010
39	Horse Lick Creek near Lamero	61.7	<.010	<.010	<.010	<.010
41	Cumberland River at Pineville	770	.028	<.010	<.010	<.010
44	Bayou de Chien near Clinton	68.7	<.010	<.010	<.010	<.010

Barium, total in µg/L as Ba [01007]

1	Tug Fork at Kermit, West Virginia	1,280	.82	.50	.064	.039
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	1.4	.64	.035	.016
4	Little Sandy River near Argillite	400	.24	.10	.059	.025
5	Tyarts Creek near Load	242	.13	.054	.056	.022
6	Kinniconick Creek near Tannery	201	.10	.026	.052	.013
7	Licking River at Claysville	827	.35	.14	.042	.017
8	North Fork Licking River at Milford	226	.19	.044	.085	.020
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	.51	.086	.082	.014
10	Licking River at West Liberty	327	.25	.20	.077	.060
17	Kentucky River near Trapp	3,246	2.6	1.1	.081	.032
21	Salt River at Shepherdsville	1,197	.84	.23	.070	.020
23	Rolling Fork near Lebanon Junction	1,299	.90	.23	.069	.017
25	Pond Creek near Louisville	64	.047	.014	.073	.023
26	Green River at Paradise/Green River near Island	6,183	3.6	2.1	.059	.034
27	Pond River near Madisonville/Pond River near Sacramento	469	.085	.049	.018	.010
28	Rough River near Dundee	757	.62	.30	.082	.040
29	Mud River near Gus	268	.12	.060	.045	.022
35	Little River near Cadiz	244	.36	.16	.15	.064
36	Cumberland River at Burkesville	6,053	3.4	1.8	.056	.029
39	Horse Lick Creek near Lamero	61.7	.016	<.010	.026	.002
41	Cumberland River at Pineville	770	.61	.28	.079	.036
44	Bayou de Chien near Clinton	68.7	.07	.019	.10	.027

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; mg/L, milligrams per liter; mL, milliliter; <, less than; µg/L, micrograms per liter]

Map number (figure 1)	USGS/KDOW station name ¹	Drainage area (in square miles)	Mean annual load		Yield	
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow
Cadmium, total, in µg/L as Cd [01027]						
1	Tug Fork at Kermit, West Virginia	1,280	<0.010	<0.010	<0.010	<0.010
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	.018	<.010	<.010	<.010
4	Little Sandy River near Argillite	400	<.010	<.010	<.010	<.010
5	Tygarts Creek near Load	242	<.010	<.010	<.010	<.010
6	Kinniconick Creek near Tannery	201	<.010	<.010	<.010	<.010
7	Licking River at Claysville	827	<.010	<.010	<.010	<.010
8	North Fork Licking River at Milford	226	<.010	<.010	<.010	<.010
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	<.010	<.010	<.010	<.010
10	Licking River at West Liberty	327	<.010	<.010	<.010	<.010
17	Kentucky River near Trapp	3,246	.029	.014	<.010	<.010
21	Salt River at Shepherdsville	1,197	.010	<.010	<.010	<.010
23	Rolling Fork near Lebanon Junction	1,299	.010	<.010	<.010	<.010
25	Pond Creek near Louisville	64	<.010	<.010	<.010	<.010
26	Green River at Paradise/Green River near Island	6183	.048	.031	<.010	<.010
27	Pond River near Madisonville/Pond River near Sacramento	469	<.010	<.010	<.010	<.010
28	Rough River near Dundee	757	.012	<.010	<.010	<.010
29	Mud River near Gus	268	<.010	<.010	<.010	<.010
35	Little River near Cadiz	244	<.010	<.010	<.010	<.010
36	Cumberland River at Burkesville	6,053	.15	.047	<.010	<.010
39	Horse Lick Creek near Lamero	61.7	<.010	<.010	<.010	<.010
41	Cumberland River at Pineville	770	<.010	<.010	<.010	<.010
44	Bayou de Chien near Clinton	68.7	<.010	<.010	<.010	<.010
Chromium, total, in µg/L as Cr [01034]						
1	Tug Fork at Kermit, West Virginia	1,280	.045	.027	<.010	<.010
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	.050	.023	<.010	<.010
4	Little Sandy River near Argillite	400	.018	<.010	<.010	<.010
5	Tygarts Creek near Load	242	.019	<.010	<.010	<.010
6	Kinniconick Creek near Tannery	201	<.010	<.010	<.010	<.010
7	Licking River at Claysville	827	.029	.020	<.010	<.010
8	North Fork Licking River at Milford	226	.025	<.010	.011	<.010
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	.037	<.010	<.010	<.010
10	Licking River at West Liberty	327	<.010	<.010	<.010	<.010
17	Kentucky River near Trapp	3,246	.14	.070	<.010	<.010

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase II—*Continued*
 [USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; mg/L, milligrams per liter; mL, milliliter; <, less than; µg/L, micrograms per liter]

Map number (figure 1)	USGS/KDOW station name ¹	Drainage area (in square miles)	Mean annual load		Yield	
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow
21	Salt River at Shepherdsville	1,197	3.0	0.018	<0.010	<0.010
23	Rolling Fork near Lebanon Junction	1,299	.12	.022	<.010	<.010
25	Pond Creek near Louisville	64	<.010	<.010	<.010	<.010
26	Green River at Paradise/Green River near Island	6,183	.29	.13	<.010	<.010
27	Pond River near Madisonville/Pond River near Sacramento	469	<.010	<.010	<.010	<.010
28	Rough River near Dundee	757	.040	.019	<.010	<.010
29	Mud River near Gus	268	<.010	<.010	<.010	<.010
35	Little River near Cadiz	244	.023	.010	.010	<.010
36	Cumberland River at Burkesville	6,053	.14	.049	<.010	<.010
39	Horse Lick Creek near Lamero	61.7	<.010	<.010	<.010	<.010
41	Cumberland River at Pineville	770	.056	.014	.01	<.010
44	Bayou de Chien near Clinton	68.7	<.010	<.010	<.010	<.010

Copper, total in µg/L as Cu [01042]

1	Tug Fork at Kermit, West Virginia	1,280	.069	.042	<.010	<.010
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	.088	.042	<.010	<.010
4	Little Sandy River near Argillite	400	.023	<.010	<.010	<.010
5	Tygarts Creek near Load	242	.012	<.010	<.010	<.010
6	Kinniconick Creek near Tannery	201	<.010	<.010	<.010	<.010
7	Licking River at Claysville	827	.036	.018	<.010	<.010
8	North Fork Licking River at Milford	226	<.010	<.010	<.010	<.010
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	.032	<.010	<.010	<.010
10	Licking River at West Liberty	327	<.010	<.010	<.010	<.010
17	Kentucky River near Trapp	3,246	.17	.076	<.010	<.010
21	Salt River at Shepherdsville	1,197	.20	.031	.017	<.010
23	Rolling Fork near Lebanon Junction	1,299	.14	.024	.010	<.010
25	Pond Creek near Louisville	64	.010	<.010	.016	<.010
26	Green River at Paradise/Green River near Island	6,183	.36	.17	<.010	<.010
27	Pond River near Madisonville/Pond River near Sacramento	469	<.010	<.010	<.010	<.010
28	Rough River near Dundee	757	.069	.037	<.010	<.010
29	Mud River near Gus	268	<.010	<.010	<.010	<.010
35	Little River near Cadiz	244	.028	<.010	.012	<.010
36	Cumberland River at Burkesville	6,053	.39	.12	<.010	<.010
39	Horse Lick Creek near Lamero	61.7	<.010	<.010	<.010	<.010
41	Cumberland River at Pineville	770	.048	.017	<.010	<.010
44	Bayou de Chien near Clinton	68.7	.86	<.010	.013	<.010

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; mg/L, milligrams per liter; mL, milliliter; <, less than; µg/L, micrograms per liter]

Map number (figure 1)	USGS/KDOW station name ¹	Drainage area (in square miles)	Mean annual load		Yield	
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow
Iron, total, in µg/L as Fe [01045]						
1	Tug Fork at Kermit, West Virginia	1,280	34.26	22.97	2.677	1.794
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	88.31	36.05	2.266	.9250
4	Little Sandy River near Argillite	400	16.72	6.312	4.179	1.578
5	Tygarts Creek near Load	242	98.16	2.392	40.56	.9885
6	Kinniconick Creek near Tannery	201	334.5	.8996	166.43	.4476
7	Licking River at Claysville	827	38.50	6.802	4.656	.8225
8	North Fork Licking River at Milford	226	41.11	7.358	18.19	3.256
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	74.79	12.46	12.04	2.006
10	Licking River at West Liberty	327	6.524	6.222	1.995	1.903
17	Kentucky River near Trapp	3,246	202.7	88.00	6.246	2.711
21	Salt River at Shepherdsville	1,197	191.8	20.15	16.02	1.683
23	Rolling Fork near Lebanon Junction	1,299	194.5	31.78	14.98	2.447
25	Pond Creek near Louisville	64	4.852	.5678	7.581	.8871
26	Green River at Paradise/Green River near Island	6,183	320.0	131.4	5.175	2.125
27	Pond River near Madisonville/Pond River near Sacramento	469	6.999	4.067	1.492	.8671
28	Rough River near Dundee	757	31.01	15.39	4.096	2.033
29	Mud River near Gus	268	5.530	2.477	2.064	.9243
35	Little River near Cadiz	244	21.15	9.541	8.669	3.910
36	Cumberland River at Burkesville	6,053	23.25	8.464	.3842	.1398
39	Horse Lick Creek near Lamero	61.7	.2046	.0366	.3317	.05936
41	Cumberland River at Pineville	770	59.50	18.59	7.727	2.414
44	Bayou de Chien near Clinton	68.7	11.72	1.033	17.06	1.504
Lead, total, in µg/L as Pb [01051]						
1	Tug Fork at Kermit, West Virginia	1,280	.069	.043	<.010	<.010
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	.16	.078	<.010	<.010
4	Little Sandy River near Argillite	400	.016	<.010	<.010	<.010
5	Tygarts Creek near Load	242	.97	.32	<.010	<.010
6	Kinniconick Creek near Tannery	201	<.010	<.010	<.010	<.010
7	Licking River at Claysville	827	.025	.014	<.010	<.010
8	North Fork Licking River at Milford	226	<.01	<.010	<.010	<.010
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	.037	.010	<.010	<.010
10	Licking River at West Liberty	327	<.010	<.010	<.010	<.010
17	Kentucky River near Trapp	3,246	.16	.067	<.010	<.010

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase II—*Continued*
 [USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; mg/L, milligrams per liter; mL, milliliter; <, less than; µg/L, micrograms per liter]

Map number (figure 1)	USGS/KDOW station name ¹	Drainage area (in square miles)	Mean annual load		Yield	
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow
21	Salt River at Shepherdsville	1,197	0.22	0.078	0.018	<0.010
23	Rolling Fork near Lebanon Junction	1,299	.16	.052	.012	<.010
25	Pond Creek near Louisville	64	.015	<.010	.023	<.010
26	Green River at Paradise/Green River near Island	6,183	.34	.12	<.010	<.010
27	Pond River near Madisonville/Pond River near Sacramento	469	<.010	<.010	<.010	<.010
28	Rough River near Dundee	757	.13	.049	.018	<.010
29	Mud River near Gus	268	<.010	<.010	<.010	<.010
35	Little River near Cadiz	244	.027	.014	.011	<.010
36	Cumberland River at Burkesville	6,053	.56	.16	<.010	<.010
39	Horse Lick Creek near Lamero	61.7	<.010	<.010	<.010	<.010
41	Cumberland River at Pineville	770	.12	.017	.016	<.010
44	Bayou de Chien near Clinton	68.7	<.010	<.010	<.010	<.010
Manganese, total, in µg/L as Mn [01055]						
1	Tug Fork at Kermit, West Virginia	1,280	3.8	1.0	.30	.080
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	4.2	1.8	.11	.047
4	Little Sandy River near Argillite	400	1.5	.50	.37	.13
5	Tygart's Creek near Load	242	31	.15	13	.062
6	Kinniconick Creek near Tannery	201	3.8	.043	1.9	.021
7	Licking River at Claysville	827	1.6	.37	.19	.045
8	North Fork Licking River at Milford	226	1.3	.24	.57	.11
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	3.6	.47	.58	.076
10	Licking River at West Liberty	327	.40	.39	.12	.12
17	Kentucky River near Trapp	3,246	9.9	4.1	.31	.13
21	Salt River at Shepherdsville	1,197	7.8	1.3	.65	.11
23	Rolling Fork near Lebanon Junction	1,299	5.5	1.1	.43	.086
25	Pond Creek near Louisville	64	.22	.046	.35	.072
26	Green River at Paradise/Green River near Island	6,183	25	<.010	.41	<.010
27	Pond River near Madisonville/Pond River near Sacramento	469	1.4	.76	.31	.16
28	Rough River near Dundee	757	3.0	1.7	.40	.22
29	Mud River near Gus	268	.21	.12	.08	.045
35	Little River near Cadiz	244	3.5	.52	1.4	.21
36	Cumberland River at Burkesville	6,053	2.9	1.0	.048	.017
39	Horse Lick Creek near Lamero	61.7	<.010	<.010	<.010	<.010
41	Cumberland River at Pineville	770	1.7	.67	.22	.087
44	Bayou de Chien near Clinton	68.7	.35	.14	.51	.21

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; mg/L, milligrams per liter; mL, milliliter; <, less than; µg/L, micrograms per liter]

Map number (figure 1)	USGS/KDOW station name ¹	Drainage area (in square miles)	Mean annual load		Yield	
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow
Mercury, total, in µg/L as Hg [71900]						
1	Tug Fork at Kermit, West Virginia	1,280	<0.010	<0.010	<0.010	<0.010
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	<.010	<.010	<.010	<.010
4	Little Sandy River near Argillite	400	<.010	<.010	<.010	<.010
5	Tygarts Creek near Load	242	<.010	<.010	<.010	<.010
6	Kinniconick Creek near Tannery	201	<.010	<.010	<.010	<.010
7	Licking River at Claysville	827	<.010	<.010	<.010	<.010
8	North Fork Licking River at Milford	226	<.010	<.010	<.010	<.010
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	<.010	<.010	<.010	<.010
10	Licking River at West Liberty	327	<.010	<.010	<.010	<.010
17	Kentucky River near Trapp	3,246	<.010	<.010	<.010	<.010
21	Salt River at Shepherdsville	1,197	<.010	<.010	<.010	<.010
23	Rolling Fork near Lebanon Junction	1,299	<.010	<.010	<.010	<.010
25	Pond Creek near Louisville	64	<.010	<.010	<.010	<.010
26	Green River at Paradise/Green River near Island	6,183	<.010	<.010	<.010	<.010
27	Pond River near Madisonville/Pond River near Sacramento	469	<.010	<.010	<.010	<.010
28	Rough River near Dundee	757	<.010	<.010	<.010	<.010
29	Mud River near Gus	268	<.010	<.010	<.010	<.010
35	Little River near Cadiz	244	<.010	<.010	<.010	<.010
36	Cumberland River at Burkesville	6,053	.011	<.010	<.010	<.010
39	Horse Lick Creek near Lamero	61.7	<.010	<.010	<.010	<.010
41	Cumberland River at Pineville	770	<.010	<.010	<.010	<.010
44	Bayou de Chien near Clinton	68.7	<.010	<.010	<.010	<.010
Zinc, total, in µg/L as Zn 001092]						
1	Tug Fork at Kermit, West Virginia	1,280	.35	.23	.027	.018
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	3,897	.43	.21	.011	<.010
4	Little Sandy River near Argillite	400	.19	.069	.048	.017
5	Tygarts Creek near Load	242	.11	.049	.047	.020
6	Kinniconick Creek near Tannery	201	.057	.024	.028	.012
7	Licking River at Claysville	827	.15	.090	.018	.011
8	North Fork Licking River at Milford	226	.090	.030	.040	.013
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	621	.12	.030	.019	<.01
10	Licking River at West Liberty	327	.084	.062	.026	.019
17	Kentucky River near Trapp	3,246	.85	.36	.026	.011

Table 6. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase II—*Continued*
 [USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; mg/L, milligrams per liter; mL, milliliter; <, less than; µg/L, micrograms per liter]

Map number (figure 1)	USGS/KDOW station name ¹	Drainage area (in square miles)	Mean annual load		Yield	
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow
21	Salt River at Shepherdsville	1,197	0.96	0.20	0.081	0.017
23	Rolling Fork near Lebanon Junction	1,299	.72	.10	.055	<.010
25	Pond Creek near Louisville	64	.13	.012	.20	.018
26	Green River at Paradise/Green River near Island	6,183	1.26	.46	.020	<.010
27	Pond River near Madisonville/Pond River near Sacramento	469	.056	.035	.012	<.010
28	Rough River near Dundee	757	.75	.41	.099	.055
29	Mud River near Gus	268	.018	<.010	<.010	<.010
35	Little River near Cadiz	244	.19	.074	.080	.030
36	Cumberland River at Burkesville	6,053	2.09	.85	.035	.014
39	Horse Lick Creek near Lamero	61.7	.012	<.010	.019	<.010
41	Cumberland River at Pineville	770	.19	.078	.025	.010
44	Bayou de Chien near Clinton	68.7	.020	<.010	.029	.011

¹If only one station name is listed, it is both the USGS and KDOW station name. If two station names are listed, the first is the USGS station name and the second is the KDOW station name.

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
Dissolved oxygen, in mg/L [00300]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	132	16	3.4	13	11	9.4	7.7	5.5
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	70	16	6.2	13	12	9.8	8.0	6.8
4	Little Sandy River near Argillite	11/85-9/97	142	16	4.4	13	12	10	8.2	7.1
5	Tygarts Creek near Load	11/85-9/97	142	22	4.8	14	12	9.8	7.4	5.6
6	Kinniconick Creek near Tannery	10/91-9/97	70	15	5.5	14	13	10.4	7.8	6.2
7	Licking River at Claysville	1/91-9/94	40	12	6.5	12	10	9.0	7.8	6.9
8	North Fork Licking River at Milford	6/91-9/97	58	14	2.3	12	10	7.8	6.5	4.9
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	40	13	5.9	12	11	9.1	7.9	6.6
10	Licking River at West Liberty	1/91-9/92	21	13	6.8	13	12	9.0	8.0	7.2
17	Kentucky River near Trapp	1/91-9/97	80	14	6.0	13	12	9.8	8.0	6.5
21	Salt River at Shepherdsville	11/79-8/97	193	15	4.3	13	11	10	7.2	5.5
23	Rolling Fork near Lebanon Junction	1/91-9/97	77	13	4.1	12	11	7.8	6.4	5.5
25	Pond Creek near Louisville	11/79-9/97	198	17	.40	12	11	7.9	6.1	4.2
26	Green River at Paradise/Green River near Island	6/91-9/97	73	12	3.7	12	8.9	7.4	6.2	4.4
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	71	13	4.4	12	9.9	7.6	6.1	5.1
28	Rough River near Dundee	9/79-9/92	154	17	4.4	13	11	8.5	6.9	5.3
29	Mud River near Gus	3/91-9/97	77	14	3.8	13	10	7.0	5.4	4.2
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	78	14	3.5	12	10	6.8	5.3	3.9
35	Little River near Cadiz	10/85-9/97	143	14	5.7	12	11	8.7	7.4	6.4
36	Cumberland River at Burkesville	10/79-9/97	154	14	5.8	12	11	10	8.8	7.2
39	Horse Lick Creek near Lamero	11/85-9/97	139	17	4.9	13	11	10	8.2	6.3
41	Cumberland River at Pineville	2/88-9/97	111	15	5.6	13	11	9.4	8.0	6.6
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	138	15	2.8	12	9.4	6.8	5.4	3.9
44	Bayou de Chien near Clinton	4/84-9/97	156	14	3.3	13	11	8.4	6.9	5.6
Biological oxygen demand, 5-day at 20 degrees Celsius, in mg/L [00310]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	20	1.8	.1	1.6	1.2	.8	.5	.2
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	--	--	--	--	--	--	--	--
4	Little Sandy River near Argillite	11/85-9/97	14	3.4	.2	2.4	1.7	1.0	.6	.3

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
5	Tygarts Creek near Load	11/85-9/97	15	2.7	0.5	2.1	1.5	1.2	0.8	0.6
6	Kinniconick Creek near Tannery	10/91-9/97	--	--	--	--	--	--	--	--
7	Licking River at Claysville	1/91-9/94	--	--	--	--	--	--	--	--
8	North Fork Licking River at Milford	6/91-9/97	--	--	--	--	--	--	--	--
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	--	--	--	--	--	--	--	--
10	Licking River at West Liberty	1/91-9/92	--	--	--	--	--	--	--	--
17	Kentucky River near Trapp	1/91-9/97	--	--	--	--	--	--	--	--
21	Salt River at Shepherdsville	11/79-8/97	73	5.7	.0	4.3	2.5	1.9	1.2	.2
23	Rolling Fork near Lebanon Junction	1/91-9/97	--	--	--	--	--	--	--	--
25	Pond Creek near Louisville	11/79-9/97	80	8.3	.4	6.7	4.2	2.6	1.9	1.1
26	Green River at Paradise/Green River near Island	6/91-9/97	1	3.4	3.4	3.4	3.4	3.4	3.4	3.4
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	1	3.0	3.0	3.0	3.0	3.0	3.0	3.0
28	Rough River near Dundee	9/79-9/92	77	6.1	.1	3.2	1.6	1.1	.7	.2
29	Mud River near Gus	3/91-9/97	3	6.8	3.3	6.5	5.2	3.6	3.5	3.3
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	2	12	4.0	12	9.9	8.0	6.0	4.4
35	Little River near Cadiz	10/85-9/97	17	5.5	.5	2.8	1.7	1.3	.8	.6
36	Cumberland River at Burkesville	10/79-9/97	85	2.7	.0	2.0	1.0	.6	.3	.1
39	Horse Lick Creek near Lamero	11/85-9/97	16	8.2	.4	3.5	1.2	1.1	.8	.4
41	Cumberland River at Pineville	2/88-9/97	9	1.8	.4	1.7	1.3	1.0	.8	.5
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	17	3.7	.8	2.8	2.0	1.6	1.1	.8
44	Bayou de Chien near Clinton	4/84-9/97	32	8.5	.1	4.8	2.0	1.1	.6	.2
Alkalinity, total as CaCO₃, in mg/L [00410]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	142	224	10.1	208	163.5	112	79.3	51.1
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	74	181	7.90	103	91.3	77.2	56.5	35.2
4	Little Sandy River near Argillite	11/85-9/97	139	118	9.47	54.1	44.9	35.7	24.5	16.0
5	Tygarts Creek near Load	11/85-9/97	139	173	15.4	111	94.9	80.3	65.2	50.4
6	Kinniconick Creek near Tannery	10/91-9/97	69	36.9	8.10	35.9	26.8	17.9	11.0	8.53
7	Licking River at Claysville	1/91-9/94	43	112	37.9	106	72.4	63.2	51.7	45.1
8	North Fork Licking River at Milford	6/91-9/97	74	219	66.7	206	185	160	140	97.8
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	43	226	99.1	211	180	160	142	124
10	Licking River at West Liberty	1/91-9/92	20	97.2	24.6	86.5	71.7	54.5	35.9	27.5

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
17	Kentucky River near Trapp	1/91-9/97	76	120	20.2	92.6	76.0	57.3	44.3	31.0
21	Salt River at Shepherdsville	11/79-8/97	203	370	42.9	200	165	147	128	97.4
23	Rolling Fork near Lebanon Junction	1/91-9/97	78	208	33.7	191	169	155	124	94.9
25	Pond Creek near Louisville	11/79-9/97	208	357	8.40	194	167	151	125	79.4
26	Green River at Paradise/Green River near Island	6/91-9/97	73	140	27.3	133	114	103	93.2	70.1
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	72	284	1.00	224	138	92.4	51.9	34.9
28	Rough River near Dundee	9/79-9/92	146	194	12.4	118	94.9	81.1	61.7	38.6
29	Mud River near Gus	3/91-9/97	75	175	42.9	163	138	123	95.0	63.1
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	75	548	21.0	244	126	68.9	43.8	28.4
35	Little River near Cadiz	10/85-9/97	139	321	19.8	202	182	165	145	80.7
36	Cumberland River at Burkesville	10/79-9/97	151	363	29.5	65.5	51.8	46.4	42.2	36.5
39	Horse Lick Creek near Lamero	11/85-9/97	136	112	6.70	98.4	76.3	54.0	36.5	20.9
41	Cumberland River at Pineville	2/88-9/97	109	212	23.4	158	112	73.9	53.2	36.2
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	137	110	17.2	61.1	49.0	39.2	29.9	20.7
44	Bayou de Chien near Clinton	4/84-9/97	154	69.3	15.3	36.5	32.6	29.1	26.0	21.5
Residue, total nonfilterable, in mg/L [00530]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	146	1,370	1.00	167	42.8	17.0	8.00	2.00
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	75	188	2.00	114	47.0	20.0	14.5	7.00
4	Little Sandy River near Argillite	11/85-9/97	141	564	1.00	137	39.7	15.9	6.62	1.84
5	Tygarts Creek near Load	11/85-9/97	141	372	1.00	53.0	15.0	8.00	4.00	1.00
6	Kinniconick Creek near Tannery	10/91-9/97	69	223	1.00	29.5	11.8	6.03	3.15	1.23
7	Licking River at Claysville	1/91-9/94	44	388	1.00	202	49.3	23.5	13.8	4.30
8	North Fork Licking River at Milford	6/91-9/97	75	848	1.00	160	48.8	20.3	8.78	2.57
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	44	448	1.00	165	61.5	16.0	7.75	1.15
10	Licking River at West Liberty	1/91-9/92	21	74.0	1.00	29.5	11.8	6.03	3.15	1.23
17	Kentucky River near Trapp	1/91-9/97	80	270	1.00	108	35.3	15.5	7.03	2.22
21	Salt River at Shepherdsville	11/79-8/97	204	698	1.00	136	43.3	22.0	12.8	5.15
23	Rolling Fork near Lebanon Junction	1/91-9/97	80	2,640	7.00	301	96.5	51.0	26.8	11.0
25	Pond Creek near Louisville	11/79-9/97	209	662	3.00	176	71.0	40.0	21.0	9.40
26	Green River at Paradise/Green River near Island	6/91-9/97	74	834	6.00	147	39.8	18.0	15.0	9.65
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	74	171	1.00	125	55.5	30.7	17.3	7.53
28	Rough River near Dundee	9/79-9/92	148	1,190	4.00	169	61.8	40.0	25.0	8.70

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
29	Mud River near Gus	3/91-9/97	77	173	1.00	66.8	43.0	28.0	16.0	5.00
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	78	664	2.00	140	69.5	46.0	24.0	5.70
35	Little River near Cadiz	10/85-9/97	142	1,730	1.00	209	34.8	22.0	12.3	4.00
36	Cumberland River at Burkesville	10/79-9/97	152	141	.500	26.3	11.0	5.85	3.17	1.30
39	Horse Lick Creek near Lamero	11/85-9/97	137	58.0	1.00	21.5	9.32	5.06	2.80	1.19
41	Cumberland River at Pineville	2/88-9/97	109	278	1.00	144	26.0	10.0	5.00	1.00
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	140	155	1.00	109	47.2	25.6	14.1	5.98
44	Bayou de Chien near Clinton	4/84-9/97	156	1,330	1.00	96.8	26.5	11.0	7.00	3.00
Ammonia, total in mg/L as N [00610]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	146	.50	.020	.33	.19	.13	.084	.047
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	74	.080	.050	.08	.08	.07	.072	.067
4	Little Sandy River near Argillite	11/85-9/97	141	.35	.050	.18	.13	.10	.074	.051
5	Tygarts Creek near Load	11/85-9/97	140	.12	.050	.11	.09	.08	.067	.056
6	Kinniconick Creek near Tannery	10/91-9/97	69	.16	.030	.15	.12	.10	.081	.063
7	Licking River at Claysville	1/91-9/94	42	.18	.050	.15	.11	.09	.072	.054
8	North Fork Licking River at Milford	6/91-9/97	74	.85	.030	.38	.21	.14	.096	.054
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	42	.11	.020	.11	.09	.08	.066	.054
10	Licking River at West Liberty	1/91-9/92	20	.10	.050	.10	.10	.10	.10	.100
17	Kentucky River near Trapp	1/91-9/97	77	.22	.050	.17	.13	.10	.083	.061
21	Salt River at Shepherdsville	11/79-8/97	204	1.15	.050	.41	.22	.15	.095	.052
23	Rolling Fork near Lebanon Junction	1/91-9/97	79	.17	.040	.14	.10	.08	.067	.050
25	Pond Creek near Louisville	11/79-9/97	207	5.50	.050	2.29	.83	.39	.19	.067
26	Green River at Paradise/Green River near Island	6/91-9/97	74	.15	.030	.14	.11	.09	.075	.059
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	72	.49	.020	.31	.18	.12	.084	.049
28	Rough River near Dundee	9/79-9/92	141	1.64	.050	.42	.20	.12	.080	.050
29	Mud River near Gus	3/91-9/97	76	.25	.010	.16	.13	.10	.077	.057
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	76	28	.015	2.11	.65	.27	.12	.035
35	Little River near Cadiz	10/85-9/97	141	1.43	.010	.30	.18	.12	.087	.052
36	Cumberland River at Burkesville	10/79-9/97	149	1.35	.020	.25	.14	.09	.059	.032
39	Horse Lick Creek near Lamero	11/85-9/97	134	.09	.050	.08	.08	.07	.072	.067
41	Cumberland River at Pineville	2/88-9/97	110	.50	.050	.11	.09	.08	.073	.061

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	139	0.51	0.020	13	3.98	1.9	1.2	0.69
44	Bayou de Chien near Clinton	4/84-9/97	157	2.1	.020	.31	.18	.12	.079	.044
Ammonia and organic, total in mg/L as N [00625]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	145	1.7	.040	.84	.42	.26	.16	.079
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	75	1.5	.050	.71	.39	.26	.17	.094
4	Little Sandy River near Argillite	11/85-9/97	139	1.2	.050	.75	.42	.27	.18	.10
5	Tygarts Creek near Load	11/85-9/97	140	1.1	.050	.59	.36	.25	.18	.11
6	Kinniconick Creek near Tannery	10/91-9/97	71	1.2	.050	.56	.32	.21	.14	.081
7	Licking River at Claysville	1/91-9/94	43	1.2	.050	.91	.50	.32	.21	.12
8	North Fork Licking River at Milford	6/91-9/97	74	1.6	.050	1.36	.76	.50	.33	.18
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	42	1.9	.050	1.13	.72	.52	.32	.18
10	Licking River at West Liberty	1/91-9/92	20	.53	.050	.46	.29	.21	.15	.095
17	Kentucky River near Trapp	1/91-9/97	78	.83	.050	.7	.39	.26	.18	.10
21	Salt River at Shepherdsville	11/79-8/97	202	7.0	.050	1.6	.96	.66	.46	.28
23	Rolling Fork near Lebanon Junction	1/91-9/97	78	5.5	.050	1.6	.83	.53	.34	.18
25	Pond Creek near Louisville	11/79-9/97	206	13	.050	3.7	2.0	1.3	.81	.43
26	Green River at Paradise/Green River near Island	6/91-9/97	75	8.6	.050	1.2	.62	.39	.24	.13
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	73	3.7	.050	1.2	.74	.51	.36	.22
28	Rough River near Dundee	9/79-9/92	142	2.1	.17	1.4	.75	.57	.43	.28
29	Mud River near Gus	3/91-9/97	76	2.1	.050	1.3	.89	.44	.29	.15
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	76	29	.050	2.8	1.3	.70	.40	.18
35	Little River near Cadiz	10/85-9/97	140	2.7	.040	1.1	.53	.32	.19	.095
36	Cumberland River at Burkesville	10/79-9/97	148	4.5	.020	.66	.32	.19	.11	.052
39	Horse Lick Creek near Lamero	11/85-9/97	139	.81	.050	.42	.25	.17	.12	.072
41	Cumberland River at Pineville	2/88-9/97	112	.80	.050	.48	.28	.19	.13	.078
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	139	2.4	.070	1.3	.78	.55	.38	.26
44	Bayou de Chien near Clinton	4/84-9/97	157	4.3	.050	1.3	.63	.38	.23	.11
Nitrite plus nitrate, total in mg/L as N [00630]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	144	1.22	.090	.926	.690	.545	.430	.152
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	75	.760	.110	.613	.515	.430	.350	.258

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
4	Little Sandy River near Argillite	11/85-9/97	141	1.35	0.120	0.984	0.570	0.420	0.320	0.200
5	Tygarts Creek near Load	11/85-9/97	141	2.37	.0200	.980	.600	.420	.220	.070
6	Kinniconick Creek near Tannery	10/91-9/97	72	1.98	.0500	.788	.530	.365	.220	.076
7	Licking River at Claysville	1/91-9/94	42	1.07	.0200	.954	.645	.420	.285	.141
8	North Fork Licking River at Milford	6/91-9/97	72	3.16	.0100	2.74	1.35	.760	.265	.036
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	41	3.98	.020	3.22	1.89	1.07	.650	.130
10	Licking River at West Liberty	1/91-9/92	20	.680	.150	.547	.385	.330	.275	.217
17	Kentucky River near Trapp	1/91-9/97	77	.570	.0100	.480	.370	.280	.220	.112
21	Salt River at Shepherdsville	11/79-8/97	202	5.40	.0100	2.75	1.55	1.000	.603	.240
23	Rolling Fork near Lebanon Junction	1/91-9/97	77	1.90	.120	1.48	1.01	.710	.470	.170
25	Pond Creek near Louisville	11/79-9/97	206	9.80	.0500	4.50	2.75	2.11	1.450	.793
26	Green River at Paradise/Green River near Island	6/91-9/97	75	1.58	.290	1.53	1.23	.990	.700	.384
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	69	1.09	.0100	.760	.410	.270	.110	.030
28	Rough River near Dundee	9/79-9/92	142	2.30	.0900	1.34	.810	.610	.450	.220
29	Mud River near Gus	3/91-9/97	76	1.36	.0100	1.14	.943	.680	.388	.058
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	77	2.56	.0300	1.92	.590	.370	.250	.114
35	Little River near Cadiz	10/85-9/97	141	6.00	.0200	4.10	3.59	2.92	2.330	1.580
36	Cumberland River at Burkesville	10/79-9/97	149	.600	.170	.520	.440	.400	.350	.244
39	Horse Lick Creek near Lamero	11/85-9/97	135	1.56	.0100	.390	.230	.160	.110	.040
41	Cumberland River at Pineville	2/88-9/97	109	1.10	.0600	.562	.420	.340	.250	.118
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	137	3.63	.0100	1.06	.590	.290	.120	.020
44	Bayou de Chien near Clinton	4/84-9/97	157	3.88	.0100	1.25	.700	.320	.080	.030
Phosphorus, total in mg/L as P [00665]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	146	.470	.005	.098	.036	.021	.012	.005
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	76	.171	.005	.090	.038	.024	.009	.005
4	Little Sandy River near Argillite	11/85-9/97	142	.820	.005	.154	.046	.022	.013	.005
5	Tygarts Creek near Load	11/85-9/97	142	.644	.004	.074	.023	.014	.005	.005
6	Kinniconick Creek near Tannery	10/91-9/97	72	.090	.005	.035	.015	.005	.005	.005
7	Licking River at Claysville	1/91-9/94	43	.634	.005	.235	.086	.056	.024	.007
8	North Fork Licking River at Milford	6/91-9/97	75	1.04	.005	.426	.146	.100	.062	.019
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	43	1.12	.005	.475	.363	.250	.191	.120

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
10	Licking River at West Liberty	1/91-9/92	80	0.096	0.005	0.073	0.030	0.017	0.007	0.005
17	Kentucky River near Trapp	1/91-9/97	78	.125	.005	.087	.028	.013	.007	.005
21	Salt River at Shepherdsville	11/79-8/97	203	1.82	.014	.655	.318	.216	.165	.100
23	Rolling Fork near Lebanon Junction	1/91-9/97	79	1.89	.005	.494	.244	.137	.092	.066
25	Pond Creek near Louisville	11/79-9/97	206	5.36	.066	2.45	1.500	.654	.281	.115
26	Green River at Paradise/Green River near Island	6/91-9/97	74	1.44	.007	.161	.055	.041	.027	.013
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	74	.218	.005	.116	.072	.047	.028	.006
28	Rough River near Dundee	9/79-9/92	142	.530	.005	.154	.073	.046	.027	.012
29	Mud River near Gus	3/91-9/97	76	.229	.005	.123	.072	.055	.035	.013
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	76	.520	.005	.227	.093	.063	.041	.011
35	Little River near Cadiz	10/85-9/97	140	1.30	.005	.369	.199	.127	.075	.032
36	Cumberland River at Burkesville	10/79-9/97	145	.177	.004	.040	.014	.009	.006	.005
39	Horse Lick Creek near Lamero	11/85-9/97	137	.042	.003	.029	.014	.007	.005	.005
41	Cumberland River at Pineville	2/88-9/97	112	.234	.005	.090	.028	.014	.005	.005
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	138	.895	.014	.257	.160	.120	.087	.045
44	Bayou de Chien near Clinton	4/84-9/97	156	1.05	.005	.320	.103	.064	.044	.026
Carbon organic, total in mg/L as C [00680]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	143	11	.40	4.3	2.5	1.9	1.4	.90
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	73	3.9	.70	3.3	2.3	1.9	1.5	1.2
4	Little Sandy River near Argillite	11/85-9/97	138	8.7	.80	4.6	3.0	2.4	1.9	1.3
5	Tygarts Creek near Load	11/85-9/97	139	13	.10	4.8	3.2	2.3	1.7	1.1
6	Kinniconick Creek near Tannery	10/91-9/97	69	5.1	.80	3.5	2.6	1.8	1.4	.90
7	Licking River at Claysville	1/91-9/94	41	11	1.7	5.9	3.2	2.7	2.5	2.0
8	North Fork Licking River at Milford	6/91-9/97	73	9.3	.60	8.4	6.2	4.5	3.0	1.6
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	42	8.8	2.1	7.0	4.8	4.5	3.4	2.5
10	Licking River at West Liberty	1/91-9/92	20	4.6	.80	4.5	2.7	2.4	1.6	1.1
17	Kentucky River near Trapp	1/91-9/97	76	26	.60	4.1	2.4	2.0	1.3	.70
21	Salt River at Shepherdsville	11/79-8/97	164	34	.10	8.5	5.4	4.6	3.8	2.8
23	Rolling Fork near Lebanon Junction	1/91-9/97	77	20	1.3	8.7	5.0	3.8	2.8	2.0
25	Pond Creek near Louisville	11/79-9/97	162	49	2.3	11	7.6	6.0	4.6	3.4
26	Green River at Paradise/Green River near Island	6/91-9/97	74	98	.40	4.8	3.1	2.5	2.0	1.6
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	72	17	2.5	7.9	6.0	4.9	4.1	3.0

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
28	Rough River near Dundee	9/79-9/92	105	11	1.3	7.0	4.7	3.8	3.2	2.3
29	Mud River near Gus	3/91-9/97	74	11	1.6	7.2	5.5	4.1	2.8	2.0
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	75	15	1.6	9.6	7.1	5.7	4.2	2.7
35	Little River near Cadiz	10/85-9/97	138	10	.10	5.5	2.9	2.0	1.5	1.0
36	Cumberland River at Burkesville	10/79-9/97	105	9.9	.20	3.9	2.0	1.8	1.6	1.2
39	Horse Lick Creek near Lamero	11/85-9/97	135	18	.10	3.2	2.0	1.4	.90	.60
41	Cumberland River at Pineville	2/88-9/97	108	26	.30	3.8	2.5	1.8	1.3	.8
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	137	24	.30	9.4	6.4	4.7	3.1	2.3
44	Bayou de Chien near Clinton	4/84-9/97	154	17	.20	8.0	3.8	2.7	2.2	1.5
Calcium, recoverable, total in mg/L as Ca [00916]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	142	64.2	18.9	54.4	45.3	39.0	32.8	23.9
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	74	58.1	19.9	50.2	45.2	37.8	29.9	24.0
4	Little Sandy River near Argillite	11/85-9/97	140	48.0	5.30	26.3	23.0	19.4	15.9	10.7
5	Tygarts Creek near Load	11/85-9/97	140	51.8	12.2	43.1	37.3	33.4	29.3	23.0
6	Kinniconick Creek near Tannery	10/91-9/97	71	17.3	5.25	14.5	10.2	8.38	6.79	5.61
7	Licking River at Claysville	1/91-9/94	43	295	17.8	43.2	30.3	26.9	24.6	19.5
8	North Fork Licking River at Milford	6/91-9/97	72	121	21.8	86.1	72.0	62.6	52.3	40.3
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	42	98.7	47.2	84.2	72.8	63.1	56.4	49.3
10	Licking River at West Liberty	1/91-9/92	19	59.0	11.9	50.7	32.4	25.3	21.2	13.1
17	Kentucky River near Trapp	1/91-9/97	79	61.4	17.0	55.6	40.2	28.4	23.3	18.9
21	Salt River at Shepherdsville	11/79-8/97	161	90.7	17.4	72.3	61.6	55.0	48.3	38.6
23	Rolling Fork near Lebanon Junction	1/91-9/97	77	73.9	28.7	65.8	59.0	54.3	47.4	38.0
25	Pond Creek near Louisville	11/79-9/97	162	84.7	14.6	73.4	64.1	56.9	51.4	35.7
26	Green River at Paradise/Green River near Island	6/91-9/97	73	68.3	28.6	64.7	51.3	45.7	39.7	31.9
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	70	443	28.0	234.1	133.8	78.6	51.0	34.7
28	Rough River near Dundee	9/79-9/92	103	50.1	8.70	42.4	39.2	34.4	25.3	15.4
29	Mud River near Gus	3/91-9/97	76	74.0	21.9	66.9	58.8	51.2	42.2	28.7
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	77	236	16.8	203	85.8	62.0	44.3	25.9
35	Little River near Cadiz	10/85-9/97	137	88.4	12.9	79.4	71.8	64.3	54.1	38.6
36	Cumberland River at Burkesville	10/79-9/97	105	34.6	3.10	26.2	22.9	20.9	18.7	15.3
39	Horse Lick Creek near Lamero	11/85-9/97	134	43.4	.100	39.7	32.1	22.5	16.8	9.90
41	Cumberland River at Pineville	2/88-9/97	108	65.0	11.4	42.5	34.3	28.7	23.1	15.8

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	138	18.0	2.90	13.3	10.6	8.76	7.24	5.23
44	Bayou de Chien near Clinton	4/84-9/97	154	18.6	2.50	12.2	9.29	7.92	6.12	4.62
Magnesium, total in mg/L as Mg [00927]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	142	32	6.8	25	21	17	14	9.7
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	74	27	9.2	22	19	17	14	11
4	Little Sandy River near Argillite	11/85-9/97	140	11	3.1	9.6	8.4	7.4	6.5	5.4
5	Tygarts Creek near Load	11/85-9/97	140	13	3.2	6.8	6.0	5.4	4.8	4.1
6	Kinniconick Creek near Tannery	10/91-9/97	71	7.9	2.5	6.0	4.5	3.6	3.3	2.8
7	Licking River at Claysville	1/91-9/94	43	9.6	5.1	8.6	7.4	6.7	6.1	5.6
8	North Fork Licking River at Milford	6/91-9/97	74	13	4.9	12	9.9	8.3	7.0	5.3
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	43	9.2	4.8	7.9	7.1	6.1	5.7	4.9
10	Licking River at West Liberty	1/91-9/92	19	28	4.9	21	14	12	10	5.7
17	Kentucky River near Trapp	1/91-9/97	79	38	5.2	31	18	13	10	7.9
21	Salt River at Shepherdsville	11/79-8/97	165	25	5.1	15	12	10	8.2	6.6
23	Rolling Fork near Lebanon Junction	1/91-9/97	78	20	5.9	17	14	12	10	8.2
25	Pond Creek near Louisville	11/79-9/97	163	44	7.1	28	24	21	18	13
26	Green River at Paradise/Green River near Island	6/91-9/97	74	23	3.8	16	10	8.5	7.3	5.9
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	72	180	7.7	110	68	35	18	9.5
28	Rough River near Dundee	9/79-9/92	105	9.4	1.6	6.2	4.9	4.4	3.7	2.5
29	Mud River near Gus	3/91-9/97	77	8.4	2.5	6.2	5.2	4.7	3.8	2.9
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	77	140	5.1	100	44	27	19	9.2
35	Little River near Cadiz	10/85-9/97	141	8.8	2.9	7.2	6.4	5.3	4.7	3.8
36	Cumberland River at Burkesville	10/79-9/97	106	13	2.2	7.9	6.7	6.3	5.9	4.7
39	Horse Lick Creek near Lamero	11/85-9/97	135	9.2	1.2	6.5	4.9	3.6	2.8	2.0
41	Cumberland River at Pineville	2/88-9/97	108	32	7.2	21	17	14	11	8.3
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	139	5.1	1.0	3.3	2.6	2.3	2.0	1.6
44	Bayou de Chien near Clinton	4/84-9/97	155	5.7	1.1	3.6	2.6	2.3	2.0	1.7
Sodium, recoverable, total in mg/L as Na [00929]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	143	192	9.50	132	86.4	46.9	27.8	15.8
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	74	50.00	7.36	44.2	34.2	23.6	16.8	9.55

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
4	Little Sandy River near Argillite	11/85-9/97	141	52.5	2.00	35.1	15.8	9.33	5.21	3.00
5	Tygarts Creek near Load	11/85-9/97	141	30.3	1.60	8.30	5.55	4.39	3.50	2.50
6	Kinniconick Creek near Tannery	10/91-9/97	71	6.70	1.55	4.50	3.46	2.81	2.34	1.80
7	Licking River at Claysville	1/91-9/94	43	5.84	1.89	5.30	4.40	3.52	3.07	2.24
8	North Fork Licking River at Milford	6/91-9/97	74	6.20	1.39	5.17	4.65	3.92	2.99	1.92
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	43	35.0	1.78	14.5	7.27	5.34	3.60	2.73
10	Licking River at West Liberty	1/91-9/92	19	17.80	2.64	11.9	8.52	6.69	5.45	4.04
17	Kentucky River near Trapp	1/91-9/97	79	28.1	3.16	19.8	12.3	7.63	5.48	3.81
21	Salt River at Shepherdsville	11/79-8/97	166	68.2	1.40	16.8	8.55	5.95	4.27	2.96
23	Rolling Fork near Lebanon Junction	1/91-9/97	78	18.9	1.37	12.3	6.54	4.38	3.39	2.32
25	Pond Creek near Louisville	11/79-9/97	164	181	5.30	74.4	42.2	29.3	22.0	12.8
26	Green River at Paradise/Green River near Island	6/91-9/97	74	13.9	1.91	12.2	6.75	4.86	4.11	3.05
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	72	406	4.68	242	82.3	44.5	16.0	7.23
28	Rough River near Dundee	9/79-9/92	106	42.5	.300	9.53	4.22	3.32	2.40	1.20
29	Mud River near Gus	3/91-9/97	77	18.7	1.92	16.5	7.26	4.83	3.62	2.36
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	77	637	4.05	277	80.1	34.2	19.2	8.10
35	Little River near Cadiz	10/85-9/97	142	23.7	1.82	13.8	8.12	5.62	4.27	2.96
36	Cumberland River at Burkesville	10/79-9/97	106	14.8	1.80	8.63	5.90	5.04	4.20	2.90
39	Horse Lick Creek near Lamero	11/85-9/97	136	74.6	.100	4.98	2.66	1.69	1.08	.57
41	Cumberland River at Pineville	2/88-9/97	109	130	.990	73	39.7	25.5	16.5	8.98
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	140	27.1	1.47	24.2	15.2	7.50	5.59	3.10
44	Bayou de Chien near Clinton	4/84-9/97	156	12.2	.540	7.01	5.95	5.45	4.89	3.47
Potassium, total, in mg/L as K [00937]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	143	7.4	1.8	5.7	4.5	3.3	2.6	2.0
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	74	5.5	1.9	4.5	3.7	3.0	2.4	2.1
4	Little Sandy River near Argillite	11/85-9/97	141	5.8	1.2	3.5	2.7	2.3	1.9	1.5
5	Tygarts Creek near Load	11/85-9/97	141	6.2	1.2	3.7	2.9	2.2	1.7	1.4
6	Kinniconick Creek near Tannery	10/91-9/97	71	4.1	1.2	3.4	2.5	2.0	1.5	1.3
7	Licking River at Claysville	1/91-9/94	43	4.8	1.5	3.3	2.8	2.3	1.9	1.6
8	North Fork Licking River at Milford	6/91-9/97	74	6.5	1.3	5.8	4.7	3.4	2.4	1.9
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	43	7.0	1.2	6.1	4.3	3.7	2.1	1.7

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
10	Licking River at West Liberty	1/91-9/92	19	5.7	1.3	4.9	3.0	2.1	1.9	1.4
17	Kentucky River near Trapp	1/91-9/97	79	5.7	1.3	4.4	3.4	2.3	1.8	1.6
21	Salt River at Shepherdsville	11/79-8/97	165	9.8	1.8	5.8	4.1	3.2	2.5	2.0
23	Rolling Fork near Lebanon Junction	1/91-9/97	78	5.9	1.5	5.0	4.0	3.1	2.3	1.7
25	Pond Creek near Louisville	11/79-9/97	163	11	2.0	7.8	5.9	4.5	3.5	2.6
26	Green River at Paradise/Green River near Island	6/91-9/97	74	5.6	1.3	3.5	2.8	2.4	1.8	1.5
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	72	10	1.7	9.0	5.5	3.5	2.9	2.0
28	Rough River near Dundee	9/79-9/92	105	5.3	1.3	3.7	2.9	2.5	2.1	1.6
29	Mud River near Gus	3/91-9/97	77	6.7	1.3	5.4	4.0	2.8	1.9	1.5
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	77	15	1.8	9.5	5.5	3.6	2.6	2.0
35	Little River near Cadiz	10/85-9/97	142	9.3	1.1	4.2	2.9	2.2	1.6	1.3
36	Cumberland River at Burkesville	10/79-9/97	106	3.3	1.1	1.8	1.6	1.5	1.3	1.2
39	Horse Lick Creek near Lamero	11/85-9/97	133	94	.63	2.7	1.7	1.2	1.0	.81
41	Cumberland River at Pineville	2/88-9/97	108	5.7	1.4	4.6	3.3	2.5	2.0	1.7
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	140	14.2	1.0	5.8	4.5	3.5	2.8	1.6
44	Bayou de Chien near Clinton	4/84-9/97	155	8.1	.60	4.6	2.5	1.7	1.2	.89
Chloride, dissolved, in mg/L as Cl [00940]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	146	61.8	.100	39.5	24.0	13.3	7.83	5.12
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	76	30.2	1.00	26.3	18.9	14.1	8.98	4.15
4	Little Sandy River near Argillite	11/85-9/97	142	64.9	.100	52.4	24.0	13.6	7.84	3.53
5	Tygarts Creek near Load	11/85-9/97	142	47.7	.100	12.7	8.7	6.50	4.60	2.22
6	Kinniconick Creek near Tannery	10/91-9/97	71	11.0	.100	7.4	4.7	3.39	2.46	1.55
7	Licking River at Claysville	1/91-9/94	43	11.5	.100	8.6	5.7	4.24	3.17	2.09
8	North Fork Licking River at Milford	6/91-9/97	75	15.8	1.00	11.9	8.1	6.08	4.60	3.10
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	44	26.4	.100	17.3	10.5	7.29	5.11	3.07
10	Licking River at West Liberty	1/91-9/92	21	29.6	.100	22.4	14.0	9.97	7.14	4.43
17	Kentucky River near Trapp	1/91-9/97	80	25.8	.300	16.5	9.0	5.85	3.83	2.08
21	Salt River at Shepherdsville	11/79-8/97	206	44.9	.100	26.1	14.3	10.3	7.40	4.80
23	Rolling Fork near Lebanon Junction	1/91-9/97	80	25.4	.100	17.9	10.4	7.02	4.78	2.76
25	Pond Creek near Louisville	11/79-9/97	211	135	3.58	72.7	50.8	39.4	27.0	13.6
26	Green River at Paradise/Green River near Island	6/91-9/97	75	18.9	1.00	14.6	9.5	6.97	5.14	3.32
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	74	29.8	1.00	21.9	13.1	9.45	5.78	3.60

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
28	Rough River near Dundee	9/79-9/92	148	68.6	0.100	13.1	6.1	5.05	3.88	2.04
29	Mud River near Gus	3/91-9/97	78	28.0	.100	21.8	15.3	7.79	5.10	2.78
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	78	134	.100	2.1	.7	.27	.12	.04
35	Little River near Cadiz	10/85-9/97	143	23.5	.500	15.6	11.0	8.20	6.65	3.53
36	Cumberland River at Burkesville	10/79-9/97	151	76.8	.050	7.1	4.8	3.70	3.00	1.65
39	Horse Lick Creek near Lamero	11/85-9/97	140	141	.000	8.3	3.8	2.60	1.60	.10
41	Cumberland River at Pineville	2/88-9/97	110	17.3	.100	13.8	7.3	4.60	2.93	1.54
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	141	99.9	.100	12.5	9.0	6.85	4.40	2.30
44	Bayou de Chien near Clinton	4/84-9/97	158	16.6	.050	7.7	5.9	4.20	3.10	1.00
Sulfate, dissolved, in mg/L as SO₄ [00946]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	144	396	11.0	241	185	129	103	64.7
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	75	210	19.5	180	159	127	101	66.9
4	Little Sandy River near Argillite	11/85-9/97	140	1,720	9.80	61.4	47.4	40.7	35.3	27.2
5	Tygarts Creek near Load	11/85-9/97	141	137	9.50	46.9	27.9	23.3	20.1	14.4
6	Kinniconick Creek near Tannery	10/91-9/97	70	129	5.00	46.4	26.4	21.5	18.9	12.1
7	Licking River at Claysville	1/91-9/94	42	58.2	5.00	49.0	34.4	30.6	26.7	16.7
8	North Fork Licking River at Milford	6/91-9/97	73	63.1	5.00	57.0	42.8	32.4	26.2	15.4
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	41	123	5.00	54.6	37.4	30.8	23.8	14.2
10	Licking River at West Liberty	1/91-9/92	21	178	21.2	90.6	67.6	59.2	47.1	36.4
17	Kentucky River near Trapp	1/91-9/97	78	221	11.6	188	113	79.9	57.6	33.9
21	Salt River at Shepherdsville	11/79-8/97	202	91.5	3.50	59.3	40.8	31.2	25.1	16.0
23	Rolling Fork near Lebanon Junction	1/91-9/97	77	105	10.4	60.4	39.7	30.4	24.7	16.4
25	Pond Creek near Louisville	11/79-9/97	207	286	4.69	145	99.6	82.4	69.9	39.8
26	Green River at Paradise/Green River near Island	6/91-9/97	72	492	5.00	122	62.1	44.0	32.9	21.2
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	66	1,900	45.6	1,298	556	281	153	78.8
28	Rough River near Dundee	9/79-9/92	147	858	3.54	47.6	22.7	17.5	13.7	9.0
29	Mud River near Gus	3/91-9/97	74	78.3	5.00	45.4	28.1	19.1	14.0	8.23
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	74	1,690	13.9	1,110	300	206	124	41.1
35	Little River near Cadiz	10/85-9/97	139	66.7	3.40	25.3	15.4	11.8	9.63	5.94
36	Cumberland River at Burkesville	10/79-9/97	153	97.3	13.8	39.8	35.5	32.0	28.8	22.1
39	Horse Lick Creek near Lamero	11/85-9/97	136	101	4.92	44.5	20.9	15.8	13.0	10.5
41	Cumberland River at Pineville	2/88-9/97	108	432	23.2	186	133	97.1	71.4	46.6

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	138	67.7	3.40	24.3	13.4	9.9	6.89	5.00
44	Bayou de Chien near Clinton	4/84-9/97	154	1,420	2.00	31.2	9.66	7.31	5.20	3.35
Arsenic, total, in µg/L as As [01002]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	139	11	1.0	9.5	6.1	4.5	3.3	2.1
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	74	7.0	1.0	8.3	6.4	5.3	4.4	3.4
4	Little Sandy River near Argillite	11/85-9/97	138	11	1.0	9.5	6.2	4.5	3.3	2.1
5	Tygarts Creek near Load	11/85-9/97	137	11	1.0	8.4	5.9	4.6	3.6	2.6
6	Kinniconick Creek near Tannery	10/91-9/97	71	9.0	1.0	7.7	5.7	4.6	3.7	2.7
7	Licking River at Claysville	1/91-9/94	41	6.0	1.0	5.8	4.5	3.8	3.2	2.5
8	North Fork Licking River at Milford	6/91-9/97	74	4.0	1.6	3.8	3.1	2.7	2.3	1.9
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	42	5.0	1.0	4.8	4.0	3.5	3.0	2.5
10	Licking River at West Liberty	1/91-9/92	18	14	1.0	10	7.0	5.3	4.0	2.7
17	Kentucky River near Trapp	1/91-9/97	78	4.0	1.0	3.8	3.4	3.1	2.9	2.6
21	Salt River at Shepherdsville	11/79-8/97	193	20	1.0	9.5	6.6	5.0	3.9	2.7
23	Rolling Fork near Lebanon Junction	1/91-9/97	78	21	1.0	7.5	4.9	3.5	2.6	1.7
25	Pond Creek near Louisville	11/79-9/97	199	33	1.0	11	7.0	5.0	3.6	2.3
26	Green River at Paradise/Green River near Island	6/91-9/97	74	16	1.0	14	8.9	6.4	4.6	2.9
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	72	3.0	1.0	3.0	3.0	3.0	3.0	3.0
28	Rough River near Dundee	9/79-9/92	132	11	1.0	4.4	2.0	1.5	1.0	1.0
29	Mud River near Gus	3/91-9/97	77	8.0	1.0	6.3	5.3	3.9	3.2	2.4
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	77	8.0	.1	2.8	1.3	.7	.4	.2
35	Little River near Cadiz	10/85-9/97	139	13	1.0	9.4	5.9	4.2	3.0	1.9
36	Cumberland River at Burkesville	10/79-9/97	141	17	.5	7.2	3.6	2.2	1.4	.7
39	Horse Lick Creek near Lamero	11/85-9/97	136	12	1.0	9.9	6.7	5.0	3.8	2.6
41	Cumberland River at Pineville	2/88-9/97	109	10	1.0	7.7	5.7	4.5	3.7	2.7
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	137	21	1.0	7.6	5.0	3.8	2.8	1.9
44	Bayou de Chien near Clinton	4/84-9/97	152	14	1.0	8.5	3.7	2.3	1.3	.8
Barium, total, in µg/L as Ba [01007]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	141	342	2.0	105	70	50	41	30
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	73	85	7.0	68	60	52	42	33

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
4	Little Sandy River near Argillite	11/85-9/97	141	296	1.0	91	55	39	27	17
5	Tygarts Creek near Load	11/85-9/97	141	290	2.0	80	46	31	21	12
6	Kinniconick Creek near Tannery	10/91-9/97	71	49	2.0	36	25	20	17	12
7	Licking River at Claysville	1/91-9/94	43	60	13	50	34	26	22	13
8	North Fork Licking River at Milford	6/91-9/97	74	84	2.0	49	31	27	24	18
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	43	72	12	51	31	26	23	15
10	Licking River at West Liberty	1/91-9/92	19	417	35	115	60	43	40	36
17	Kentucky River near Trapp	1/91-9/97	79	472	2.0	67	47	39	30	22
21	Salt River at Shepherdsville	11/79-8/97	177	351	1.0	91	47	29	19	9.5
23	Rolling Fork near Lebanon Junction	1/91-9/97	79	243	13	76	43	35	27	19
25	Pond Creek near Louisville	11/79-9/97	176	154	1.0	110	67	47	33	20
26	Green River at Paradise/Green River near Island	6/91-9/97	74	286	18	55	39	33	29	23
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	72	79	14	57	43	36	29	18
28	Rough River near Dundee	9/79-9/92	116	196	6.0	110	55	42	35	19
29	Mud River near Gus	3/91-9/97	76	91	13	76	58	47	35	29
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	77	480	6.0	83	69	46	34	22
35	Little River near Cadiz	10/85-9/97	141	303	5.0	106	61	51	45	24
36	Cumberland River at Burkesville	10/79-9/97	117	396	.5	74	39	24	15	7.9
39	Horse Lick Creek near Lamero	11/85-9/97	136	103	1.0	51	30	20	14	8.1
41	Cumberland River at Pineville	2/88-9/97	108	181	2.0	74	51	40	33	19
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	140	274	1.0	102	61	42	29	18
44	Bayou de Chien near Clinton	4/84-9/97	156	416	1.0	89	40	25	14	8.8
Cadmium, total, in µg/L as Cd [01027]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	141	3.0	1.0	1.0	1.0	1.0	1.0	1.0
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	74	6.0	1.0	6.4	4.3	3.2	2.4	1.6
4	Little Sandy River near Argillite	11/85-9/97	140	2.0	2.0	2.0	2.0	2.0	2.0	2.0
5	Tygarts Creek near Load	11/85-9/97	140	2.0	2.0	2.0	2.0	2.0	2.0	2.0
6	Kinniconick Creek near Tannery	10/91-9/97	71	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7	Licking River at Claysville	1/91-9/94	43	1.0	1.0	1.0	1.0	1.0	1.0	1.0
8	North Fork Licking River at Milford	6/91-9/97	74	1.0	1.0	1.0	1.0	1.0	1.0	1.0
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	43	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
10	Licking River at West Liberty	1/91-9/92	19	1.0	1.0	1.0	1.0	1.0	1.0	1.0
17	Kentucky River near Trapp	1/91-9/97	79	1.0	1.0	1.0	1.0	1.0	1.0	1.0
21	Salt River at Shepherdsville	11/79-8/97	193	20	1.0	19	11	6.9	4.5	2.4
23	Rolling Fork near Lebanon Junction	1/91-9/97	79	1.0	1.0	1.0	1.0	1.0	1.0	1.0
25	Pond Creek near Louisville	11/79-9/97	198	27	1.0	18	8.8	5.4	3.3	1.6
26	Green River at Paradise/Green River near Island	6/91-9/97	74	2.0	2.0	2.0	2.0	2.0	2.0	2.0
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	73	3.0	1.0	3.0	3.0	3.0	3.0	3.0
28	Rough River near Dundee	9/79-9/92	138	11.0	1.0	3.2	1.0	1.0	1.0	1.0
29	Mud River near Gus	3/91-9/97	77	1.0	1.0	1.0	1.0	1.0	1.0	1.0
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	77	82	1.0	46	21	12	6.6	2.9
35	Little River near Cadiz	10/85-9/97	141	2.0	1.0	1.2	1.1	1.0	.9	.9
36	Cumberland River at Burkesville	10/79-9/97	140	23	.50	15	7.5	4.6	2.9	1.5
39	Horse Lick Creek near Lamero	11/85-9/97	135	3.0	1.0	3.1	2.6	2.3	2.0	1.7
41	Cumberland River at Pineville	2/88-9/97	108	5.0	1.0	5.0	5.0	5.0	5.0	5.0
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	139	5.0	1.0	5.0	5.0	5.0	5.0	5.0
44	Bayou de Chien near Clinton	4/84-9/97	156	2.0	1.0	3.1	2.1	1.7	1.3	1.1
Chromium, total, in µg/L as Cr [01034]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	140	29	1.0	3.6	3.0	2.6	2.3	1.9
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	74	8.0	1.0	6.1	4.1	3.1	2.4	1.6
4	Little Sandy River near Argillite	11/85-9/97	139	15	1.0	6.9	4.2	3.0	2.1	1.3
5	Tygarts Creek near Load	11/85-9/97	139	121	1.0	8.9	5.2	3.5	2.4	1.4
6	Kinniconick Creek near Tannery	10/91-9/97	71	8.0	1.0	6.3	4.2	3.1	2.3	1.5
7	Licking River at Claysville	1/91-9/94	43	9.0	1.0	6.6	4.6	3.6	2.7	1.9
8	North Fork Licking River at Milford	6/91-9/97	74	15	1.0	8.8	5.2	3.6	2.5	1.4
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	43	10	1.0	7.2	4.6	3.3	2.4	1.6
10	Licking River at West Liberty	1/91-9/92	19	10	1.0	7.9	4.9	3.5	2.5	1.6
17	Kentucky River near Trapp	1/91-9/97	79	7.0	1.0	5.9	4.1	3.1	2.3	1.6
21	Salt River at Shepherdsville	11/79-8/97	201	12	1.0	9.2	5.5	3.8	2.6	1.6
23	Rolling Fork near Lebanon Junction	1/91-9/97	79	34	1.0	10	5.3	3.3	2.1	1.1
25	Pond Creek near Louisville	11/79-9/97	206	27	1.0	9.4	5.7	3.9	2.8	1.6
26	Green River at Paradise/Green River near Island	6/91-9/97	74	28	1.0	11	6.0	3.8	2.5	1.3
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	73	9.0	1.0	6.0	3.9	2.9	2.1	1.4

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
28	Rough River near Dundee	9/79-9/92	140	19	1.0	7.0	4.0	2.0	1.0	1.0
29	Mud River near Gus	3/91-9/97	77	9.0	1.0	5.9	4.6	2.9	2.2	1.4
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	77	19	1.0	5.4	4.2	3.6	3.0	2.3
35	Little River near Cadiz	10/85-9/97	140	39	1.0	9.1	5.2	3.4	2.3	1.3
36	Cumberland River at Burkesville	10/79-9/97	147	10	.5	4.6	2.7	1.9	1.3	.8
39	Horse Lick Creek near Lamero	11/85-9/97	136	9.0	1.0	5.3	3.7	2.8	2.2	1.5
41	Cumberland River at Pineville	2/88-9/97	108	12	1.0	6.9	4.5	3.4	2.5	1.7
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	138	12	1.0	6.1	4.2	3.3	2.5	1.7
44	Bayou de Chien near Clinton	4/84-9/97	155	13	1.0	6.6	3.1	2.1	1.2	.8
Copper, total, in µg/L as Cu [01042]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	143	40	1.0	9.1	5.0	3.2	2.1	1.2
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	74	10	1.0	6.9	4.5	3.3	2.4	1.6
4	Little Sandy River near Argillite	11/85-9/97	140	55	1.0	9.8	5.3	3.3	2.2	1.1
5	Tygarts Creek near Load	11/85-9/97	140	25	1.0	10	5.7	3.7	2.5	1.4
6	Kinniconick Creek near Tannery	10/91-9/97	71	14	1.0	8.1	4.7	3.2	2.2	1.2
7	Licking River at Claysville	1/91-9/94	43	59	1.0	14	7.4	4.7	3.0	1.6
8	North Fork Licking River at Milford	6/91-9/97	74	17	1.0	8.9	5.1	3.4	2.3	1.3
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	43	11	1.0	7.3	4.8	3.5	2.6	1.7
10	Licking River at West Liberty	1/91-9/92	19	26	1.0	9.1	4.9	3.2	2.1	1.1
17	Kentucky River near Trapp	1/91-9/97	79	9.0	1.0	6.5	4.2	3.0	2.2	1.4
21	Salt River at Shepherdsville	11/79-8/97	202	53	1.0	18	9.6	6.1	3.9	2.0
23	Rolling Fork near Lebanon Junction	1/91-9/97	79	45	1.0	10	4.8	2.7	1.6	.74
25	Pond Creek near Louisville	11/79-9/97	207	33	1.0	16	9.4	6.3	4.3	2.4
26	Green River at Paradise/Green River near Island	6/91-9/97	74	30	1.0	8.9	5.1	3.4	2.3	1.3
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	73	12	1.0	6.0	3.9	2.9	2.1	1.3
28	Rough River near Dundee	9/79-9/92	141	53	1.0	14	5.0	3.0	2.0	1.0
29	Mud River near Gus	3/91-9/97	77	35	1.0	7.8	5.6	3.0	2.1	1.2
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	77	88	1.0	16	3.0	2.0	2.0	1.0
35	Little River near Cadiz	10/85-9/97	141	57	1.0	12	6.1	3.8	2.4	1.2
36	Cumberland River at Burkesville	10/79-9/97	147	52	.50	16	6.5	3.4	1.8	.71
39	Horse Lick Creek near Lamero	11/85-9/97	135	17	1.0	6.6	4.1	2.9	2.1	1.3
41	Cumberland River at Pineville	2/88-9/97	109	23	1.0	9.2	5.5	3.8	2.6	1.5

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	139	46	1.0	10	5.7	3.7	2.4	1.3
44	Bayou de Chien near Clinton	4/84-9/97	156	31	1.0	9.5	3.8	2.3	1.2	.7
Iron, total, in µg/L as Fe [01045]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	140	11,800	3.000	4,647	1,568	731.0	467.3	209.0
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	74	7,660	309.0	5,203	1,880	992.5	610.0	398.7
4	Little Sandy River near Argillite	11/85-9/97	139	17,700	276.0	6,445	1,960	950.5	649.5	418.0
5	Tygarts Creek near Load	11/85-9/97	140	9,950	147.0	2,353	979	659.5	539.5	390.0
6	Kinniconick Creek near Tannery	10/91-9/97	71	6,910	185.0	2,180	748	479.0	321.5	216.5
7	Licking River at Claysville	1/91-9/94	42	17,000	56.00	9,892	2,053	1,120	719.0	312.7
8	North Fork Licking River at Milford	6/91-9/97	74	31,400	107.0	8,850	2,020	888.0	413.5	135.9
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	43	19,000	11.00	7,609	2,170	770.5	485.5	118.3
10	Licking River at West Liberty	1/91-9/92	19	4,020	616.0	2,283	1,635	1,190	882.5	663.7
17	Kentucky River near Trapp	1/91-9/97	79	12,100	55.00	5,567	1,670	723.0	431.0	145.6
21	Salt River at Shepherdsville	11/79-8/97	191	24,900	80.00	4,775	1,420	760.0	363.0	170.0
23	Rolling Fork near Lebanon Junction	1/91-9/97	78	77,500	367.0	13,555	3,480	1,985	1,340	740.8
25	Pond Creek near Louisville	11/79-9/97	196	17,800	30.00	4,445	1,913	1,228	640.0	297.5
26	Green River at Paradise/Green River near Island	6/91-9/97	74	49,000	84.00	4,925	1,265	776	530.5	314.9
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	72	8,860	299.0	4,786	2,384	1,700	1,155	662.3
28	Rough River near Dundee	9/79-9/92	136	10,300	10.00	5,198	1,858	1,100	655.0	315.0
29	Mud River near Gus	3/91-9/97	77	8,820	238.0	2,694	1,570	1,150	779.0	412.4
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	77	23,700	254.0	4,660	2,880	2,000	1,180	524.6
35	Little River near Cadiz	10/85-9/97	141	37,400	90.00	5,550	940.0	533.0	343.0	170.0
36	Cumberland River at Burkesville	10/79-9/97	138	2,040	10.00	712.2	263.0	129.0	80.25	20.00
39	Horse Lick Creek near Lamero	11/85-9/97	133	1,980	10.00	878.1	453.5	280.7	175.9	89.73
41	Cumberland River at Pineville	2/88-9/97	108	10,100	35.00	5,661	1,263	501.0	320.0	181.7
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	138	5,750	2.330	4,843	3,133	2,435	1,860	1,203
44	Bayou de Chien near Clinton	4/84-9/97	154	25,060	500.0	6,548	1,820	1,265	984.8	746.5
Lead, total, in µg/L as Pb [01051]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	1,42	41	1.0	10	5.5	3.5	2.2	1.2
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	74	23	.30	14	7.6	4.9	3.2	1.7

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
4	Little Sandy River near Argillite	11/85-9/97	140	21	1.0	12	7.2	5.0	3.4	2.0
5	Tygarts Creek near Load	11/85-9/97	140	46	1.0	15	8.9	6.0	4.0	2.3
6	Kinniconick Creek near Tannery	10/91-9/97	71	8.0	1.0	7.5	5.6	4.5	3.6	2.7
7	Licking River at Claysville	1/91-9/94	42	10	1.0	8.1	5.9	4.7	3.7	2.7
8	North Fork Licking River at Milford	6/91-9/97	74	20	1.0	12	7.4	5.3	3.9	2.5
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	43	18	1.0	13	8.1	5.8	4.2	2.6
10	Licking River at West Liberty	1/91-9/92	19	13	1.0	7.3	5.4	4.4	3.6	2.6
17	Kentucky River near Trapp	1/91-9/97	79	13	1.0	8.5	5.9	4.5	3.5	2.4
21	Salt River at Shepherdsville	11/79-8/97	201	410	1.0	130	39	16	7.1	2.1
23	Rolling Fork near Lebanon Junction	1/91-9/97	79	58	1.0	12	6.7	4.3	2.7	1.5
25	Pond Creek near Louisville	11/79-9/97	208	340	1.0	73	25	11	5.1	1.7
26	Green River at Paradise/Green River near Island	6/91-9/97	74	49	1.0	17	8.3	4.9	2.9	1.4
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	72	4.0	1.0	4.2	3.5	3.1	2.8	2.3
28	Rough River near Dundee	9/79-9/92	140	450	1.0	31	8.5	2.0	2.0	1.0
29	Mud River near Gus	3/91-9/97	77	19	1.0	11	8.3	5.1	3.7	2.4
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	77	25	1.0	13	7.8	5.4	3.7	2.2
35	Little River near Cadiz	10/85-9/97	140	140	1.0	9.1	2.0	2.0	2.0	1.0
36	Cumberland River at Burkesville	10/79-9/97	145	280	.50	45	14	6.3	2.9	.90
39	Horse Lick Creek near Lamero	11/85-9/97	134	87	1.0	16	8.8	5.7	3.7	2.0
41	Cumberland River at Pineville	2/88-9/97	110	20	1.0	12	7.8	5.8	4.3	2.9
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	139	32	1.0	9.6	6.2	4.5	3.3	2.1
44	Bayou de Chien near Clinton	4/84-9/97	156	29	1.0	13	5.5	3.5	2.0	1.2
Manganese, total, in µg/L as Mn [01055]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	142	1,450.000	8.000	240.000	110.000	80.000	60.000	40.000
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	74	634.000	11.000	257.150	106.250	73.500	60.250	33.900
4	Little Sandy River near Argillite	11/85-9/97	141	1,070.000	22.000	732.000	400.500	239.500	156.000	77.000
5	Tygarts Creek near Load	11/85-9/97	141	590.000	14.000	340.000	160.000	90.900	60.000	39.000
6	Kinniconick Creek near Tannery	10/91-9/97	71	280.000	1.000	191.000	72.000	28.000	18.000	10.500
7	Licking River at Claysville	1/91-9/94	43	544.000	25.000	383.400	140.500	84.000	56.500	33.000
8	North Fork Licking River at Milford	6/91-9/97	74	848.000	18.000	349.450	124.500	72.000	41.250	27.650
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	43	693.000	3.000	367.052	125.564	57.036	26.752	8.863

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
10	Licking River at West Liberty	1/91-9/92	19	290.000	80.000	281.000	217.500	150.000	109.000	87.110
17	Kentucky River near Trapp	1/91-9/97	79	386.000	18.000	264.100	130.000	93.000	64.500	33.700
21	Salt River at Shepherdsville	11/79-8/97	192	2,810.000	17.000	406.150	160.500	110.000	72.500	40.000
23	Rolling Fork near Lebanon Junction	1/91-9/97	78	2,440.000	37.000	371.200	180.000	122.000	74.000	46.700
25	Pond Creek near Louisville	11/79-9/97	197	1,280.000	22.000	300.400	181.000	140.000	100.000	50.000
26	Green River at Paradise/Green River near Island	6/91-9/97	74	4,130.000	18.000	502.150	152.750	109.000	79.000	44.650
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	72	3,740.000	79.000	1,662.500	833.250	546.500	310.250	126.550
28	Rough River near Dundee	9/79-9/92	137	1,720.000	48.000	866.000	410.000	250.000	170.000	119.400
29	Mud River near Gus	3/91-9/97	77	385.000	9.000	304.200	186.000	128.000	65.000	19.800
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	77	2,010.000	75.000	1,492.000	1,090.000	690.000	408.000	120.200
35	Little River near Cadiz	10/85-9/97	142	2,540.000	20.000	352.800	90.000	68.000	50.000	27.150
36	Cumberland River at Burkesville	10/79-9/97	139	180.000	1.000	102.848	51.807	31.484	19.383	9.638
39	Horse Lick Creek near Lamero	11/85-9/97	136	253.000	1.000	89.899	29.052	12.635	5.695	1.776
41	Cumberland River at Pineville	2/88-9/97	109	500.000	1.000	170.600	84.000	60.000	37.000	21.400
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	140	4,630.000	30.000	1,380.000	818.000	445.000	230.000	77.600
44	Bayou de Chien near Clinton	4/84-9/97	155	4,400.000	9.500	586.900	380.000	280.000	190.000	99.700
Zinc, total, in µg/L as Zn [01092]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	143	310	1.0	55	22	13	8.0	2.0
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	74	63	1.0	35	18	11	7.2	3.7
4	Little Sandy River near Argillite	11/85-9/97	141	350	1.0	93	36	18	9.0	3.3
5	Tygarts Creek near Load	11/85-9/97	141	390	1.0	76	30	15	7.9	3.0
6	Kinniconick Creek near Tannery	10/91-9/97	71	130	1.0	72	26	13	6.3	2.3
7	Licking River at Claysville	1/91-9/94	43	310	1.0	57	24	12	6.6	2.6
8	North Fork Licking River at Milford	6/91-9/97	74	180	1.0	38	17	9.1	5.1	2.2
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	43	160	1.0	38	16	8.2	4.4	1.8
10	Licking River at West Liberty	1/91-9/92	19	230	1.0	120	46	23	12	4.6
17	Kentucky River near Trapp	1/91-9/97	79	77	1.0	36	16	8.7	4.9	2.1
21	Salt River at Shepherdsville	11/79-8/97	190	370	1.0	87	32	15	7.6	2.7
23	Rolling Fork near Lebanon Junction	1/91-9/97	77	190	1.0	51	19	10	4.9	1.8
25	Pond Creek near Louisville	11/79-9/97	197	360	1.0	123	49	25	13	5.1
26	Green River at Paradise/Green River near Island	6/91-9/97	74	190	1.0	31	15	8.5	5.0	2.3
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	71	170	1.0	51	26	16	10	5.1

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
28	Rough River near Dundee	9/79-9/92	137	300	1.0	93	33	14	8.0	3.8
29	Mud River near Gus	3/91-9/97	76	120	1.0	32	19	7.1	3.9	1.6
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	77	100	1.0	41	21	13	7.8	3.9
35	Little River near Cadiz	10/85-9/97	141	360	1.0	61	24	12	6.1	2.3
36	Cumberland River at Burkesville	10/79-9/97	138	290	.50	63	23	11	5.1	1.8
39	Horse Lick Creek near Lamero	11/85-9/97	135	300	1.0	41	14	7.0	4.0	1.0
41	Cumberland River at Pineville	2/88-9/97	109	290	1.0	52	21	11	6.0	2.4
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	140	1,600	1.0	68	27	13	6.9	2.7
44	Bayou de Chien near Clinton	4/84-9/97	155	320	1.0	51	16	8.2	3.7	1.8
Aluminum, total, in µg/L as Al [01105]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	141	16,400	9.000	2,760	725.0	328.0	153.0	70.00
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	74	2,640	50.00	2,238	923.8	306.0	186.8	97.25
4	Little Sandy River near Argillite	11/85-9/97	140	4,900	1.000	2,323	651.9	254.4	103.9	27.87
5	Tygarts Creek near Load	11/85-9/97	140	3,620	1.000	1,238	406.3	178.8	81.48	25.83
6	Kinniconick Creek near Tannery	10/91-9/97	71	3,520	6.000	635.1	236.5	114.6	57.02	20.66
7	Licking River at Claysville	1/91-9/94	43	11,800	28.00	4,349	1,440	653.0	286.5	125.20
8	North Fork Licking River at Milford	6/91-9/97	74	23,300	25.00	5,051	1,568	552.5	229.8	47.85
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	43	12,800	24.00	7,670	1,570	457.5	263.5	52.10
10	Licking River at West Liberty	1/91-9/92	19	3,710	23.00	1,544	687.7	381.3	215.3	94.19
17	Kentucky River near Trapp	1/91-9/97	79	6,250	37.00	3,354	802	326.0	128.0	46.90
21	Salt River at Shepherdsville	11/79-8/97	166	12,200	2.000	2,960	1,028	497.0	255.5	122.0
23	Rolling Fork near Lebanon Junction	1/91-9/97	78	41,000	125.00	5,876	2,058	1,100	581.3	210.6
25	Pond Creek near Louisville	11/79-9/97	163	17,700	7.000	3,195	1,186	715.0	402.5	187.4
26	Green River at Paradise/Green River near Island	6/91-9/97	74	49,000	56.00	3,142	1,040	467.0	352.8	175.7
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	72	5,060	85.00	2,989	1,468	1,045	530.8	149.65
28	Rough River near Dundee	9/79-9/92	105	5,340	20.00	3,550	1,270	630.0	344.0	97.8
29	Mud River near Gus	3/91-9/97	77	7,440	84.00	2,022	1,230	895.0	494.0	150.4
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	77	16,800	45.00	3,202	1,900	1,190	705.0	187.8
35	Little River near Cadiz	10/85-9/97	139	22,100	6.000	3,860	948.5	450.0	233.0	76.00
36	Cumberland River at Burkesville	10/79-9/97	107	1,420	.500	631.6	203.4	88.24	39.68	12.33
39	Horse Lick Creek near Lamero	11/85-9/97	133	874.0	1.000	523.6	182.0	83.71	39.71	13.38
41	Cumberland River at Pineville	2/88-9/97	108	10,600	19.00	2,797	593.0	184.5	73.25	34.10

Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	140	5,500	19.00	3,461	1,643	929.0	438.0	135.5
44	Bayou de Chien near Clinton	4/84-9/97	155	11,700	6.000	3,613	672.0	274.0	156.0	74.50
Fecal-coliform bacteria, colonies per 100 mL [31616]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	122	99,000	1.0	7,100	1,760	630	240	56
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	51	7,000	10	4,600	950	300	98	19
4	Little Sandy River near Argillite	11/85-9/97	114	5,800	3.0	2,500	510	190	82	19
5	Tygarts Creek near Load	11/85-9/97	114	4,300	1.0	1,700	390	120	70	17
6	Kinniconick Creek near Tannery	10/91-9/97	48	960	2.0	440	230	92	47	11
7	Licking River at Claysville	1/91-9/94	44	12,000	10	3,700	610	160	45	6.9
8	North Fork Licking River at Milford	6/91-9/97	51	16,000	10	8,100	1,500	420	130	22
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	44	16,000	10	4,100	820	250	81	15
10	Licking River at West Liberty	1/91-9/92	21	1,800	20	1,400	800	300	250	25
17	Kentucky River near Trapp	1/91-9/97	57	2,300	4.0	1,200	340	130	53	14
21	Salt River at Shepherdsville	11/79-8/97	175	19,000	2.0	4,900	900	250	77	13
23	Rolling Fork near Lebanon Junction	1/91-9/97	57	16,000	10	5,400	1,100	320	100	19
25	Pond Creek near Louisville	11/79-9/97	182	20,000	2.0	13,000	2,000	480	130	18
26	Green River at Paradise/Green River near Island	6/91-9/97	52	800	3	740	320	176	98	42
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	51	600	20	360	170	100	60	28
28	Rough River near Dundee	9/79-9/92	106	5,340	1.0	3,500	1,250	620	340	93
29	Mud River near Gus	3/91-9/97	55	670	18	450	290	123	73	34
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	55	800	30	430	210	120	75	36
35	Little River near Cadiz	10/85-9/97	118	12,600	1.0	490	190	100	52	20
36	Cumberland River at Burkesville	10/79-9/97	133	6,600	1.0	910	180	53	17	3
39	Horse Lick Creek near Lamero	11/85-9/97	125	1,750	4	350	120	53	25	8
41	Cumberland River at Pineville	2/88-9/97	98	3,000	1.0	1,600	510	220	96	29
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	119	2,500	1.0	500	190	92	46	17
44	Bayou de Chien near Clinton	4/84-9/97	134	8,000	10	800	260	140	64	32
Mercury, total, in µg/L as Hg [71900]										
1	Tug Fork at Kermit, West Virginia	2/85-9/97	143	.9	.05	.7	.5	.3	.2	.1
2	Levisa Fork at Paintsville/Levisa Fork near Louisa	6/91-9/97	75	1.0	.05	1.0	1.0	1.0	1.0	1.0

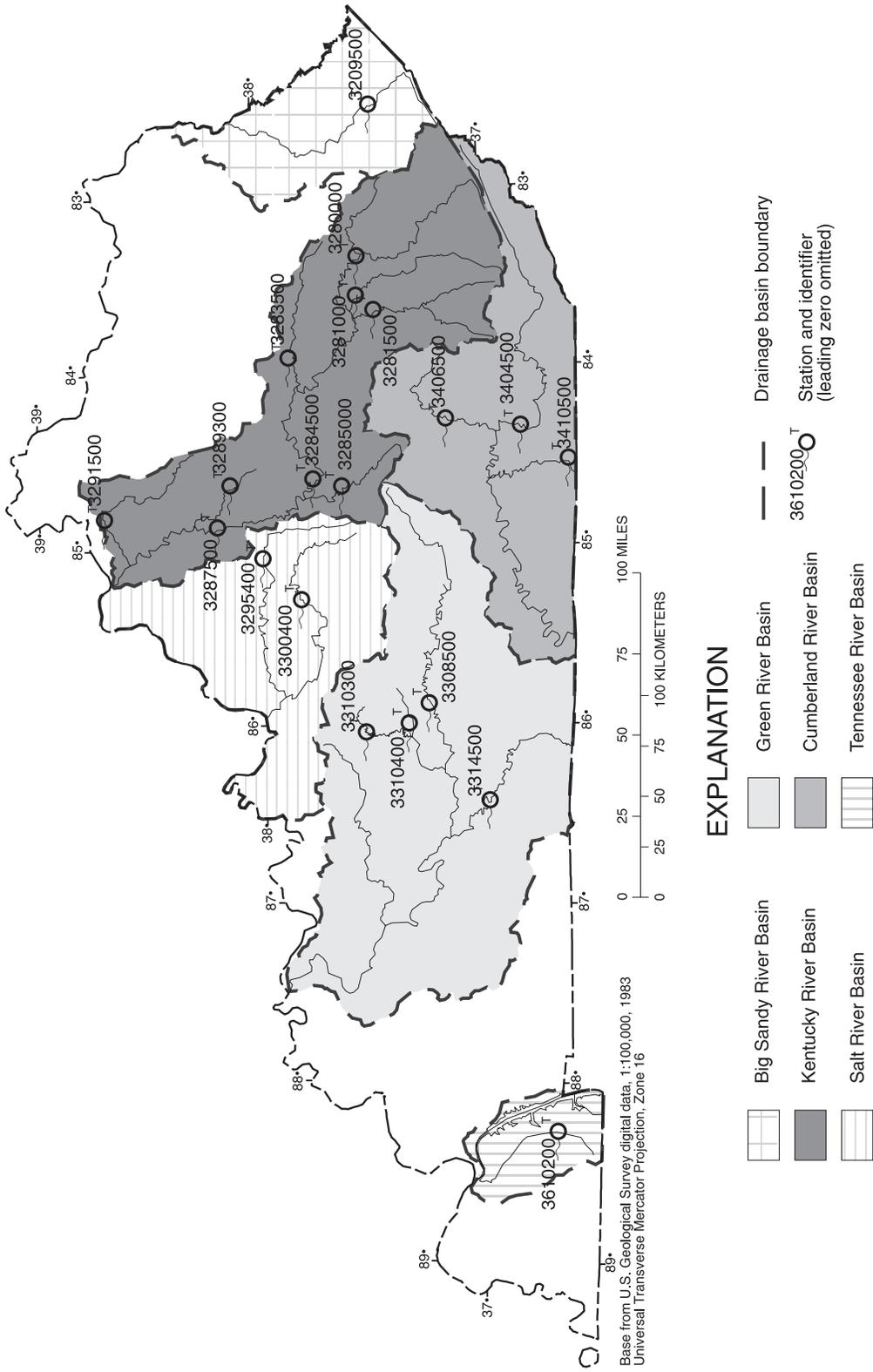
Table 7. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase II—*Continued*

[USGS, U.S. Geological Survey; KDOW, Kentucky Division of Water; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; mg/L, micrograms per liter; mL, milliliter]

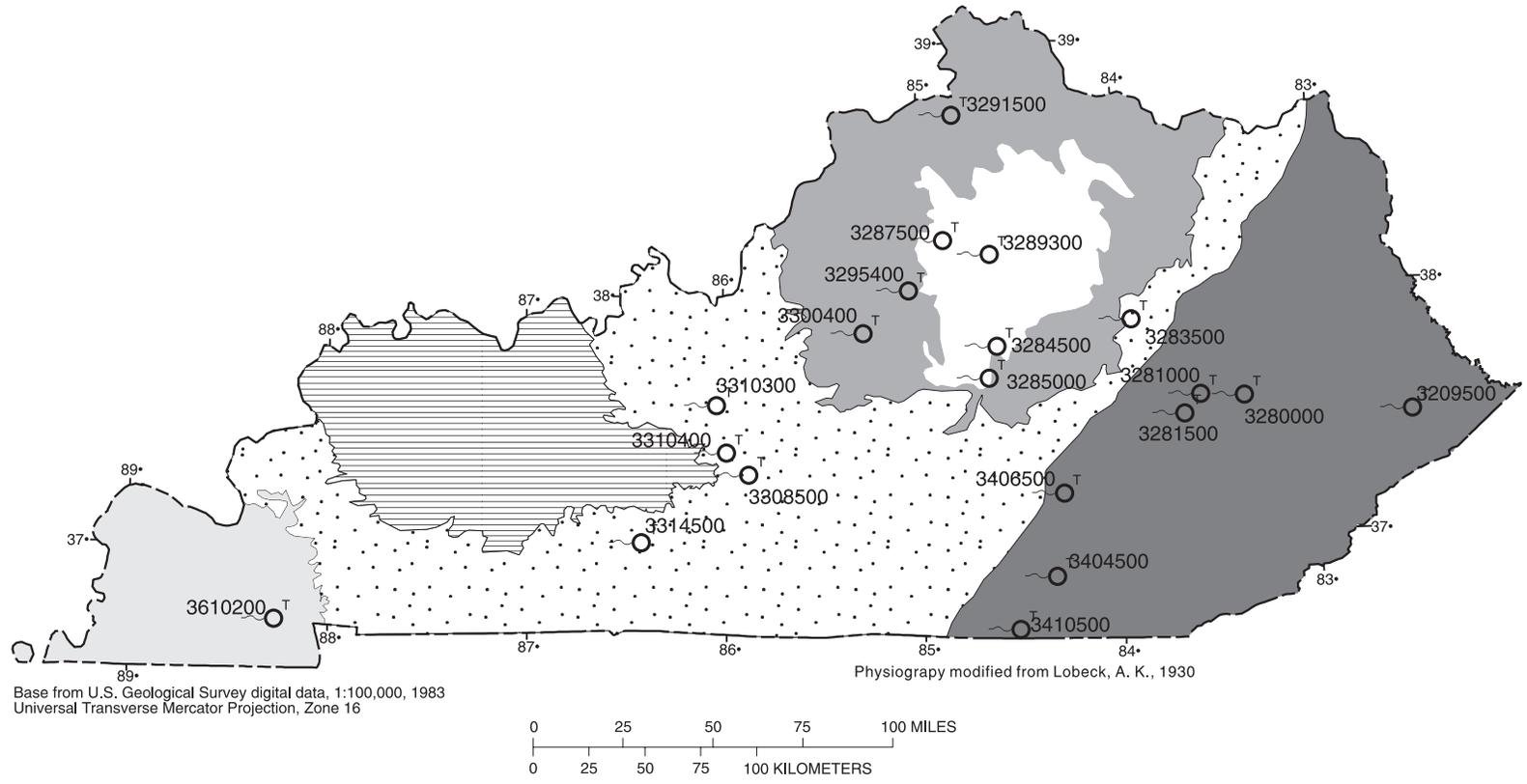
Map number (figure 1)	USGS/KDOW station name ¹	Period of record	N	Maximum	Minimum	Percent of samples in which values were less than or equal to those shown				
						95	75	50 (median)	25	5
4	Little Sandy River near Argillite	11/85-9/97	136	1.4	0.05	1.0	0.6	0.4	0.3	0.1
5	Tygarts Creek near Load	11/85-9/97	135	.3	.05	.3	.2	.2	.2	.2
6	Kinniconick Creek near Tannery	10/91-9/97	71	.1	.05	.1	.1	.1	.1	.05
7	Licking River at Claysville	1/91-9/94	42	.1	.1	.1	.1	.1	.1	.1
8	North Fork Licking River at Milford	6/91-9/97	73	.5	.05	.5	.5	.5	.5	.5
9	South Fork Licking River at Cynthiana/South Fork Licking River at Morgan	1/91-9/94	42	.7	.10	.6	.5	.4	.3	.3
10	Licking River at West Liberty	1/91-9/92	18	.1	.1	.1	.1	.1	.1	.1
17	Kentucky River near Trapp	1/91-9/97	77	.2	.05	.2	.2	.2	.2	.2
21	Salt River at Shepherdsville	11/79-8/97	196	8.3	.05	2.9	1.2	.7	.4	.1
23	Rolling Fork near Lebanon Junction	1/91-9/97	77	.1	.05	.1	.1	.1	.1	.05
25	Pond Creek near Louisville	11/79-9/97	200	5.0	.05	2.4	1.1	.6	.3	.1
26	Green River at Paradise/Green River near Island	6/91-9/97	74	.2	.05	.2	.2	.2	.2	.2
27	Pond River near Madisonville/Pond River near Sacramento	7/91-9/97	73	.1	.05	.1	.1	.1	.1	.05
28	Rough River near Dundee	9/79-9/92	135	4.5	.05	3.0	.7	.2	.2	.09
29	Mud River near Gus	3/91-9/97	76	.1	.05	.1	.1	.1	.1	.1
34	Tradewater River at Olney/Tradewater River near Sullivan	3/91-9/97	76	.2	.2	.2	.2	.2	.2	.2
35	Little River near Cadiz	10/85-9/97	135	3.3	.05	2.0	1.0	.6	.4	.2
36	Cumberland River at Burkesville	10/79-9/97	141	7.2	.05	1.8	.7	.3	.2	.1
39	Horse Lick Creek near Lamero	11/85-9/97	132	1.0	.05	.8	.5	.4	.3	.2
41	Cumberland River at Pineville	2/88-9/97	107	2.8	.05	4.1	1.9	1.1	.6	.3
43	Mayfield Creek near Blandville/Mayfield Creek near Magee Springs	10/85-9/97	136	1.2	.05	.7	.4	.3	.2	.1
44	Bayou de Chien near Clinton	4/84-9/97	155	1	.05	.7	.4	.3	.2	.1

¹If only one station name is listed, it is both the USGS and KDOW station name. If two station names are listed, the first is the USGS station name and the second is the KDOW station name.

APPENDIXES



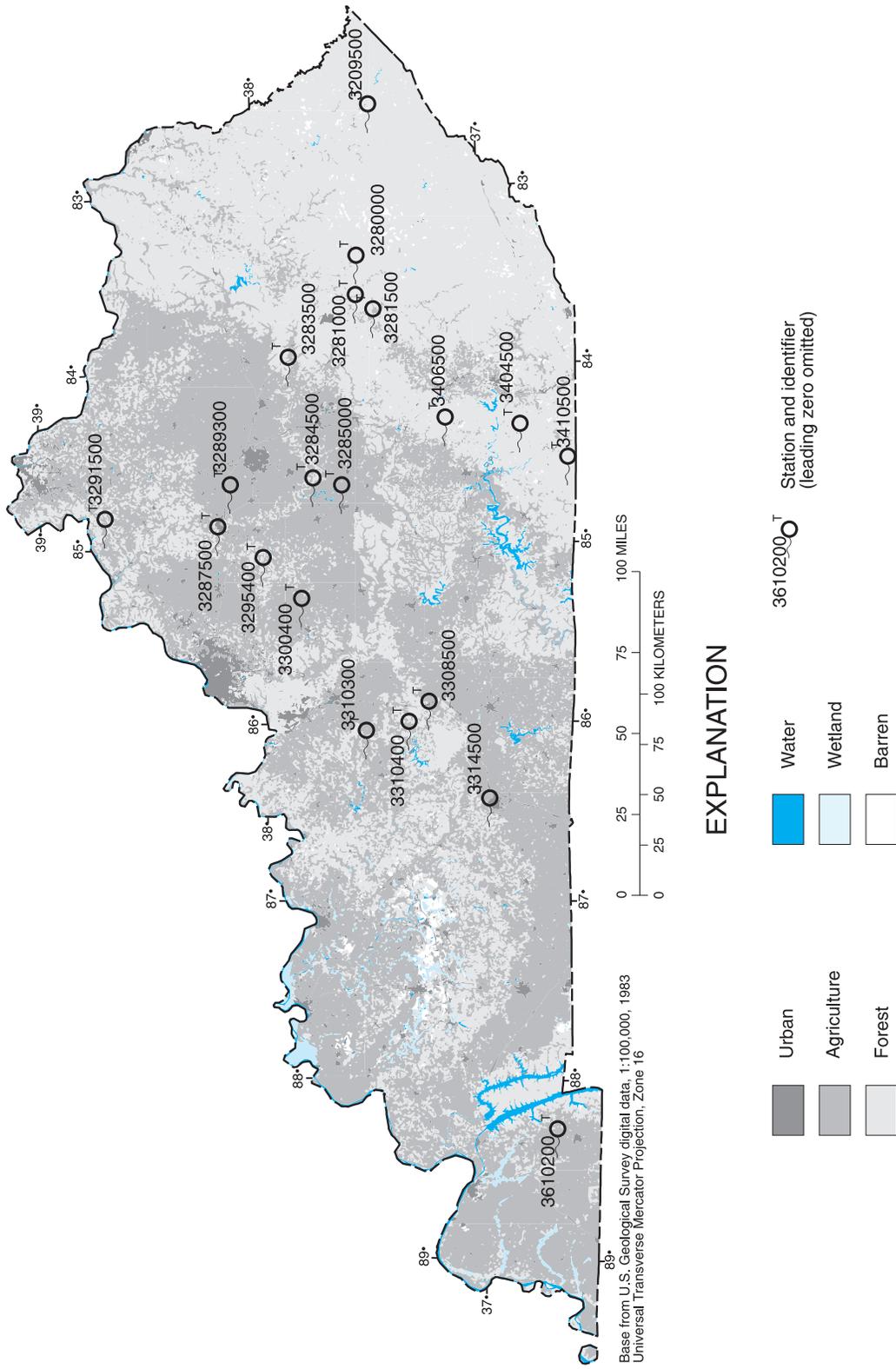
Appendix 1. Major drainage basins in Kentucky and locations of selected study stations, phase I.



EXPLANATION

- | | | | | | |
|---|-----------------------|---|------------------------|---|--|
|  | Inner Bluegrass |  | Mississippian plateaus |  | Station and identifier
(leading zero omitted) |
|  | Outer Bluegrass |  | Western coalfield | | |
|  | Mississippi embayment |  | Eastern coalfield | | |

Appendix 2. Physiographic regions of Kentucky and locations of selected study stations, phase I.



Appendix 3. Land use in Kentucky and locations of selected study stations, phase I.

Appendix 4. Constituents for which total and base-flow loads were determined by use of the FLUX program for selected stations in Kentucky, phase II

Constituent	Station number	Constituent	Station number	
Dissolved oxygen	03316275	Chloride— <i>Continued</i>	03402900	
	03316500		03414110	
Fecal coliform	03212500		07024000	
	03214500	Sulfate	03248620	
	03216500		03316275	
	03251200		03316500	
	03298500		03402900	
	03302000		Residue	03212500
	03316275			03214500
	03316500	03216500		
	03319000	03282300		
	03321060	03319000		
	03402900	03316275		
	Biological oxygen demand	03414110	03316500	
03438000		03402900		
07024000		03414110		
Carbon		03214500	03282300	
		03217000	03316275	
		03298500	03316500	
		03319000	07024000	
		03402900	Calcium	03316275
03438000	03316500			
03414110	03402900			
Chloride	07024000	Magnesium	03302000	
	03212500		03248620	
	03214500		03249500	
	03216500	03316275		
	03248620	03316500		
	03249500	Potassium	03282300	
	03282300		03316275	
	03301500		03316500	
	03302000		03316275	
	03316275		03316500	
	03316500			
	03319000			

Appendix 4. Constituents for which total and base-flow loads were determined by use of the FLUX program for selected stations in Kentucky, phase II—*Continued*

Constituent	Station number	Constituent	Station number
Sodium	03214500	Ammonia and organic nitrogen— <i>Continued</i>	03316500
	03302000		03402900
	03316275		03414110
	03316500		07024000
	03402900		
	07024000		
Ammonia	03212500	Phosphorus	03212500
	03214500		03214500
	03216500		03216500
	03217000		03282300
	03237250		03237250
	03248620		03316275
	03249500		03316500
	03251200		03402900
	03252500		03414110
	03282300		07024000
	03301500	Aluminum	03212500
	03316275		03214500
	03316500		03216500
	03319000		03237250
	03321060		03302000
	03402900		03316275
03414110		03316500	
03438000		03319000	
07024000		03414110	
			07024000
Nitrite plus nitrate	03316275	Arsenic	03212500
	03316500		03214500
	03414110		03216500
Ammonia and organic nitrogen	03212500		03217000
			03237250
	03214500		03248620
	03216500		03249500
	03237250		03251200
	03282300		03252500
	03248620		03282300
	03249500		03301500
03316275		03302000	

Appendix 4. Constituents for which total and base-flow loads were determined by use of the FLUX program for selected stations in Kentucky, phase II—*Continued*

Constituent	Station number	Constituent	Station number
Arsenic— <i>Continued</i>	03316275	Chromium	03212500
	03316500		03214500
	03319000		03216500
	03321060		03237250
	03414110		03248620
	03438000		03249500
	07024000		03252500
Barium	03302000		03282300
	03316275		03298500
	03316500		03302000
	03402900		03316275
	03414110		03316500
	03248620		03319000
	07024000		03321060
Cadmium			03402900
	03212500		03414110
	03214500		07024000
	03216500	Copper	03212500
	03217000		03216500
	03237250		03248620
	03248620		03249500
	03249500		03251200
	03251200		03252500
	03252500		03302000
	03282300		03316275
	03298500		03316500
	03301500		03319000
	03302000		03414110
	03316275		07024000
	03316500		
	03319000		Iron
03321060	03316275		
03402900	03316500		
03414110	03319000		
03438000	03402900		
07024000		03414110	
		07024000	

Appendix 4. Constituents for which total and base-flow loads were determined by use of the FLUX program for selected stations in Kentucky, phase II—*Continued*

Constituent	Station number	Constituent	Station number	
Lead	03212500	Mercury— <i>Continued</i>	03248620	
	03214500		03249500	
	03216500		03251200	
	03237250		03252500	
	03248620		03282300	
	03249500		03302000	
	03251200		03301500	
	03252500		03316275	
	03282300		03316500	
	03298500		03321060	
	03301500		03402900	
	03302000		03438000	
	03316275		Zinc	03212500
	03316500			03214500
	03319000			03216500
	03321060			03248620
03402900	03249500			
03414110	03252500			
07024000	03282300			
Manganese	03216500	03298500		
	03282300	03316275		
	03302000	03316500		
	03316275	03319000		
	03316500	03402900		
	03414110	03414110		
Mercury	07024000	07024000		
	03212500	Alkalinity	03316275	
	03214500		03316500	
	03216500		03282300	
	03217000		03248620	
03237250				

Appendix 5. Constituents for which total and base-flow loads were determined by use of the FLUX program for selected stations in Kentucky, phase I

Constituent	Station number	Constituent	Station number
Dissolved oxygen	03291500	Sulfate	03289300
			03291500
Fecal coliform	03280000	Residue	03285000
	03284500		03289300
	03285000		03291500
	03289300		03295400
	03291500		03300400
	03295400		03310400
	03300400		03314500
	03310400		03404500
	03314500		03209500
	03404500		
03209500			
Biological oxygen demand	03281000	Carbon	03291500
	03281500	Calcium	03291500
	03283500	Magnesium	03291500
	03284500		03610200
	03287500	Potassium	03280000
	03291500		03291500
	03295400		
	03300400	Sodium	03289300
	03308500		03291500
	03310400		03310300
03314500			
03404500	Ammonia	03281000	
03209500		03284500	
Chloride		03280000	03285000
		03281500	03287500
		03289300	03289300
		03291500	03291500
		03295400	03295400
	03308500	03310400	
	03310300	03314500	
03310400	03404500		
03404500	03209500		
03209500			

Appendix 5. Constituents for which total and base-flow loads were determined by use of the FLUX program for selected stations in Kentucky, phase I—*Continued*

Constituent	Station number	Constituent	Station number
Nitrite plus nitrate	03285000	Arsenic— <i>Continued</i>	03300400
	03291500		03310400
	03295400		03314500
	03610200		03404500
	03209500		
Ammonia and organic nitrogen	03284500	Barium	03285000
	03285000		03291500
	03289300		03295400
	03291500	Cadmium	03314500
	03295400		03284500
	03404500		03287500
Phosphorus	03209500		03300400
	03285000		03310400
	03289300		03314500
	03291500		03404500
	03310400		03209500
	03314500	Chromium	03285000
	03404500		03291500
03209500	03295400		
Aluminum			03300400
	03285000		03310400
	03289300		03314500
	03291500		03404500
	03295400		03209500
	03310400	Copper	03285000
	03314500		03289300
	03404500		03291500
03209500		03295400	
Arsenic	03280000		03300400
	03281000		03310300
	03285000		03310400
	03287500		03314500
	03289300		03404500
	03291500		03209500
	03295400		

Appendix 5. Constituents for which total and base-flow loads were determined by use of the FLUX program for selected stations in Kentucky, phase I—*Continued*

Constituent	Station number	Constituent	Station number
Iron	03284500	Mercury	03280000
	03287500		03281500
	03289300		03283500
	03291500		03285000
	03295400		03287500
	03300400		03289300
	03310300		03310300
	03310400		03310400
	03314500		03314500
	03610200		03404500
	03209500	03610200	
Lead	03284500	Zinc	03281000
	03285000		03281500
	03287500		03284500
	03289300		03285000
	03291500		03289300
	03295400		03291500
	03300400		03295400
	03310400		03300400
	03314500		03308500
	03404500		03310300
	03209500	03310400	
Manganese			03314500
			03404500
			03209500

Appendix 6. Aggregate total yields summary statistics for sediment and water-quality constituents for 20 ambient monitoring stations in Kentucky, phase I

[Yields are in tons per square mile except for fecal coliform (10^{15} colonies per square mile); N, number of stations at which yields were estimated; %, percent; chemical constituents are total analysis except chloride and sulfate, which are dissolved]

Constituent	N	Mean	Maximum	75% Quartile	Median	25% Quartile	Minimum
Dissolved oxygen	19	14.821	18.353	16.389	14.733	14.020	7.057
Fecal coliform	20	.287	1.739	.326	.159	.090	.008
Alkalinity, total	20	97.664	218.885	140.739	70.795	60.355	6.209
Biological oxygen demand	20	1.448	5.946	1.722	1.075	.617	.050
Chloride	20	10.470	42.949	12.031	8.444	6.387	3.296
Sulfate	20	51.203	150.460	60.592	46.797	25.798	1.162
Residue	20	138.816	364.600	156.855	113.088	71.457	.350
Carbon	20	213.625	4175.080	6.069	4.351	3.371	2.345
Calcium	20	53.206	217.935	60.112	43.644	27.884	8.434
Magnesium	20	10.662	24.510	13.036	9.926	7.647	1.504
Potassium	19	3.226	5.507	3.410	3.085	2.617	1.891
Sodium	20	8.708	28.358	10.051	6.898	4.727	1.839
Ammonia	20	.526	7.492	.118	.093	.055	.004
Nitrite plus nitrate	20	2.412	11.767	2.774	1.337	.938	.419
Ammonia and organic nitrogen	20	16.360	206.475	.893	.573	.375	.172
Phosphorus	20	.410	3.418	.198	.120	.072	.036
Aluminum	20	2.906	5.921	3.638	3.192	1.637	.832
Arsenic	20	.003	.012	.003	.003	.002	.002
Barium	20	.081	.414	.076	.063	.053	.037
Cadmium	20	.004	.039	.002	.002	.001	.001
Chromium	20	.005	.009	.006	.005	.004	.000
Copper	20	.008	.017	.009	.007	.006	.003
Iron	20	3.964	10.529	5.687	2.871	1.811	.013
Lead	20	.019	.040	.028	.021	.006	.004
Manganese	20	.212	.515	.225	.200	.156	.087
Mercury	20	.008	.161	.000	.000	.000	.000
Zinc	19	.051	.106	.061	.046	.037	.017

Appendix 7. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase I

[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load ¹		Yield ¹		
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow	Overland runoff
Dissolved oxygen, in mg/L [00300]							
3	03209500	Levisa Fork at Pikeville	137.06	66.37	11.07	5.36	5.71
18	03280000	North Fork Kentucky River at Jackson	153.82	73.92	13.97	6.71	7.26
19	03281000	Middle Fork Kentucky River at Tallega	86.60	45.42	16.13	8.46	7.67
20	03281500	South Fork Kentucky River at Booneville	116.23	48.34	16.10	6.70	9.40
16	03283500	Red River at Clay City	61.49	26.29	16.99	7.26	9.72
12	03284500	Kentucky River at Camp Nelson	618.27	---	13.97	---	---
15	03285000	Dix River near Danville	52.60	17.44	16.54	5.49	11.05
11	03287500	Kentucky River at Lock 4 at Frankfort	766.48	---	14.17	---	---
14	03289300	South Elkhorn Creek near Midway	15.47	9.33	14.73	8.89	5.84
13	03291500	Eagle Creek at Glencoe	73.46	6.01	16.81	1.38	15.43
22	03295400	Salt River at Glensboro	23.04	8.19	13.40	4.76	8.63
24	03300400	Beech Fork at Maud	63.78	16.28	14.63	3.73	10.90
31	03308500	Green River at Munfordville	289.58	171.33	17.31	10.24	7.07
32	03310300	Nolin River at White Mills	50.22	31.53	14.07	8.83	5.24
33	03310400	Bacon Creek near Priceville	6.00	3.61	7.06	4.22	2.83
30	03314500	Barren River at Bowling Green	264.85	176.59	14.32	9.55	4.77
40	03404500	Cumberland River at Cumberland Falls	311.32	337.02	15.75	17.05	-1.30
38	03406500	Rockcastle River at Billows	98.08	43.35	16.24	7.18	9.06
37	03410500	South Fork Cumberland River near Stearns	175.08	83.82	18.35	8.79	9.57
42	03610200	Clarks River at Almo	---	---	---	---	---
Fecal-coliform bacteria, colonies per 100 mL [31616]							
3	03209500	Levisa Fork at Pikeville	191.66	151.00	.15	.12	.03
18	03280000	North Fork Kentucky River at Jackson	399.70	207.64	.36	.19	.17
19	03281000	Middle Fork Kentucky River at Tallega	37.40	20.27	.07	.04	.03
20	03281500	South Fork Kentucky River at Booneville	86.95	25.58	.12	.04	.09
16	03283500	Red River at Clay City	42.29	18.55	.12	.05	.07
12	03284500	Kentucky River at Camp Nelson	724.73	557.78	.16	.13	.04
15	03285000	Dix River near Danville	100.81	87.56	.32	.28	.04
11	03287500	Kentucky River at Lock 4 at Frankfort	524.00	---	.10	---	---
14	03289300	South Elkhorn Creek near Midway	48.36	3.85	.46	.04	.42
13	03291500	Eagle Creek at Glencoe	140.65	90.16	.32	.21	.12
22	03295400	Salt River at Glensboro	52.95	---	.31	---	---

Appendix 7. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load ¹		Yield ¹		
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow	Overland runoff
24	03300400	Beech Fork at Maud	148.35	---	0.34	---	---
31	03308500	Green River at Munfordville	324.58	248.70	.19	0.15	0.05
32	03310300	Nolin River at White Mills	265.98	90.53	.75	.25	.49
33	03310400	Bacon Creek near Priceville	148.54	17.04	1.74	.20	1.54
30	03314500	Barren River at Bowling Green	46.16	---	.02	---	---
40	03404500	Cumberland River at Cumberland Falls	268.70	114.65	.14	.06	.08
38	03406500	Rockcastle River at Billows	15.76	6.54	.03	.01	.02
37	03410500	South Fork Cumberland River near Stearns	31.20	14.40	.03	.02	.02
42	03610200	Clarks River at Almo	1.01	.15	.01	<.01	<.01
Alkalinity, total as CaCO₃ [00410]							
3	03209500	Levisa Fork at Pikeville	740.52	395.05	59.82	31.91	27.91
18	03280000	North Fork Kentucky River at Jackson	765.10	404.17	69.49	36.71	32.78
19	03281000	Middle Fork Kentucky River at Tallega	232.37	119.45	43.27	22.24	21.03
20	03281500	South Fork Kentucky River at Booneville	247.72	123.43	34.31	17.10	17.21
16	03283500	Red River at Clay City	228.24	100.54	63.05	27.77	35.28
12	03284500	Kentucky River at Camp Nelson	3163.70	---	71.50	---	---
15	03285000	Dix River near Danville	505.64	.45	159.01	.14	158.87
11	03287500	Kentucky River at Lock 4 at Frankfort	5034.54	---	93.04	---	---
14	03289300	South Elkhorn Creek near Midway	229.83	134.69	218.89	128.28	90.61
13	03291500	Eagle Creek at Glencoe	306.31	73.96	70.09	16.92	53.17
22	03295400	Salt River at Glensboro	337.47	122.22	196.20	71.06	125.14
24	03300400	Beech Fork at Maud	834.50	216.24	191.40	49.60	141.80
31	03308500	Green River at Munfordville	2168.07	1343.22	129.59	80.29	49.30
32	03310300	Nolin River at White Mills	576.62	344.25	161.52	96.43	65.09
33	03310400	Bacon Creek near Priceville	82.00	48.03	96.47	56.24	40.23
30	03314500	Barren River at Bowling Green	2489.67	1674.14	134.65	90.54	44.11
40	03404500	Cumberland River at Cumberland Falls	1196.77	675.77	60.53	34.18	26.35
38	03406500	Rockcastle River at Billows	409.40	188.23	67.78	31.16	36.62
37	03410500	South Fork Cumberland River near Stearns	252.35	130.43	26.45	13.67	12.78
42	03610200	Clarks River at Almo	8.32	3.20	6.21	2.39	3.82
Biological oxygen demand, 5-day [00310]							
3	03209500	Levisa Fork at Pikeville	10.64	11.51	.86	.93	-.07
18	03280000	North Fork Kentucky River at Jackson	6.72	2.22	.61	.20	.41

Appendix 7. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load ¹		Yield ¹		
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow	Overland runoff
19	03281000	Middle Fork Kentucky River at Tallega	4.45	---	0.83	---	---
20	03281500	South Fork Kentucky River at Booneville	4.47	---	.62	---	---
16	03283500	Red River at Clay City	.18	---	.05	---	---
12	03284500	Kentucky River at Camp Nelson	39.76	---	.90	---	---
15	03285000	Dix River near Danville	.17	---	.05	---	---
11	03287500	Kentucky River at Lock 4 at Frankfort	61.12	66.31	1.13	1.23	-0.10
14	03289300	South Elkhorn Creek near Midway	3.30	2.65	3.15	2.52	.63
13	03291500	Eagle Creek at Glencoe	9.24	---	2.11	---	---
22	03295400	Salt River at Glensboro	10.23	9.02	5.95	5.24	.70
24	03300400	Beech Fork at Maud	4.45	4.79	1.02	1.10	-.08
31	03308500	Green River at Munfordville	24.51	25.40	1.47	1.52	-.05
32	03310300	Nolin River at White Mills	5.97	3.98	1.67	1.12	.56
33	03310400	Bacon Creek near Priceville	.44	---	.52	---	---
30	03314500	Barren River at Bowling Green	46.97	33.25	2.54	1.80	.74
40	03404500	Cumberland River at Cumberland Falls	33.04	31.58	1.67	1.60	.07
38	03406500	Rockcastle River at Billows	10.99	5.54	1.82	.92	.90
37	03410500	South Fork Cumberland River near Stearns	16.12	9.30	1.69	.97	.71
42	03610200	Clarks River at Almo	.41	.05	.30	.03	.27
Chloride, dissolved as Cl [00940]							
3	03209500	Levisa Fork at Pikeville	126.68	136.59	10.23	11.03	-.80
18	03280000	North Fork Kentucky River at Jackson	71.23	---	6.47	---	---
19	03281000	Middle Fork Kentucky River at Tallega	32.97	20.50	6.14	3.82	2.32
20	03281500	South Fork Kentucky River at Booneville	52.38	---	7.25	---	---
16	03283500	Red River at Clay City	43.20	21.51	11.93	5.94	5.99
12	03284500	Kentucky River at Camp Nelson	554.96	---	12.54	---	---
15	03285000	Dix River near Danville	20.69	7.49	6.51	2.36	4.15
11	03287500	Kentucky River at Lock 4 at Frankfort	666.82	---	12.32	---	---
14	03289300	South Elkhorn Creek near Midway	45.10	---	42.95	---	---
13	03291500	Eagle Creek at Glencoe	39.65	25.60	9.07	5.86	3.22
22	03295400	Salt River at Glensboro	19.70	19.90	11.45	11.57	-.12
24	03300400	Beech Fork at Maud	34.08	7.45	7.82	1.71	6.11
31	03308500	Green River at Munfordville	256.06	253.73	15.31	15.17	.14
32	03310300	Nolin River at White Mills	50.50	13.51	14.15	3.79	10.36
33	03310400	Bacon Creek near Priceville	2.80	2.68	3.30	3.14	.16

Appendix 7. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load ¹		Yield ¹		
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow	Overland runoff
30	03314500	Barren River at Bowling Green	194.75	114.91	10.53	6.21	4.32
40	03404500	Cumberland River at Cumberland Falls	117.20	---	5.93	---	---
38	03406500	Rockcastle River at Billows	32.65	18.78	5.41	3.11	2.30
37	03410500	South Fork Cumberland River near Stearns	63.46	34.66	6.65	3.63	3.02
42	03610200	Clarks River at Almo	4.61	1.02	3.44	.76	2.67
Sulfate, dissolved in mg/L as SO₄ [00946]							
3	03209500	Levisa Fork at Pikeville	1424.56	759.07	115.07	61.31	53.76
18	03280000	North Fork Kentucky River at Jackson	1656.57	864.02	150.46	78.48	71.98
19	03281000	Middle Fork Kentucky River at Tallega	400.17	214.46	74.52	39.94	34.58
20	03281500	South Fork Kentucky River at Booneville	418.97	207.15	58.03	28.69	29.34
16	03283500	Red River at Clay City	95.16	39.38	26.29	10.88	15.41
12	03284500	Kentucky River at Camp Nelson	2622.43	---	59.26	---	---
15	03285000	Dix River near Danville	100.98	35.13	31.75	11.05	20.71
11	03287500	Kentucky River at Lock 4 at Frankfort	2889.07	---	53.39	---	---
14	03289300	South Elkhorn Creek near Midway	63.09	67.79	60.08	64.57	-4.48
13	03291500	Eagle Creek at Glencoe	271.47	.06	62.12	.01	62.11
22	03295400	Salt River at Glensboro	64.92	27.02	37.74	15.71	22.04
24	03300400	Beech Fork at Maud	193.53	54.11	44.39	12.41	31.98
31	03308500	Green River at Munfordville	407.02	227.51	24.33	13.60	10.73
32	03310300	Nolin River at White Mills	49.50	34.57	13.87	9.68	4.18
33	03310400	Bacon Creek near Priceville	5.02	2.61	5.91	3.05	2.86
30	03314500	Barren River at Bowling Green	442.43	295.06	23.93	15.96	7.97
40	03404500	Cumberland River at Cumberland Falls	1875.86	1024.17	94.88	51.80	43.08
38	03406500	Rockcastle River at Billows	227.45	110.39	37.66	18.28	19.38
37	03410500	South Fork Cumberland River near Stearns	469.43	253.90	49.21	26.61	22.59
42	03610200	Clarks River at Almo	1.56	.30	1.16	.22	.94
Residue, total nonfilterable [00530]							
3	03209500	Levisa Fork at Pikeville	1091.42	1148.99	88.16	92.81	-4.65
18	03280000	North Fork Kentucky River at Jackson	3757.19	927.72	341.25	84.26	256.99
19	03281000	Middle Fork Kentucky River at Tallega	714.37	454.51	133.03	84.64	48.39
20	03281500	South Fork Kentucky River at Booneville	520.03	167.23	72.03	23.16	48.86
16	03283500	Red River at Clay City	554.51	196.70	153.18	54.34	98.84
12	03284500	Kentucky River at Camp Nelson	7428.96	---	167.89	---	---
15	03285000	Dix River near Danville	178.31	---	56.07	---	---

Appendix 7. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load ¹		Yield ¹		
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow	Overland runoff
11	03287500	Kentucky River at Lock 4 at Frankfort	7490.07	---	138.42	---	---
14	03289300	South Elkhorn Creek near Midway	47.32	---	45.07	---	---
13	03291500	Eagle Creek at Glencoe	1593.30	1232.94	364.60	282.14	82.46
22	03295400	Salt River at Glensboro	182.78	---	106.27	---	---
24	03300400	Beech Fork at Maud	522.81	---	119.91	---	---
31	03308500	Green River at Munfordville	2116.63	1371.63	126.52	81.99	44.53
32	03310300	Nolin River at White Mills	605.29	343.70	169.55	96.28	73.27
33	03310400	Bacon Creek near Priceville	78.42	63.61	92.26	74.49	17.78
30	03314500	Barren River at Bowling Green	1289.69	---	69.75	---	---
40	03404500	Cumberland River at Cumberland Falls	7117.63	4354.63	360.02	220.26	139.76
38	03406500	Rockcastle River at Billows	408.26	189.73	67.59	31.41	36.18
37	03410500	South Fork Cumberland River near Stearns	996.09	417.99	104.41	43.81	60.60
42	03610200	Clarks River at Almo	.47	.15	.35	.11	.24
Carbon, organic, total as C [00680]							
3	03209500	Levisa Fork at Pikeville	32.57	15.41	2.63	1.24	1.39
18	03280000	North Fork Kentucky River at Jackson	32.67	20.58	2.97	1.87	1.10
19	03281000	Middle Fork Kentucky River at Tallega	17.49	9.26	3.26	1.72	1.53
20	03281500	South Fork Kentucky River at Booneville	16.93	9.24	2.34	1.28	1.06
16	03283500	Red River at Clay City	18.94	8.74	5.23	2.41	2.82
12	03284500	Kentucky River at Camp Nelson	186.23	---	4.21	---	---
15	03285000	Dix River near Danville	15.84	6.01	4.98	1.89	3.09
11	03287500	Kentucky River at Lock 4 at Frankfort	233.06	---	4.31	---	---
14	03289300	South Elkhorn Creek near Midway	7.62	5.51	7.26	5.25	2.01
13	03291500	Eagle Creek at Glencoe	62.30	4.41	14.26	1.01	13.25
22	03295400	Salt River at Glensboro	14.85	5.24	8.63	3.05	5.59
24	03300400	Beech Fork at Maud	38.76	10.11	8.89	2.32	6.57
31	03308500	Green River at Munfordville	94.92	55.23	5.67	3.30	2.37
32	03310300	Nolin River at White Mills	15.69	.01	4.39	<.01	4.39
33	03310400	Bacon Creek near Priceville	2.11	1.95	2.48	2.28	.20
30	03314500	Barren River at Bowling Green	85.26	58.15	4.61	3.15	1.47
40	03404500	Cumberland River at Cumberland Falls	74.98	65.76	3.79	3.33	.47
38	03406500	Rockcastle River at Billows	24.76	10.21	4.10	1.69	2.41
37	03410500	South Fork Cumberland River near Stearns	32.52	16.98	3.41	1.78	1.63
42	03610200	Clarks River at Almo	5594.61	497.71	4175.08	371.43	3803.65

Appendix 7. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load ¹		Yield ¹		
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow	Overland runoff
Calcium, recoverable, total as Ca [00916]							
3	03209500	Levisa Fork at Pikeville	466.50	240.80	37.68	19.45	18.23
18	03280000	North Fork Kentucky River at Jackson	518.21	275.73	47.07	25.04	22.02
19	03281000	Middle Fork Kentucky River at Tallega	137.14	71.21	25.54	13.26	12.28
20	03281500	South Fork Kentucky River at Booneville	149.73	73.23	20.74	10.14	10.60
16	03283500	Red River at Clay City	96.61	43.19	26.69	11.93	14.76
12	03284500	Kentucky River at Camp Nelson	1820.97	---	41.15	---	---
15	03285000	Dix River near Danville	190.25	61.80	59.83	19.43	40.39
11	03287500	Kentucky River at Lock 4 at Frankfort	2496.39	---	46.14	---	---
14	03289300	South Elkhorn Creek near Midway	109.14	67.02	103.94	63.83	40.11
13	03291500	Eagle Creek at Glencoe	36.85	30.37	8.43	6.95	1.48
22	03295400	Salt River at Glensboro	147.92	50.76	86.00	29.51	56.49
24	03300400	Beech Fork at Maud	314.29	85.19	72.08	19.54	52.55
31	03308500	Green River at Munfordville	833.72	513.53	49.83	30.70	19.14
32	03310300	Nolin River at White Mills	217.66	137.23	60.97	38.44	22.53
33	03310400	Bacon Creek near Priceville	29.58	18.70	34.80	21.90	12.90
30	03314500	Barren River at Bowling Green	918.79	579.23	49.69	31.33	18.36
40	03404500	Cumberland River at Cumberland Falls	603.59	383.00	30.53	19.37	11.16
38	03406500	Rockcastle River at Billows	170.83	74.19	28.28	12.28	16.00
37	03410500	South Fork Cumberland River near Stearns	160.26	80.59	16.80	8.45	8.35
42	03610200	Clarks River at Almo	292.03	32.42	217.93	24.19	193.74
Magnesium, total as Mg [00927]							
3	03209500	Levisa Fork at Pikeville	204.04	103.24	16.48	8.34	8.14
18	03280000	North Fork Kentucky River at Jackson	269.85	139.53	24.51	12.67	11.84
19	03281000	Middle Fork Kentucky River at Tallega	63.56	32.87	11.84	6.12	5.72
20	03281500	South Fork Kentucky River at Booneville	73.20	34.75	10.14	4.81	5.33
16	03283500	Red River at Clay City	19.62	8.76	5.42	2.42	3.00
12	03284500	Kentucky River at Camp Nelson	589.68	12.30	13.33	.28	13.05
15	03285000	Dix River near Danville	47.86	15.83	15.05	4.98	10.08
11	03287500	Kentucky River at Lock 4 at Frankfort	652.46	---	12.06	---	---
14	03289300	South Elkhorn Creek near Midway	10.20	6.52	9.71	6.21	3.50
13	03291500	Eagle Creek at Glencoe	56.54	4.65	12.94	1.06	11.87
22	03295400	Salt River at Glensboro	13.49	5.17	7.84	3.01	4.84
24	03300400	Beech Fork at Maud	53.71	15.14	12.32	3.47	8.85

Appendix 7. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load ¹		Yield ¹		
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow	Overland runoff
31	03308500	Green River at Munfordville	162.21	106.27	9.70	6.35	3.34
32	03310300	Nolin River at White Mills	23.70	15.45	6.64	4.33	2.31
33	03310400	Bacon Creek near Priceville	2.04	1.26	2.40	1.48	.92
30	03314500	Barren River at Bowling Green	177.56	112.35	9.60	6.08	3.53
40	03404500	Cumberland River at Cumberland Falls	328.19	204.31	16.60	10.33	6.27
38	03406500	Rockcastle River at Billows	46.57	20.55	7.71	3.40	4.31
37	03410500	South Fork Cumberland River near Stearns	71.12	37.46	7.46	3.93	3.53
42	03610200	Clarks River at Almo	2.02	.02	1.50	.01	1.49
Potassium, total as K [00937]							
3	03209500	Levisa Fork at Pikeville	33.73	16.99	2.72	1.37	1.35
18	03280000	North Fork Kentucky River at Jackson	38.76	---	3.52	---	---
19	03281000	Middle Fork Kentucky River at Tallega	15.71	8.18	2.93	1.52	1.40
20	03281500	South Fork Kentucky River at Booneville	17.10	8.49	2.37	1.18	1.19
16	03283500	Red River at Clay City	9.08	3.94	2.51	1.09	1.42
12	03284500	Kentucky River at Camp Nelson	143.27	---	3.24	---	---
15	03285000	Dix River near Danville	10.49	3.58	3.30	1.13	2.17
11	03287500	Kentucky River at Lock 4 at Frankfort	168.79	---	3.12	---	---
14	03289300	South Elkhorn Creek near Midway	5.58	3.68	5.32	3.51	1.81
13	03291500	Eagle Creek at Glencoe	24.06	1.74	5.51	.40	5.11
22	03295400	Salt River at Glensboro	6.30	1.99	3.66	1.16	2.51
24	03300400	Beech Fork at Maud	17.25	4.50	3.96	1.03	2.92
31	03308500	Green River at Munfordville	51.30	29.80	3.07	1.78	1.28
32	03310300	Nolin River at White Mills	11.01	8.34	3.09	2.34	.75
33	03310400	Bacon Creek near Priceville	1.61	1.30	1.89	1.52	.37
30	03314500	Barren River at Bowling Green	56.62	41.13	3.06	2.22	.84
40	03404500	Cumberland River at Cumberland Falls	64.97	42.71	3.29	2.16	1.13
38	03406500	Rockcastle River at Billows	15.14	6.86	2.51	1.14	1.37
37	03410500	South Fork Cumberland River near Stearns	21.50	11.41	2.25	1.20	1.06
42	03610200	Clarks River at Almo	---	---	---	---	---

Appendix 7. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load ¹		Yield ¹		
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow	Overland runoff
Sodium, recoverable, total as Na [00929]							
3	03209500	Levisa Fork at Pikeville	255.50	138.97	20.64	11.23	9.41
18	03280000	North Fork Kentucky River at Jackson	120.97	70.56	10.99	6.41	4.58
19	03281000	Middle Fork Kentucky River at Tallega	42.56	21.47	7.93	4.00	3.93
20	03281500	South Fork Kentucky River at Booneville	55.15	29.98	7.64	4.15	3.49
16	03283500	Red River at Clay City	22.29	10.75	6.16	2.97	3.19
12	03284500	Kentucky River at Camp Nelson	467.04	---	10.55	---	---
15	03285000	Dix River near Danville	12.14	4.71	3.82	1.48	2.34
11	03287500	Kentucky River at Lock 4 at Frankfort	534.79	---	9.88	---	---
14	03289300	South Elkhorn Creek near Midway	29.78	4.79	28.36	4.56	23.80
13	03291500	Eagle Creek at Glencoe	23.91	2.13	5.47	.49	4.98
22	03295400	Salt River at Glensboro	9.64	3.71	5.61	2.16	3.45
24	03300400	Beech Fork at Maud	18.21	5.18	4.18	1.19	2.99
31	03308500	Green River at Munfordville	129.30	83.13	7.73	4.97	2.76
32	03310300	Nolin River at White Mills	33.53	---	9.39	---	---
33	03310400	Bacon Creek near Priceville	1.56	1.06	1.84	1.24	.60
30	03314500	Barren River at Bowling Green	88.60	54.60	4.79	2.95	1.84
40	03404500	Cumberland River at Cumberland Falls	303.96	167.22	15.37	8.46	6.92
38	03406500	Rockcastle River at Billows	23.69	10.56	3.92	1.75	2.17
37	03410500	South Fork Cumberland River near Stearns	51.21	28.79	5.37	3.02	2.35
42	03610200	Clarks River at Almo	6.07	1.31	4.53	.98	3.56
Ammonia, total as N [00610]							
3	03209500	Levisa Fork at Pikeville	.66	---	.05	---	---
18	03280000	North Fork Kentucky River at Jackson	.04	---	<.01	---	---
19	03281000	Middle Fork Kentucky River at Tallega	.22	.22	.04	.04	<.01
20	03281500	South Fork Kentucky River at Booneville	.28	.28	.04	.04	<.01
16	03283500	Red River at Clay City	.20	.21	.06	.06	<.01
12	03284500	Kentucky River at Camp Nelson	5.74	6.93	.15	.16	-.01
15	03285000	Dix River near Danville	.30	.26	.09	.08	.01
11	03287500	Kentucky River at Lock 4 at Frankfort	3.71	---	.07	---	---
14	03289300	South Elkhorn Creek near Midway	1.58	---	1.50	---	---
13	03291500	Eagle Creek at Glencoe	.48	.29	.11	.07	.04
22	03295400	Salt River at Glensboro	.19	---	.11	---	---

Appendix 7. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load ¹		Yield ¹		
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow	Overland runoff
24	03300400	Beech Fork at Maud	0.39	0.41	0.09	0.09	-0.01
31	03308500	Green River at Munfordville	1.50	1.54	.09	.09	<.01
32	03310300	Nolin River at White Mills	.41	---	.11	---	---
33	03310400	Bacon Creek near Priceville	.04	---	.04	---	---
30	03314500	Barren River at Bowling Green	2.06	2.12	.11	.11	<.01
40	03404500	Cumberland River at Cumberland Falls	1.85	1.96	.09	.10	-.01
38	03406500	Rockcastle River at Billows	.86	.85	.14	.14	<.01
37	03410500	South Fork Cumberland River near Stearns	1.25	.63	.13	.07	.06
42	03610200	Clarks River at Almo	10.04	10.71	7.49	7.99	-.50
Nitrite plus Nitrate, total as N [00630]							
3	03209500	Levisa Fork at Pikeville	7.52	3.25	.61	.26	.34
18	03280000	North Fork Kentucky River at Jackson	11.08	3.52	1.01	.32	.69
19	03281000	Middle Fork Kentucky River at Tallega	2.25	1.12	.42	.21	.21
20	03281500	South Fork Kentucky River at Booneville	6.88	1.63	.95	.23	.73
16	03283500	Red River at Clay City	2.19	.80	.60	.22	.38
12	03284500	Kentucky River at Camp Nelson	39.47	---	.89	---	---
15	03285000	Dix River near Danville	21.86	6.22	6.87	1.96	4.92
11	03287500	Kentucky River at Lock 4 at Frankfort	94.35	---	1.74	---	---
14	03289300	South Elkhorn Creek near Midway	12.35	---	11.77	---	---
13	03291500	Eagle Creek at Glencoe	4.65	3.76	1.06	.86	.20
22	03295400	Salt River at Glensboro	8.02	4.10	4.66	2.39	2.28
24	03300400	Beech Fork at Maud	15.64	1.89	3.59	.43	3.15
31	03308500	Green River at Munfordville	28.09	16.38	1.68	.98	.70
32	03310300	Nolin River at White Mills	13.42	7.21	3.76	2.02	1.74
33	03310400	Bacon Creek near Priceville	1.31	.56	1.54	.66	.88
30	03314500	Barren River at Bowling Green	35.55	26.79	1.92	1.45	.47
40	03404500	Cumberland River at Cumberland Falls	19.16	---	.97	---	---
38	03406500	Rockcastle River at Billows	6.86	2.30	1.14	.38	.75
37	03410500	South Fork Cumberland River near Stearns	5.17	1.68	.54	.18	.37
42	03610200	Clarks River at Almo	3.35	3.66	2.50	2.73	-.23
Ammonia and organic, total as N [00625]							
3	03209500	Levisa Fork at Pikeville	3.95	---	.32	---	---
18	03280000	North Fork Kentucky River at Jackson	1.89	---	.17	---	---
19	03281000	Middle Fork Kentucky River at Tallega	1.69	1.80	.31	.34	-.02

Appendix 7. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load ¹		Yield ¹		
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow	Overland runoff
20	03281500	South Fork Kentucky River at Booneville	2.83	---	0.39	---	---
16	03283500	Red River at Clay City	1.87	---	.52	---	---
12	03284500	Kentucky River at Camp Nelson	30.72	6.93	.78	0.16	0.62
15	03285000	Dix River near Danville	3.95	.26	1.24	.08	1.16
11	03287500	Kentucky River at Lock 4 at Frankfort	17.63	---	.33	---	---
14	03289300	South Elkhorn Creek near Midway	.62	---	.59	---	---
13	03291500	Eagle Creek at Glencoe	7.24	.29	1.66	.07	1.59
22	03295400	Salt River at Glensboro	355.14	.21	206.47	.12	206.35
24	03300400	Beech Fork at Maud	435.80	.41	99.95	.09	99.86
31	03308500	Green River at Munfordville	12.07	---	.72	---	---
32	03310300	Nolin River at White Mills	2.75	---	.77	---	---
33	03310400	Bacon Creek near Priceville	.20	.05	.24	.05	.18
30	03314500	Barren River at Bowling Green	10.31	2.12	.56	.11	.44
40	03404500	Cumberland River at Cumberland Falls	14.07	1.96	.71	.10	.61
38	03406500	Rockcastle River at Billows	3.13	3.16	.52	.52	-.01
37	03410500	South Fork Cumberland River near Stearns	4.80	---	.50	---	---
42	03610200	Clarks River at Almo	14.00	10.71	10.45	7.99	2.45
Phosphorus, total as P [00665]							
3	03209500	Levisa Fork at Pikeville	.86	.89	.07	.07	<.01
18	03280000	North Fork Kentucky River at Jackson	.81	.36	.07	.03	.04
19	03281000	Middle Fork Kentucky River at Tallega	.31	.21	.06	.04	.02
20	03281500	South Fork Kentucky River at Booneville	.26	.15	.04	.02	.02
16	03283500	Red River at Clay City	.27	.12	.08	.03	.04
12	03284500	Kentucky River at Camp Nelson	7.26	---	.16	---	---
15	03285000	Dix River near Danville	.56	---	.18	---	---
11	03287500	Kentucky River at Lock 4 at Frankfort	10.90	---	.20	---	---
14	03289300	South Elkhorn Creek near Midway	1.94	---	1.85	---	---
13	03291500	Eagle Creek at Glencoe	.26	---	.06	---	---
22	03295400	Salt River at Glensboro	1.22	.38	.71	.22	.49
24	03300400	Beech Fork at Maud	2.07	.55	.48	.13	.35
31	03308500	Green River at Munfordville	1.86	1.30	.11	.08	.03
32	03310300	Nolin River at White Mills	.70	.58	.20	.16	.04
33	03310400	Bacon Creek near Priceville	.11	.08	.13	.09	.04
30	03314500	Barren River at Bowling Green	1.57	---	.09	---	---

Appendix 7. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load ¹		Yield ¹		
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow	Overland runoff
40	03404500	Cumberland River at Cumberland Falls	3.16	2.75	0.16	0.14	0.02
38	03406500	Rockcastle River at Billows	.41	.19	.07	.03	.04
37	03410500	South Fork Cumberland River near Stearns	.79	.29	.08	.03	.05
42	03610200	Clarks River at Almo	4.58	1.03	3.42	.77	2.65
Aluminum, total, in µg/L as Al [01105]							
3	03209500	Levisa Fork at Pikeville	16.74	13.32	1.35	1.08	.28
18	03280000	North Fork Kentucky River at Jackson	65.19	9.41	5.92	.85	5.07
19	03281000	Middle Fork Kentucky River at Tallega	18.71	4.89	3.48	.91	2.57
20	03281500	South Fork Kentucky River at Booneville	12.76	3.69	1.77	.51	1.25
16	03283500	Red River at Clay City	12.16	---	3.36	---	---
12	03284500	Kentucky River at Camp Nelson	181.39	12.32	4.10	.28	3.82
15	03285000	Dix River near Danville	5.51	2.11	1.73	.66	1.07
11	03287500	Kentucky River at Lock 4 at Frankfort	182.32	38.36	3.37	.71	2.66
14	03289300	South Elkhorn Creek near Midway	1.28	---	1.22	---	---
13	03291500	Eagle Creek at Glencoe	14.82	3.56	3.39	.81	2.58
22	03295400	Salt River at Glensboro	5.25	---	3.05	---	---
24	03300400	Beech Fork at Maud	13.41	6.28	3.08	1.44	1.64
31	03308500	Green River at Munfordville	30.19	1.26	1.80	.08	1.73
32	03310300	Nolin River at White Mills	11.81	---	3.31	---	---
33	03310400	Bacon Creek near Priceville	4.43	---	5.19	---	---
30	03314500	Barren River at Bowling Green	15.38	2.49	.83	.13	.70
40	03404500	Cumberland River at Cumberland Falls	86.57	3.80	4.38	.19	4.19
38	03406500	Rockcastle River at Billows	7.50	.69	1.24	.11	1.13
37	03410500	South Fork Cumberland River near Stearns	9.12	---	.96	---	---
42	03610200	Clarks River at Almo	6.14	---	4.58	---	---
Arsenic, total, in µg/L as As [01002]							
3	03209500	Levisa Fork at Pikeville	.03	---	<.01	---	---
18	03280000	North Fork Kentucky River at Jackson	.03	---	<.01	---	---
19	03281000	Middle Fork Kentucky River at Tallega	.01	.01	<.01	<.01	<.01
20	03281500	South Fork Kentucky River at Booneville	.02	.01	<.01	<.01	<.01
16	03283500	Red River at Clay City	.01	<.01	<.01	<.01	<.01
12	03284500	Kentucky River at Camp Nelson	.11	---	<.01	---	---
15	03285000	Dix River near Danville	.01	---	<.01	---	---
11	03287500	Kentucky River at Lock 4 at Frankfort	.15	---	<.01	---	---

Appendix 7. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load ¹		Yield ¹		
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow	Overland runoff
14	03289300	South Elkhorn Creek near Midway	<0.01	---	<0.01	---	---
13	03291500	Eagle Creek at Glencoe	.05	0.01	.01	<0.01	<0.01
22	03295400	Salt River at Glensboro	.01	<.01	<.01	<.01	<.01
24	03300400	Beech Fork at Maud	.01	---	<.01	---	---
31	03308500	Green River at Munfordville	.05	.03	<.01	<.01	<.01
32	03310300	Nolin River at White Mills	.01	.01	<.01	<.01	<.01
33	03310400	Bacon Creek near Priceville	<.01	<.01	<.01	<.01	<.01
30	03314500	Barren River at Bowling Green	.05	.06	<.01	<.01	<.01
40	03404500	Cumberland River at Cumberland Falls	.09	---	<.01	---	---
38	03406500	Rockcastle River at Billows	.02	.01	<.01	<.01	<.01
37	03410500	South Fork Cumberland River near Stearns	.03	.02	<.01	<.01	<.01
42	03610200	Clarks River at Almo	.01	<.01	.01	<.01	<.01
Barium, total, in µg/L as Ba [01007]							
3	03209500	Levisa Fork at Pikeville	.71	.36	.06	.03	.03
18	03280000	North Fork Kentucky River at Jackson	.73	.36	.07	.03	.03
19	03281000	Middle Fork Kentucky River at Tallega	.34	.19	.06	.04	.03
20	03281500	South Fork Kentucky River at Booneville	.41	.19	.06	.03	.03
16	03283500	Red River at Clay City	.26	.13	.07	.03	.04
12	03284500	Kentucky River at Camp Nelson	4.14	---	.09	---	---
15	03285000	Dix River near Danville	.16	---	.05	---	---
11	03287500	Kentucky River at Lock 4 at Frankfort	4.45	---	.08	---	---
14	03289300	South Elkhorn Creek near Midway	.05	.03	.05	.03	.02
13	03291500	Eagle Creek at Glencoe	.35	.24	.08	.05	.03
22	03295400	Salt River at Glensboro	.08	---	.05	---	---
24	03300400	Beech Fork at Maud	.22	.06	.05	.01	.04
31	03308500	Green River at Munfordville	1.01	.65	.06	.04	.02
32	03310300	Nolin River at White Mills	.27	.19	.08	.05	.02
33	03310400	Bacon Creek near Priceville	.03	.02	.04	.03	.01
30	03314500	Barren River at Bowling Green	1.13	---	.06	---	---
40	03404500	Cumberland River at Cumberland Falls	1.52	1.36	.08	.07	.01
38	03406500	Rockcastle River at Billows	.32	.12	.05	.02	.03
37	03410500	South Fork Cumberland River near Stearns	.62	.30	.06	.03	.03
42	03610200	Clarks River at Almo	.56	.09	.41	.07	.35

Appendix 7. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load ¹		Yield ¹		
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow	Overland runoff
Cadmium, total, in µg/L as Cd [01027]							
3	03209500	Levisa Fork at Pikeville	0.03	0.02	<0.01	<0.01	<0.01
18	03280000	North Fork Kentucky River at Jackson	.01	---	<.01	---	---
19	03281000	Middle Fork Kentucky River at Tallega	<.01	<.01	<.01	<.01	<.01
20	03281500	South Fork Kentucky River at Booneville	.01	.01	<.01	<.01	<.01
16	03283500	Red River at Clay City	<.01	<.01	<.01	<.01	<.01
12	03284500	Kentucky River at Camp Nelson	.11	.06	<.01	<.01	<.01
15	03285000	Dix River near Danville	<.01	<.01	<.01	<.01	<.01
11	03287500	Kentucky River at Lock 4 at Frankfort	.21	---	<.01	---	---
14	03289300	South Elkhorn Creek near Midway	<.01	---	<.01	---	---
13	03291500	Eagle Creek at Glencoe	.01	<.01	<.01	<.01	<.01
22	03295400	Salt River at Glensboro	<.01	<.01	<.01	<.01	<.01
24	03300400	Beech Fork at Maud	<.01	<.01	<.01	<.01	<.01
31	03308500	Green River at Munfordville	.03	.01	<.01	<.01	<.01
32	03310300	Nolin River at White Mills	.01	<.01	<.01	<.01	<.01
33	03310400	Bacon Creek near Priceville	<.01	---	<.01	---	---
30	03314500	Barren River at Bowling Green	.06	.03	<.01	<.01	<.01
40	03404500	Cumberland River at Cumberland Falls	.04	.04	<.01	<.01	<.01
38	03406500	Rockcastle River at Billows	.01	.01	<.01	<.01	<.01
37	03410500	South Fork Cumberland River near Stearns	.02	.01	<.01	<.01	<.01
42	03610200	Clarks River at Almo	.05	.01	.04	.01	.03
Chromium, total, in µg/L as Cr [01034]							
3	03209500	Levisa Fork at Pikeville	.04	---	<.01	---	---
18	03280000	North Fork Kentucky River at Jackson	.07	.03	.01	<.01	<.01
19	03281000	Middle Fork Kentucky River at Tallega	.02	.01	<.01	<.01	<.01
20	03281500	South Fork Kentucky River at Booneville	.03	---	<.01	---	---
16	03283500	Red River at Clay City	.02	.01	.01	<.01	<.01
12	03284500	Kentucky River at Camp Nelson	.22	---	.01	---	---
15	03285000	Dix River near Danville	.02	---	.01	---	---
11	03287500	Kentucky River at Lock 4 at Frankfort	.34	---	.01	---	---
14	03289300	South Elkhorn Creek near Midway	<.01	<.01	<.01	<.01	<.01
13	03291500	Eagle Creek at Glencoe	.04	.04	.01	.01	<.01
22	03295400	Salt River at Glensboro	.01	---	.01	---	---
24	03300400	Beech Fork at Maud	.03	---	.01	---	---

Appendix 7. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load ¹		Yield ¹		
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow	Overland runoff
31	03308500	Green River at Munfordville	0.08	0.05	<0.01	<0.01	<0.01
32	03310300	Nolin River at White Mills	.02	.02	.01	<.01	<.01
33	03310400	Bacon Creek near Priceville	<.01	<.01	<.01	<.01	<.01
30	03314500	Barren River at Bowling Green	.08	.08	<.01	<.01	<.01
40	03404500	Cumberland River at Cumberland Falls	.12	---	.01	---	---
38	03406500	Rockcastle River at Billows	.02	.01	<.01	<.01	<.01
37	03410500	South Fork Cumberland River near Stearns	.04	.02	<.01	<.01	<.01
42	03610200	Clarks River at Almo	---	---	---	---	---
Copper, total, in µg/L as Cu [01042]							
3	03209500	Levisa Fork at Pikeville	.08	.09	.01	.01	<.01
18	03280000	North Fork Kentucky River at Jackson	.07	.04	.01	<.01	<.01
19	03281000	Middle Fork Kentucky River at Tallega	.03	.02	.01	<.01	<.01
20	03281500	South Fork Kentucky River at Booneville	.03	.01	<.01	<.01	<.01
16	03283500	Red River at Clay City	.02	.01	.01	<.01	<.01
12	03284500	Kentucky River at Camp Nelson	.35	---	.01	---	---
15	03285000	Dix River near Danville	.01	---	<.01	---	---
11	03287500	Kentucky River at Lock 4 at Frankfort	.63	---	.01	---	---
14	03289300	South Elkhorn Creek near Midway	.01	---	.01	---	---
13	03291500	Eagle Creek at Glencoe	.04	.04	.01	.01	<.01
22	03295400	Salt River at Glensboro	.01	<.01	<.01	<.01	<.01
24	03300400	Beech Fork at Maud	.03	---	.01	---	---
31	03308500	Green River at Munfordville	.11	.06	.01	<.01	<.01
32	03310300	Nolin River at White Mills	.02	---	.01	---	---
33	03310400	Bacon Creek near Priceville	<.01	<.01	<.01	<.01	<.01
30	03314500	Barren River at Bowling Green	.31	.19	.02	.01	.01
40	03404500	Cumberland River at Cumberland Falls	.22	---	.01	---	---
38	03406500	Rockcastle River at Billows	.05	.02	.01	<.01	<.01
37	03410500	South Fork Cumberland River near Stearns	.09	.04	.01	<.01	<.01
42	03610200	Clarks River at Almo	.02	<.01	.02	<.01	.01
Iron, total, in µg/L as Fe [01045]							
3	03209500	Levisa Fork at Pikeville	27.79	29.93	2.24	2.42	-.17
18	03280000	North Fork Kentucky River at Jackson	88.34	29.23	8.02	2.65	5.37
19	03281000	Middle Fork Kentucky River at Tallega	22.05	11.50	4.11	2.14	1.97
20	03281500	South Fork Kentucky River at Booneville	21.64	7.66	3.00	1.06	1.94

Appendix 7. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load ¹		Yield ¹		
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow	Overland runoff
16	03283500	Red River at Clay City	16.97	6.81	4.69	1.88	2.81
12	03284500	Kentucky River at Camp Nelson	343.64	303.84	7.77	6.87	.90
15	03285000	Dix River near Danville	8.73	---	2.74	---	---
11	03287500	Kentucky River at Lock 4 at Frankfort	303.30	292.01	5.61	5.40	.21
14	03289300	South Elkhorn Creek near Midway	1.35	---	1.29	---	---
13	03291500	Eagle Creek at Glencoe	46.01	---	10.53	---	---
22	03295400	Salt River at Glensboro	7.67	---	4.46	---	---
24	03300400	Beech Fork at Maud	25.86	---	5.93	---	---
31	03308500	Green River at Munfordville	38.55	25.60	2.30	1.53	.77
32	03310300	Nolin River at White Mills	8.53	---	2.39	---	---
33	03310400	Bacon Creek near Priceville	.97	---	1.14	---	---
30	03314500	Barren River at Bowling Green	20.09	---	1.09	---	---
40	03404500	Cumberland River at Cumberland Falls	166.71	---	8.43	---	---
38	03406500	Rockcastle River at Billows	10.14	4.14	1.68	.69	.99
37	03410500	South Fork Cumberland River near Stearns	17.70	7.93	1.86	.83	1.02
42	03610200	Clarks River at Almo	.02	---	.01	---	---
Lead, total, in µg/L as Pb [01051]							
3	03209500	Levisa Fork at Pikeville	.32	---	.03	---	---
18	03280000	North Fork Kentucky River at Jackson	.08	.03	.01	<.01	<.01
19	03281000	Middle Fork Kentucky River at Tallega	.03	.01	.01	<.01	<.01
20	03281500	South Fork Kentucky River at Booneville	.03	.01	<.01	<.01	<.01
16	03283500	Red River at Clay City	.01	.01	<.01	<.01	<.01
12	03284500	Kentucky River at Camp Nelson	1.13	.71	.03	.02	.01
15	03285000	Dix River near Danville	.03	.03	.01	.01	<.01
11	03287500	Kentucky River at Lock 4 at Frankfort	1.72	---	.03	---	---
14	03289300	South Elkhorn Creek near Midway	.01	---	.01	---	---
13	03291500	Eagle Creek at Glencoe	.16	.02	.04	.01	.03
22	03295400	Salt River at Glensboro	.01	.01	<.01	<.01	<.01
24	03300400	Beech Fork at Maud	.02	---	<.01	---	---
31	03308500	Green River at Munfordville	.61	.15	.04	.01	.03
32	03310300	Nolin River at White Mills	.08	.04	.02	.01	.01
33	03310400	Bacon Creek near Priceville	.02	.01	.02	.01	.01
30	03314500	Barren River at Bowling Green	.74	---	.04	---	---

Appendix 7. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load ¹		Yield ¹		
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow	Overland runoff
40	03404500	Cumberland River at Cumberland Falls	0.51	0.54	0.03	0.03	<0.01
38	03406500	Rockcastle River at Billows	.21	.09	.03	.02	.02
37	03410500	South Fork Cumberland River near Stearns	.26	.10	.03	.01	.02
42	03610200	Clarks River at Almo	.01	<.01	.01	<.01	.01
Manganese, total, in µg/L as Mn [01055]							
3	03209500	Levisa Fork at Pikeville	2.18	.25	.18	.02	.16
18	03280000	North Fork Kentucky River at Jackson	3.48	1.55	.32	.14	.18
19	03281000	Middle Fork Kentucky River at Tallega	1.10	.57	.21	.11	.10
20	03281500	South Fork Kentucky River at Booneville	1.41	.58	.19	.08	.12
16	03283500	Red River at Clay City	.57	.26	.16	.07	.09
12	03284500	Kentucky River at Camp Nelson	10.56	---	.24	---	---
15	03285000	Dix River near Danville	.28	---	.09	---	---
11	03287500	Kentucky River at Lock 4 at Frankfort	11.35	---	.21	---	---
14	03289300	South Elkhorn Creek near Midway	.24	.16	.22	.15	.07
13	03291500	Eagle Creek at Glencoe	1.92	1.61	.44	.37	.07
22	03295400	Salt River at Glensboro	.17	---	.10	---	---
24	03300400	Beech Fork at Maud	.69	.23	.16	.05	.11
31	03308500	Green River at Munfordville	2.51	1.59	.15	.09	.06
32	03310300	Nolin River at White Mills	.59	.43	.17	.12	.04
33	03310400	Bacon Creek near Priceville	.08	.06	.10	.07	.03
30	03314500	Barren River at Bowling Green	4.20	3.11	.23	.17	.06
40	03404500	Cumberland River at Cumberland Falls	10.18	8.66	.51	.44	.08
38	03406500	Rockcastle River at Billows	1.35	.59	.22	.10	.13
37	03410500	South Fork Cumberland River near Stearns	2.10	1.08	.22	.11	.11
42	03610200	Clarks River at Almo	.19	.05	.14	.04	.10
Mercury, total, in µg/L as Hg [71900]							
3	03209500	Levisa Fork at Pikeville	<.01	<.01	---	---	---
18	03280000	North Fork Kentucky River at Jackson	<.01	<.01	---	---	---
19	03281000	Middle Fork Kentucky River at Tallega	<.01	---	---	---	---
20	03281500	South Fork Kentucky River at Booneville	<.01	<.01	---	---	---
16	03283500	Red River at Clay City	<.01	---	---	---	---
12	03284500	Kentucky River at Camp Nelson	.01	---	---	---	---
15	03285000	Dix River near Danville	---	---	---	---	---

Appendix 7. Constituent mean annual load and yield at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; ---, not applicable; <, less than]

Map number (figure 1)	USGS station number	USGS station name	Mean annual load ¹		Yield ¹		Overland runoff
			Total flow (Tons per year (x 100))	Base flow	Total flow (Tons per year per square mile)	Base flow	
11	03287500	Kentucky River at Lock 4 at Frankfort	0.02	0.07	---	<0.01	---
14	03289300	South Elkhorn Creek near Midway	---	---	---	---	---
13	03291500	Eagle Creek at Glencoe	<.01	<.01	<.01	---	---
22	03295400	Salt River at Glensboro	---	---	---	---	---
24	03300400	Beech Fork at Maud	<.01	---	---	---	---
31	03308500	Green River at Munfordville	.01	<.01	<.01	---	---
32	03310300	Nolin River at White Mills	<.01	<.01	<.01	---	---
33	03310400	Bacon Creek near Priceville	<.01	<.01	<.01	---	---
30	03314500	Barren River at Bowling Green	.01	.01	<.01	---	---
40	03404500	Cumberland River at Cumberland Falls	.01	.01	<.01	<.01	---
38	03406500	Rockcastle River at Billows	<.01	<.01	---	---	---
37	03410500	South Fork Cumberland River near Stearns	<.01	<.01	---	---	---
42	03610200	Clarks River at Almo	.22	.18	.16	.13	0.03
Zinc, total, in µg/L as Zn [01092]							
3	03209500	Levisa Fork at Pikeville	.43	.42	.04	.03	<.01
18	03280000	North Fork Kentucky River at Jackson	1.12	.38	.10	.03	.07
19	03281000	Middle Fork Kentucky River at Tallega	.25	.17	.05	.03	.02
20	03281500	South Fork Kentucky River at Booneville	.26	---	.04	---	---
16	03283500	Red River at Clay City	.14	.04	.04	.01	.03
12	03284500	Kentucky River at Camp Nelson	4.70	---	.11	---	---
15	03285000	Dix River near Danville	.18	---	.06	---	---
11	03287500	Kentucky River at Lock 4 at Frankfort	4.08	---	.08	---	---
14	03289300	South Elkhorn Creek near Midway	.04	---	.04	---	---
13	03291500	Eagle Creek at Glencoe	.23	.24	.05	.05	<.01
22	03295400	Salt River at Glensboro	.05	.04	.03	.02	<.01
24	03300400	Beech Fork at Maud	.28	---	.06	---	---
31	03308500	Green River at Munfordville	.79	.87	.05	.05	<.01
32	03310300	Nolin River at White Mills	.12	.13	.03	.04	<.01
33	03310400	Bacon Creek near Priceville	.01	---	.02	---	---
30	03314500	Barren River at Bowling Green	.85	.57	.05	.03	.01
40	03404500	Cumberland River at Cumberland Falls	1.40	---	.07	---	---
38	03406500	Rockcastle River at Billows	.25	.10	.04	.02	.02
37	03410500	South Fork Cumberland River near Stearns	.38	.15	.04	.02	.02
42	03610200	Clarks River at Almo	---	---	---	---	---

¹Alternate rounding technique used in phase I analyses.

Appendix 8. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase I

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; mg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum ¹	Minimum ¹	Percent of samples in which values were less than or equal to those shown ¹					
							95	75	50 (median)	25	5	
Dissolved oxygen, in mg/L [00300]												
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	163	15.500	4.500	12.600	10.200	8.800	7.200	5.840	
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	14.200	5.600	13.140	11.300	9.100	7.600	6.615	
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	119	14.400	5.400	12.800	11.200	8.800	7.200	6.200	
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	121	14.400	4.800	12.990	11.000	9.000	7.050	6.010	
16	03283500	Red River at Clay City	10/85 - 9/94	104	14.400	4.800	13.250	11.375	9.100	7.125	6.100	
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	167	19.000	5.500	13.640	11.900	9.800	8.100	6.840	
15	03285000	Dix River near Danville	10/85 - 9/94	105	16.000	5.700	13.940	11.300	9.800	7.600	6.200	
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	178	15.700	4.200	13.105	11.600	10.000	7.975	6.500	
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	119	16.200	2.400	11.900	10.300	8.100	6.000	3.100	
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	181	18.000	3.400	14.580	12.200	9.300	7.700	6.310	
22	03295400	Salt River at Glensboro	2/89 - 9/94	75	16.100	4.200	13.060	11.100	9.200	7.100	5.580	
24	03300400	Beech Fork at Maud	4/84 - 9/94	120	16.500	3.100	13.100	10.700	8.400	6.325	4.900	
31	03308500	Green River at Munfordville	8/79 - 9/94	179	14.000	5.500	12.800	11.000	9.400	8.200	6.800	
32	03310300	Nolin River at White Mills	8/79 - 9/94	178	16.000	5.800	12.200	10.800	9.000	7.875	6.495	
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	164	13.600	6.100	12.875	11.175	9.600	8.000	7.200	
30	03314500	Barren River at Bowling Green	6/79 - 9/94	169	14.200	3.400	11.850	10.000	8.900	8.150	6.500	
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	180	15.800	3.500	12.800	10.600	9.000	8.000	6.205	
38	03406500	Rockcastle River at Billows	3/79 - 9/94	175	14.900	4.600	12.620	10.100	8.800	7.500	6.000	
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	179	15.200	4.800	13.200	10.500	9.000	7.700	6.100	
Biological oxygen demand, 5-day at 20 degrees Celsius, in mg/L [00310]												
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	80	3.800	.100	2.295	1.200	.700	.425	.100	
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	29	2.000	.100	1.950	1.150	.800	.600	.150	
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	29	2.300	--	*1.900	*.950	*.700	*.400	*.118	
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	29	3.200	.100	2.500	1.100	.800	.400	.100	
16	03283500	Red River at Clay City	10/85 - 9/94	13	1.100	.400	1.100	1.000	.700	.550	.400	
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	78	3.700	.000	2.610	1.500	1.050	.575	.100	
15	03285000	Dix River near Danville	10/85 - 9/94	13	2.600	.500	2.600	1.400	.900	.700	.500	
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	84	5.900	.000	3.375	1.575	1.050	.600	.100	
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	68	8.600	.100	7.455	2.375	1.550	1.025	.490	
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	91	3.200	.000	2.720	1.800	1.200	.700	.200	

Appendix 8. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; mg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum ¹	Minimum ¹	Percent of samples in which values were less than or equal to those shown ¹				
							95	75	50 (median)	25	5
22	03295400	Salt River at Glensboro	2/89 - 9/94	16	6.600	0.500	6.600	4.475	2.050	0.925	0.500
24	03300400	Beech Fork at Maud	4/84 - 9/94	29	3.500	.100	3.250	1.500	1.200	.400	.100
31	03308500	Green River at Munfordville	8/79 - 9/94	85	2.800	--	*2.470	*1.300	*.700	*.400	*.125
32	03310300	Nolin River at White Mills	8/79 - 9/94	82	3.400	.100	2.185	1.300	.800	.400	.200
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	71	2.900	--	*1.820	*1.000	*.700	*.400	*.100
30	03314500	Barren River at Bowling Green	6/79 - 9/94	83	6.000	.100	4.240	1.800	1.100	.700	.220
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	83	6.200	.100	2.100	1.100	.700	.400	.100
38	03406500	Rockcastle River at Billows	3/79 - 9/94	86	3.100	.100	2.200	1.100	.750	.400	.135
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	84	2.800	--	*2.175	*1.000	*.600	*.300	*.094
42	03610200	Clarks River at Almo	4/84 - 9/94	121	1.100	--	*.490	*.100	*.058	*.027	*.009
Alkalinity, total as CaCO₃, in mg/L [00410]											
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	182	136.000	8.000	104.850	84.250	68.000	51.000	35.000
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	165.000	35.000	128.850	100.250	77.000	56.000	43.000
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	122	83.000	15.000	68.850	54.250	38.500	28.000	17.000
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	123	91.000	13.000	69.600	50.000	37.000	23.000	16.000
16	03283500	Red River at Clay City	10/85 - 9/94	103	88.000	8.000	82.800	70.000	56.000	45.000	27.600
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	170	124.000	7.000	96.000	80.000	69.000	54.000	41.100
15	03285000	Dix River near Danville	10/85 - 9/94	106	310.000	23.000	171.650	138.000	125.000	103.000	72.800
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	178	172.000	8.000	111.050	91.000	78.000	66.000	50.800
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	124	373.000	35.000	191.750	166.000	150.500	130.250	95.500
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	181	387.000	27.000	213.400	168.000	142.000	121.000	80.100
22	03295400	Salt River at Glensboro	2/89 - 9/94	66	225.000	50.000	217.650	187.500	170.500	146.500	83.700
24	03300400	Beech Fork at Maud	4/84 - 9/94	123	363.000	43.000	216.200	184.000	158.000	132.000	84.600
31	03308500	Green River at Munfordville	8/79 - 9/94	175	179.000	42.000	130.400	114.000	94.000	76.000	54.000
32	03310300	Nolin River at White Mills	8/79 - 9/94	171	315.000	46.000	189.400	172.000	154.000	130.000	83.200
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	159	800.000	70.000	190.000	180.000	170.000	158.000	107.000
30	03314500	Barren River at Bowling Green	6/79 - 9/94	173	224.000	47.000	140.300	121.500	103.000	88.000	70.000
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	177	150.000	14.000	109.000	76.000	56.000	38.000	25.800
38	03406500	Rockcastle River at Billows	3/79 - 9/94	169	123.000	27.000	90.500	71.500	55.000	42.000	32.000
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	177	83.000	7.000	37.000	25.000	18.000	13.000	9.000
42	03610200	Clarks River at Almo	4/84 - 9/94	120	41.000	2.000	36.950	21.000	12.000	8.000	4.050

Appendix 8. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; mg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum ¹	Minimum ¹	Percent of samples in which values were less than or equal to those shown ¹					
							95	75	50 (median)	25	5	
Residue, total nonfilterable, in mg/L [00530]												
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	185	705.000	1.000	130.800	38.000	19.000	8.000	3.300	
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	121	883.000	1.000	238.600	57.500	22.000	10.000	2.100	
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	121	320.000	.000	102.500	32.500	12.000	6.000	1.100	
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	122	344.000	.000	62.100	18.000	8.000	4.000	1.000	
16	03283500	Red River at Clay City	10/85 - 9/94	101	276.000	1.000	145.000	35.500	12.000	7.000	2.000	
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	172	478.000	1.000	230.400	40.750	14.500	6.000	2.000	
15	03285000	Dix River near Danville	10/85 - 9/94	105	681.000	.000	74.000	15.000	8.000	4.000	1.000	
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	179	410.000	1.000	207.000	49.000	16.000	8.000	3.000	
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	121	286.000	.000	43.400	14.500	9.000	6.000	1.000	
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	184	1180.000	1.000	296.500	40.500	18.000	9.000	2.000	
22	03295400	Salt River at Glensboro	2/89 - 9/94	85	525.000	1.000	243.100	39.500	14.000	7.000	1.000	
24	03300400	Beech Fork at Maud	4/84 - 9/94	123	870.000	2.000	192.800	30.000	17.000	9.000	3.000	
31	03308500	Green River at Munfordville	8/79 - 9/94	175	380.000	1.000	134.600	38.000	22.000	12.000	3.000	
32	03310300	Nolin River at White Mills	8/79 - 9/94	171	334.000	1.000	141.000	33.000	18.000	10.000	3.000	
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	158	294.000	1.000	100.200	33.000	19.000	8.000	2.000	
30	03314500	Barren River at Bowling Green	6/79 - 9/94	175	907.000	1.000	99.800	31.000	20.000	13.000	4.000	
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	173	694.000	1.000	267.200	54.000	17.000	6.000	1.000	
38	03406500	Rockcastle River at Billows	3/79 - 9/94	174	291.000	--	*73.250	*12.000	*5.000	*2.000	*.541	
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	173	317.000	--	*108.400	*12.000	*5.000	*2.000	*.409	
42	03610200	Clarks River at Almo	4/84 - 9/94	120	2.000	.000	2.000	1.000	1.000	.000	.000	
Ammonia, total in mg/L as N [00610]												
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	181	1.240	--	*.172	*.060	*.028	*.013	*.004	
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	.164	--	*.093	*.046	*.030	*.019	*.010	
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	123	.299	--	*.059	*.013	*.004	*.002	*.000	
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	123	.091	--	*.060	*.035	*.025	*.018	*.011	
16	03283500	Red River at Clay City	10/85 - 9/94	104	.170	--	*.097	*.038	*.021	*.012	*.005	
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	172	17.000	--	*.257	*.080	*.027	*.009	*.002	
15	03285000	Dix River near Danville	10/85 - 9/94	106	.644	--	*.091	*.031	*.013	*.005	*.001	
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	181	1.760	--	*.230	*.084	*.037	*.017	*.005	
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	126	15.800	--	*9.933	*2.460	*.105	*.030	*.002	
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	182	.670	--	*.219	*.079	*.034	*.015	*.005	

Appendix 8. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; mg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum ¹	Minimum ¹	Percent of samples in which values were less than or equal to those shown ¹				
							95	75	50 (median)	25	5
22	03295400	Salt River at Glensboro	2/89 - 9/94	85	0.422	--	*0.158	*0.054	*0.028	*0.015	*0.006
24	03300400	Beech Fork at Maud	4/84 - 9/94	125	.282	--	*.088	*.042	*.023	*.013	*.006
31	03308500	Green River at Munfordville	8/79 - 9/94	174	.300	--	*.147	*.051	*.028	*.014	*.005
32	03310300	Nolin River at White Mills	8/79 - 9/94	171	.440	--	*.204	*.074	*.044	*.024	*.010
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	156	.309	--	*.180	*.056	*.035	*.019	*.008
30	03314500	Barren River at Bowling Green	6/79 - 9/94	168	.461	--	*.243	*.093	*.039	*.018	*.006
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	175	.290	--	*.160	*.059	*.035	*.019	*.008
38	03406500	Rockcastle River at Billows	3/79 - 9/94	174	1.520	--	*.197	*.052	*.026	*.012	*.003
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	172	.240	--	*.124	*.046	*.023	*.012	*.004
42	03610200	Clarks River at Almo	4/84 - 9/94	119	14.800	1.300	8.000	4.600	3.800	3.200	2.300
Ammonia and organic, total in mg/L as N [00625]											
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	179	1.500	--	*.630	*.390	*.230	*.130	*.059
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	123	1.400	--	*.592	*.350	*.230	*.150	*.063
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	123	.890	--	*.394	*.240	*.160	*.110	*.058
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	122	.880	--	*.443	*.262	*.150	*.070	*.030
16	03283500	Red River at Clay City	10/85 - 9/94	104	.940	--	*.650	*.330	*.240	*.120	*.058
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	172	2.200	.030	1.200	.557	.370	.240	.063
15	03285000	Dix River near Danville	10/85 - 9/94	104	2.500	.030	.837	.547	.360	.220	.050
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	180	1.800	.050	1.000	.588	.415	.272	.150
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	124	28.000	--	*12.000	*2.500	*.850	*.373	*.070
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	182	4.500	.050	1.485	.763	.610	.450	.213
22	03295400	Salt River at Glensboro	2/89 - 9/94	84	2.500	.050	1.925	.870	.570	.402	.127
24	03300400	Beech Fork at Maud	4/84 - 9/94	124	9.400	.050	1.275	.755	.535	.380	.147
31	03308500	Green River at Munfordville	8/79 - 9/94	172	1.500	.050	.690	.428	.310	.220	.087
32	03310300	Nolin River at White Mills	8/79 - 9/94	169	1.500	--	*1.050	*.520	*.340	*.190	*.062
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	154	1.300	--	*.970	*.382	*.240	*.108	*.043
30	03314500	Barren River at Bowling Green	6/79 - 9/94	163	1.500	.050	1.080	.530	.370	.230	.070
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	175	2.200	--	*.870	*.420	*.260	*.160	*.070
38	03406500	Rockcastle River at Billows	3/79 - 9/94	175	1.500	--	*.770	*.330	*.210	*.120	*.053
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	173	1.600	--	*.650	*.300	*.180	*.080	*.038
42	03610200	Clarks River at Almo	4/84 - 9/94	118	31.000	.500	16.050	13.250	12.000	10.000	7.990

Appendix 8. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase I—Continued

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; mg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum ¹	Minimum ¹	Percent of samples in which values were less than or equal to those shown ¹					
							95	75	50 (median)	25	5	
Nitrite plus nitrate, total in mg/L as N [00630]												
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	182	1.120	0.025	0.629	0.449	0.329	0.224	0.126	
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	121	1.020	.035	.664	.558	.440	.308	.097	
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	121	.490	.015	.388	.278	.202	.139	.053	
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	121	.650	.005	.523	.393	.251	.136	.035	
16	03283500	Red River at Clay City	10/85 - 9/94	103	.835	.005	.627	.367	.268	.179	.070	
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	171	3.000	.055	1.236	.660	.500	.369	.189	
15	03285000	Dix River near Danville	10/85 - 9/94	104	3.200	.010	2.508	1.585	.979	.615	.038	
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	178	3.100	.005	1.390	.882	.661	.404	.093	
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	121	13.300	.005	10.880	6.255	5.010	3.775	1.205	
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	181	1.660	.005	1.340	.701	.438	.040	.010	
22	03295400	Salt River at Glensboro	2/89 - 9/94	82	4.820	.011	3.819	1.963	1.270	.686	.073	
24	03300400	Beech Fork at Maud	4/84 - 9/94	122	2.300	.005	1.942	1.070	.521	.125	.022	
31	03308500	Green River at Munfordville	8/79 - 9/94	171	1.900	.120	1.344	1.010	.730	.550	.303	
32	03310300	Nolin River at White Mills	8/79 - 9/94	168	14.700	.267	3.822	3.150	2.650	2.105	1.239	
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	155	2.150	.040	1.952	1.450	1.080	.700	.318	
30	03314500	Barren River at Bowling Green	6/79 - 9/94	165	5.440	.158	1.928	1.465	1.080	.590	.253	
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	173	1.300	.005	.569	.410	.325	.201	.029	
38	03406500	Rockcastle River at Billows	3/79 - 9/94	171	.840	.009	.681	.490	.340	.200	.056	
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	171	.694	.005	.307	.210	.135	.066	.020	
42	03610200	Clarks River at Almo	4/84 - 9/94	32	6.700	.100	6.440	2.875	1.955	1.200	.165	
Phosphorus, total in mg/L as P [00665]												
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	181	.660	--	*.105	*.040	*.021	*.010	*.004	
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	.236	--	*.123	*.039	*.022	*.013	*.004	
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	124	.222	--	*.069	*.027	*.015	*.008	*.003	
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	124	.220	--	*.060	*.019	*.012	*.005	*.002	
16	03283500	Red River at Clay City	10/85 - 9/94	105	.164	--	*.087	*.049	*.027	*.016	*.007	
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	172	.840	.005	.311	.113	.065	.040	.019	
15	03285000	Dix River near Danville	10/85 - 9/94	105	.960	.005	.249	.115	.067	.043	.013	
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	181	1.030	.008	.261	.128	.083	.057	.030	
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	126	4.800	.021	3.553	1.878	1.165	.773	.455	
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	183	1.780	.005	.533	.159	.089	.053	.021	

Appendix 8. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; mg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum ¹	Minimum ¹	Percent of samples in which values were less than or equal to those shown ¹				
							95	75	50 (median)	25	5
22	03295400	Salt River at Glensboro	2/89 - 9/94	85	1.780	0.061	1.230	0.474	0.351	0.238	0.152
24	03300400	Beech Fork at Maud	4/84 - 9/94	124	1.620	.007	.682	.235	.160	.109	.062
31	03308500	Green River at Munfordville	8/79 - 9/94	171	1.330	.004	.154	.069	.048	.033	.013
32	03310300	Nolin River at White Mills	8/79 - 9/94	168	.566	.005	.379	.181	.110	.069	.024
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	153	6.750	--	*.171	*.045	*.028	*.015	*.004
30	03314500	Barren River at Bowling Green	6/79 - 9/94	166	.670	.005	.105	.050	.034	.024	.009
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	174	.278	--	*.167	*.059	*.029	*.014	*.005
38	03406500	Rockcastle River at Billows	3/79 - 9/94	173	.260	--	*.084	*.031	*.015	*.008	*.002
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	173	.235	--	*.078	*.031	*.013	*.005	*.002
42	03610200	Clarks River at Almo	4/84 - 9/94	119	6.090	1.210	3.430	2.990	2.690	2.440	1.880
Carbon organic, total in mg/L as C [00680]											
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	135	26.000	.300	4.360	2.300	1.900	1.600	1.200
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	120	34.000	.300	5.960	3.000	2.250	1.600	1.105
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	121	21.000	.600	4.590	2.500	2.000	1.450	1.000
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	121	18.000	.400	4.530	2.600	1.600	1.100	.710
16	03283500	Red River at Clay City	10/85 - 9/94	101	25.000	.760	9.460	3.850	2.400	1.550	1.110
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	129	25.000	.500	6.650	3.500	2.800	1.950	1.300
15	03285000	Dix River near Danville	10/85 - 9/94	105	33.000	1.500	8.200	5.250	3.800	2.350	1.600
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	129	8.700	1.300	5.700	3.750	3.000	2.100	1.500
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	118	42.000	.600	18.100	7.025	4.700	2.800	1.800
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	128	27.000	.100	13.100	8.075	6.350	4.600	3.145
22	03295400	Salt River at Glensboro	2/89 - 9/94	77	17.000	1.500	12.000	6.900	5.300	3.600	2.080
24	03300400	Beech Fork at Maud	4/84 - 9/94	121	41.000	2.100	11.900	6.450	5.500	3.800	2.400
31	03308500	Green River at Munfordville	8/79 - 9/94	129	20.000	1.100	6.050	3.300	2.500	2.100	1.600
32	03310300	Nolin River at White Mills	8/79 - 9/94	128	15.000	.800	6.390	3.400	2.400	1.800	1.245
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	126	9.400	.100	5.495	2.500	1.800	1.300	.935
30	03314500	Barren River at Bowling Green	6/79 - 9/94	130	11.000	1.000	4.900	3.125	2.400	1.900	1.400
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	124	11.000	.100	5.175	3.100	2.350	1.525	1.100
38	03406500	Rockcastle River at Billows	3/79 - 9/94	123	9.800	.010	5.920	3.000	2.000	1.400	.900
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	122	6.800	.600	4.185	2.525	1.800	1.375	.800
42	03610200	Clarks River at Almo	4/84 - 9/94	119	13000.000	6.000	2400.000	820.000	450.000	300.000	140.000

Appendix 8. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase I—Continued

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; mg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum ¹	Minimum ¹	Percent of samples in which values were less than or equal to those shown ¹				
							95	75	50 (median)	25	5
Calcium, recoverable, total in mg/L as Ca [00916]											
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	133	79.000	12.000	57.300	47.000	40.000	34.500	24.700
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	120	120.000	18.000	84.950	65.000	49.500	37.250	28.000
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	119	45.000	5.800	33.000	27.000	22.000	16.000	11.000
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	119	45.000	6.500	35.000	25.000	19.000	15.000	10.000
16	03283500	Red River at Clay City	10/85 - 9/94	104	50.000	2.800	34.000	28.000	23.500	19.000	12.000
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	128	63.000	17.000	56.000	43.000	34.000	28.000	21.450
15	03285000	Dix River near Danville	10/85 - 9/94	105	98.000	17.000	53.000	46.000	41.000	36.000	27.300
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	128	65.000	17.000	54.550	43.750	37.000	32.000	22.900
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	119	100.000	17.000	91.000	80.000	73.000	65.000	50.000
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	126	95.000	17.000	81.000	69.000	56.000	46.000	33.000
22	03295400	Salt River at Glensboro	2/89 - 9/94	62	120.000	22.000	97.550	79.250	70.500	62.500	37.600
24	03300400	Beech Fork at Maud	4/84 - 9/94	118	130.000	16.000	83.050	70.000	57.000	47.000	32.000
31	03308500	Green River at Munfordville	8/79 - 9/94	129	64.000	13.000	50.500	44.000	37.000	29.000	23.000
32	03310300	Nolin River at White Mills	8/79 - 9/94	126	94.000	20.000	77.000	69.000	61.500	51.000	33.050
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	123	94.000	27.000	75.000	68.000	65.000	52.000	36.200
30	03314500	Barren River at Bowling Green	6/79 - 9/94	127	61.000	10.000	55.000	47.000	41.000	34.000	27.000
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	125	70.000	6.700	42.000	32.000	27.000	21.000	14.300
38	03406500	Rockcastle River at Billows	3/79 - 9/94	124	44.000	9.400	39.000	31.000	24.000	20.000	13.000
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	124	43.000	4.800	24.000	16.000	12.000	9.225	6.000
42	03610200	Clarks River at Almo	4/84 - 9/94	120	400.000	1.000	167.500	79.750	61.500	42.000	16.000
Magnesium, total in mg/L as Mg [00927]											
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	134	29.000	4.300	25.250	20.000	18.000	15.000	11.000
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	121	67.000	11.000	46.000	33.500	25.000	20.000	15.000
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	121	51.000	4.300	14.000	11.000	9.800	7.650	5.530
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	119	20.000	3.800	16.000	12.000	8.700	7.200	5.200
16	03283500	Red River at Clay City	10/85 - 9/94	104	7.100	2.500	5.800	5.000	4.250	3.425	2.925
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	129	25.000	5.900	19.000	15.000	11.000	9.200	7.750
15	03285000	Dix River near Danville	10/85 - 9/94	106	17.000	6.000	15.000	13.000	11.000	9.600	7.800
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	129	20.000	4.500	16.000	12.000	9.900	8.550	7.250
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	121	16.000	3.700	13.000	9.700	7.500	5.800	4.210
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	128	23.000	3.600	16.550	11.000	8.950	7.300	4.980

Appendix 8. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; mg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum ¹	Minimum ¹	Percent of samples in which values were less than or equal to those shown ¹				
							95	75	50 (median)	25	5
22	03295400	Salt River at Glensboro	2/89 - 9/94	66	12.000	4.200	11.000	8.525	7.300	6.175	4.705
24	03300400	Beech Fork at Maud	4/84 - 9/94	122	24.000	2.800	15.850	12.000	9.100	7.600	5.160
31	03308500	Green River at Munfordville	8/79 - 9/94	130	55.000	2.700	8.590	7.325	6.300	5.275	4.100
32	03310300	Nolin River at White Mills	8/79 - 9/94	129	10.000	2.500	9.450	7.900	6.600	5.450	3.850
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	128	7.700	2.000	5.755	5.100	4.500	3.625	2.800
30	03314500	Barren River at Bowling Green	6/79 - 9/94	128	13.000	2.800	9.800	8.500	7.500	6.300	4.800
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	126	24.000	5.300	21.000	17.000	13.500	10.000	8.800
38	03406500	Rockcastle River at Billows	3/79 - 9/94	125	14.000	2.800	10.000	7.900	6.200	5.050	3.630
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	125	12.000	1.900	9.240	6.200	4.900	3.850	2.700
42	03610200	Clarks River at Almo	4/84 - 9/94	120	77.000	--	*1.000	*.075	*.012	*.002	*.000
Sodium, recoverable, total in mg/L as Na [00929]											
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	135	56.000	9.000	50.000	40.000	29.000	20.000	12.000
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	46.000	4.600	33.850	21.000	14.000	9.650	5.960
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	122	69.000	2.200	16.000	9.925	6.450	4.775	2.530
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	122	69.000	1.600	37.000	15.000	8.450	5.875	3.115
16	03283500	Red River at Clay City	10/85 - 9/94	105	35.000	1.600	15.000	7.850	5.000	3.450	2.330
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	130	76.000	1.800	40.250	13.250	9.350	5.500	3.355
15	03285000	Dix River near Danville	10/85 - 9/94	107	20.000	.600	14.400	5.300	4.100	3.100	2.340
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	130	45.000	2.200	25.450	12.000	7.650	4.800	3.355
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	122	77.000	4.000	67.550	42.250	26.000	16.000	7.690
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	129	15.000	1.200	8.600	5.950	4.800	3.400	2.250
22	03295400	Salt River at Glensboro	2/89 - 9/94	67	42.000	1.300	31.400	14.000	7.000	4.600	2.840
24	03300400	Beech Fork at Maud	4/84 - 9/94	123	7.300	1.300	6.080	4.400	3.200	2.700	1.700
31	03308500	Green River at Munfordville	8/79 - 9/94	131	55.000	1.400	25.000	13.000	6.200	3.600	2.360
32	03310300	Nolin River at White Mills	8/79 - 9/94	130	72.000	1.300	45.450	20.250	10.500	5.825	3.085
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	128	14.000	.600	4.375	2.900	2.200	1.800	1.100
30	03314500	Barren River at Bowling Green	6/79 - 9/94	129	12.000	1.000	7.900	4.800	3.500	2.800	2.050
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	127	63.000	3.800	47.600	24.000	16.000	11.000	5.920
38	03406500	Rockcastle River at Billows	3/79 - 9/94	126	27.000	1.100	8.825	5.200	3.500	2.600	1.535
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	126	19.000	.300	16.000	7.800	4.400	2.800	1.400
42	03610200	Clarks River at Almo	4/84 - 9/94	118	14.000	--	*8.000	*3.000	*2.000	*.835	*.351

Appendix 8. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; mg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum ¹	Minimum ¹	Percent of samples in which values were less than or equal to those shown ¹					
							95	75	50 (median)	25	5	
Potassium, total, in mg/L as K [00937]												
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	134	4.200	1.500	3.900	3.300	2.850	2.400	1.900	
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	121	7.900	1.800	5.980	4.800	3.400	2.600	2.100	
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	121	6.900	.700	3.190	2.500	2.000	1.600	1.300	
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	119	5.300	1.000	4.400	2.700	2.000	1.500	1.100	
16	03283500	Red River at Clay City	10/85 - 9/94	102	3.800	.900	3.185	2.425	1.850	1.300	1.100	
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	129	5.100	1.300	4.500	3.400	2.600	1.950	1.500	
15	03285000	Dix River near Danville	10/85 - 9/94	106	8.600	1.000	6.465	4.600	2.500	1.700	1.335	
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	129	5.000	1.300	4.050	3.000	2.500	2.000	1.500	
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	121	12.000	1.400	9.980	6.850	4.500	2.850	2.000	
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	128	9.100	1.400	5.255	3.800	3.000	2.225	1.645	
22	03295400	Salt River at Glensboro	2/89 - 9/94	67	7.600	1.400	6.240	5.100	2.900	2.200	1.500	
24	03300400	Beech Fork at Maud	4/84 - 9/94	122	8.300	1.300	5.970	4.325	3.050	2.300	1.615	
31	03308500	Green River at Munfordville	8/79 - 9/94	130	5.900	1.000	3.300	2.300	1.900	1.500	1.200	
32	03310300	Nolin River at White Mills	8/79 - 9/94	129	7.400	1.100	4.000	2.900	2.100	1.500	1.200	
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	124	6.200	.700	3.700	1.975	1.350	1.025	.800	
30	03314500	Barren River at Bowling Green	6/79 - 9/94	127	10.000	1.000	4.120	2.500	2.000	1.600	1.200	
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	125	5.100	1.400	4.400	3.200	2.400	1.900	1.500	
38	03406500	Rockcastle River at Billows	3/79 - 9/94	124	4.100	.900	3.400	2.600	1.750	1.400	1.100	
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	122	3.300	.700	2.500	1.900	1.350	1.100	.900	
Chloride, dissolved, in mg/L as Cl [00940]												
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	185	40.000	1.000	29.700	18.000	11.000	7.500	4.130	
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	123	100.000	.100	17.000	10.000	6.700	4.500	2.320	
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	123	35.000	.100	9.900	6.700	4.900	3.100	1.320	
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	123	120.000	.100	85.600	16.000	7.800	4.400	2.020	
16	03283500	Red River at Clay City	10/85 - 9/94	104	76.000	.100	34.500	15.750	7.400	4.800	2.450	
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	173	170.000	.100	66.300	21.500	11.000	6.200	2.670	
15	03285000	Dix River near Danville	10/85 - 9/94	108	53.000	1.000	23.550	8.600	6.100	4.550	2.300	
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	181	71.000	.200	38.900	17.000	9.700	6.450	3.100	
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	124	490.000	4.000	94.250	51.750	34.000	23.500	6.700	
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	182	63.000	.100	14.000	8.500	6.400	4.675	2.230	
22	03295400	Salt River at Glensboro	2/89 - 9/94	68	45.000	.100	34.400	13.750	9.450	6.600	4.300	

Appendix 8. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; mg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum ¹	Minimum ¹	Percent of samples in which values were less than or equal to those shown ¹				
							95	75	50 (median)	25	5
24	03300400	Beech Fork at Maud	4/84 - 9/94	125	39.000	--	*8.970	*6.550	*5.000	*3.800	*1.583
31	03308500	Green River at Munfordville	8/79 - 9/94	180	75.000	0.100	42.900	21.000	12.000	7.000	3.710
32	03310300	Nolin River at White Mills	8/79 - 9/94	174	98.000	1.000	66.250	27.000	13.000	8.400	4.450
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	160	18.000	.100	10.950	6.250	4.750	3.725	1.705
30	03314500	Barren River at Bowling Green	6/79 - 9/94	174	98.000	.100	14.000	9.150	7.300	5.900	3.000
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	176	52.000	.100	15.000	6.675	4.800	3.300	.778
38	03406500	Rockcastle River at Billows	3/79 - 9/94	172	21.000	.100	9.805	5.200	3.800	2.925	.662
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	176	150.000	.050	13.000	6.075	3.700	2.500	.785
42	03610200	Clarks River at Almo	4/84 - 9/94	121	5.100	.150	3.790	2.850	2.200	1.600	.501
Sulfate, dissolved, in mg/L as SO₄ [00946]											
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	184	450.000	13.000	197.500	150.000	125.000	100.000	56.750
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	470.000	46.000	308.500	200.000	150.000	120.000	85.600
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	121	280.000	22.000	89.900	70.000	56.000	48.000	36.100
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	123	160.000	20.000	110.000	74.000	55.000	44.000	30.400
16	03283500	Red River at Clay City	10/85 - 9/94	101	120.000	5.000	37.600	18.000	15.000	13.000	9.540
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	172	150.000	11.000	110.000	77.000	55.500	44.000	31.300
15	03285000	Dix River near Danville	10/85 - 9/94	104	70.000	9.700	37.750	27.000	23.000	19.000	15.000
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	180	130.000	20.000	87.950	59.750	46.000	37.000	28.000
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	123	130.000	6.600	98.400	66.000	49.000	36.000	24.000
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	181	180.000	17.000	86.900	55.500	40.000	30.500	21.100
22	03295400	Salt River at Glensboro	2/89 - 9/94	66	82.000	9.100	68.600	51.000	39.000	28.000	15.750
24	03300400	Beech Fork at Maud	4/84 - 9/94	123	290.000	6.700	61.000	40.000	29.000	20.000	14.200
31	03308500	Green River at Munfordville	8/79 - 9/94	179	110.000	5.000	27.000	18.000	15.000	13.000	9.000
32	03310300	Nolin River at White Mills	8/79 - 9/94	175	71.000	2.200	25.000	16.000	11.000	8.100	4.800
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	161	46.000	--	*15.900	*7.500	*5.400	*3.521	*1.501
30	03314500	Barren River at Bowling Green	6/79 - 9/94	175	53.000	5.000	29.200	21.000	17.000	13.000	8.180
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	175	170.000	10.000	140.000	100.000	77.000	59.000	35.800
38	03406500	Rockcastle River at Billows	3/79 - 9/94	173	130.000	7.600	63.000	38.000	29.000	23.000	16.000
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	174	100.000	6.700	84.500	48.250	36.000	29.000	17.000
42	03610200	Clarks River at Almo	4/84 - 9/94	121	2.200	.120	1.300	.805	.620	.470	.252

Appendix 8. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; mg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum ¹	Minimum ¹	Percent of samples in which values were less than or equal to those shown ¹					
							95	75	50 (median)	25	5	
Arsenic, total, in µg/L as As [01002]												
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	175	55.000	--	*6.000	*2.000	*1.000	*0.388	*0.130	
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	120	13.000	--	*4.950	*2.000	*.780	*.372	*.130	
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	120	13.000	--	*5.950	*1.000	*.366	*.128	*.030	
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	119	21.000	--	*5.000	*1.383	*.519	*.189	*.046	
16	03283500	Red River at Clay City	10/85 - 9/94	104	13.000	--	*6.000	*2.000	*.962	*.401	*.140	
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	162	12.000	--	*4.850	*2.000	*1.000	*.614	*.281	
15	03285000	Dix River near Danville	10/85 - 9/94	104	18.000	--	*8.000	*2.000	*.700	*.280	*.079	
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	169	19.000	--	*6.500	*2.000	*1.000	*.634	*.254	
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	118	11.000	--	*6.050	*2.000	*.996	*.425	*.147	
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	173	65.000	--	*6.000	*2.000	*1.000	*.526	*.187	
22	03295400	Salt River at Glensboro	2/89 - 9/94	63	10.000	--	*6.800	*2.000	*.925	*.448	*.154	
24	03300400	Beech Fork at Maud	4/84 - 9/94	119	11.000	--	*8.000	*2.000	*.688	*.279	*.071	
31	03308500	Green River at Munfordville	8/79 - 9/94	164	29.000	--	*6.000	*2.000	*.999	*.372	*.127	
32	03310300	Nolin River at White Mills	8/79 - 9/94	161	13.000	--	*6.000	*1.406	*.875	*.365	*.128	
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	147	11.000	--	*4.600	*1.512	*.838	*.374	*.135	
30	03314500	Barren River at Bowling Green	6/79 - 9/94	158	14.000	--	*6.050	*2.000	*1.000	*.542	*.208	
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	170	43.000	--	*8.900	*2.000	*1.000	*.375	*.106	
38	03406500	Rockcastle River at Billows	3/79 - 9/94	166	14.000	--	*7.000	*2.000	*.982	*.349	*.108	
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	168	39.000	--	*7.550	*1.183	*1.000	*.295	*.085	
42	03610200	Clarks River at Almo	4/84 - 9/94	120	280.000	--	*14.900	*3.750	*2.000	*.518	*.128	
Barium, total, in µg/L as Ba [01007]												
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	143	200.000	8.000	100.000	70.000	50.000	40.000	12.000	
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	500.000	1.000	90.000	60.000	40.000	30.000	11.500	
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	122	200.000	1.000	80.000	50.000	40.000	30.000	20.000	
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	121	300.000	2.000	90.000	50.000	40.000	20.000	10.000	
16	03283500	Red River at Clay City	10/85 - 9/94	104	400.000	10.000	175.000	70.000	40.000	30.000	20.000	
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	140	300.000	1.000	100.000	70.000	50.000	30.000	10.500	
15	03285000	Dix River near Danville	10/85 - 9/94	106	300.000	1.000	60.000	40.000	30.000	20.000	8.000	
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	141	500.000	1.000	100.000	60.000	40.000	30.000	20.000	
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	122	300.000	1.000	78.500	30.000	20.000	20.000	6.150	
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	141	400.000	1.000	80.000	30.000	20.000	20.000	4.000	

Appendix 8. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; mg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum ¹	Minimum ¹	Percent of samples in which values were less than or equal to those shown ¹				
							95	75	50 (median)	25	5
22	03295400	Salt River at Glensboro	2/89 - 9/94	66	400.000	3.000	76.500	40.000	30.000	20.000	10.000
24	03300400	Beech Fork at Maud	4/84 - 9/94	123	400.000	1.000	70.000	30.000	20.000	20.000	3.600
31	03308500	Green River at Munfordville	8/79 - 9/94	142	100.000	4.000	60.000	42.500	30.000	20.000	10.000
32	03310300	Nolin River at White Mills	8/79 - 9/94	141	200.000	9.000	100.000	80.000	50.000	40.000	20.000
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	135	200.000	4.000	90.000	50.000	40.000	30.000	10.000
30	03314500	Barren River at Bowling Green	6/79 - 9/94	138	200.000	1.000	90.500	42.500	30.000	30.000	9.950
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	136	500.000	1.000	100.000	50.000	40.000	30.000	8.850
38	03406500	Rockcastle River at Billows	3/79 - 9/94	135	100.000	1.000	60.000	30.000	20.000	20.000	3.800
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	135	100.000	4.000	80.000	40.000	30.000	20.000	8.000
42	03610200	Clarks River at Almo	4/84 - 9/94	119	900.000	.000	400.000	300.000	200.000	200.000	100.000
Cadmium, total, in µg/L as Cd [01027]											
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	162	25.000	--	*4.700	*.365	*.081	*.018	*.002
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	1.000	--	*1.000	*1.000	*1.000	*1.000	*1.000
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	121	1.000	--	*1.000	*1.000	*1.000	*1.000	*1.000
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	122	1.000	--	*1.000	*1.000	*1.000	*1.000	*1.000
16	03283500	Red River at Clay City	10/85 - 9/94	104	--	--	--	--	--	--	--
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	161	32.000	--	*6.900	*.436	*.078	*.014	*.001
15	03285000	Dix River near Danville	10/85 - 9/94	105	--	--	--	--	--	--	--
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	163	32.000	--	*8.200	*.377	*.062	*.010	*.001
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	122	1.000	--	*1.000	*1.000	*1.000	*1.000	*1.000
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	162	52.000	--	*5.700	*.387	*.073	*.013	*.001
22	03295400	Salt River at Glensboro	2/89 - 9/94	65	--	--	--	--	--	--	--
24	03300400	Beech Fork at Maud	4/84 - 9/94	123	--	--	--	--	--	--	--
31	03308500	Green River at Munfordville	8/79 - 9/94	164	18.000	--	*2.750	*.378	*.109	*.030	*.005
32	03310300	Nolin River at White Mills	8/79 - 9/94	163	15.000	--	*5.000	*.555	*.151	*.041	*.006
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	149	22.000	--	*4.000	*.213	*.037	*.006	*.001
30	03314500	Barren River at Bowling Green	6/79 - 9/94	161	71.000	--	*5.000	*.545	*.128	*.029	*.004
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	155	20.000	--	*4.000	*.436	*.121	*.033	*.005
38	03406500	Rockcastle River at Billows	3/79 - 9/94	156	17.000	--	*4.150	*.460	*.118	*.030	*.004
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	157	20.000	--	*6.000	*.318	*.061	*.012	*.001
42	03610200	Clarks River at Almo	4/84 - 9/94	118	330.000	--	*57.400	*21.250	*15.000	*8.000	*2.095

Appendix 8. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; mg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum ¹	Minimum ¹	Percent of samples in which values were less than or equal to those shown ¹					
							95	75	50 (median)	25	5	
Chromium, total, in µg/L as Cr [01034]												
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	181	26.000	--	*6.000	*3.000	*1.135	*0.716	*0.284	
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	121	13.000	--	*7.900	*3.000	*2.000	*.880	*.371	
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	121	16.000	--	*5.900	*3.000	*1.000	*.773	*.333	
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	120	12.000	--	*5.000	*3.000	*1.000	*.640	*.264	
16	03283500	Red River at Clay City	10/85 - 9/94	104	9.000	--	*5.750	*3.000	*1.571	*.822	*.351	
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	169	12.000	--	*8.000	*3.500	*2.000	*1.000	*.380	
15	03285000	Dix River near Danville	10/85 - 9/94	105	63.000	--	*8.000	*3.000	*1.000	*.556	*.170	
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	177	20.000	--	*8.000	*4.000	*2.000	*1.000	*.449	
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	119	9.000	--	*7.000	*4.000	*2.000	*1.000	*.453	
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	180	20.000	--	*10.000	*4.000	*2.000	*1.000	*.326	
22	03295400	Salt River at Glensboro	2/89 - 9/94	63	14.000	--	*7.600	*3.000	*1.000	*.502	*.172	
24	03300400	Beech Fork at Maud	4/84 - 9/94	122	19.000	--	*9.000	*3.250	*2.000	*.740	*.271	
31	03308500	Green River at Munfordville	8/79 - 9/94	171	10.000	--	*6.000	*3.000	*2.000	*.932	*.367	
32	03310300	Nolin River at White Mills	8/79 - 9/94	169	31.000	--	*8.000	*4.000	*2.000	*1.000	*.328	
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	155	21.000	--	*7.200	*3.000	*1.000	*.725	*.281	
30	03314500	Barren River at Bowling Green	6/79 - 9/94	164	26.000	--	*6.000	*3.000	*2.000	*1.000	*.422	
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	174	18.000	--	*8.000	*4.000	*2.000	*1.000	*.316	
38	03406500	Rockcastle River at Billows	3/79 - 9/94	174	10.000	--	*5.000	*2.000	*1.000	*.787	*.377	
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	174	13.000	--	*6.000	*2.000	*1.014	*.738	*.311	
42	03610200	Clarks River at Almo	4/84 - 9/94	118	--	--	--	--	--	--	--	
Copper, total, in µg/L as Cu [01042]												
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	182	40.000	--	*16.850	*6.000	*3.000	*1.000	*.464	
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	41.000	--	*13.850	*4.000	*3.000	*2.000	*.585	
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	121	19.000	--	*8.000	*4.000	*2.000	*1.000	*.465	
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	121	21.000	--	*11.900	*3.000	*2.000	*1.000	*.303	
16	03283500	Red River at Clay City	10/85 - 9/94	104	23.000	--	*10.000	*3.750	*2.000	*1.000	*.359	
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	170	29.000	--	*13.450	*6.000	*4.000	*2.000	*.726	
15	03285000	Dix River near Danville	10/85 - 9/94	106	28.000	--	*11.300	*4.000	*2.000	*1.000	*.410	
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	178	210.000	--	*25.250	*7.000	*3.000	*2.000	*.547	
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	122	26.000	--	*10.850	*5.000	*3.000	*2.000	*.778	
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	181	39.000	--	*17.800	*6.000	*4.000	*2.000	*.810	

Appendix 8. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; mg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum ¹	Minimum ¹	Percent of samples in which values were less than or equal to those shown ¹				
							95	75	50 (median)	25	5
22	03295400	Salt River at Glensboro	2/89 - 9/94	65	25.000	--	*16.000	*3.000	*2.000	*1.000	*0.464
24	03300400	Beech Fork at Maud	4/84 - 9/94	123	23.000	--	*11.000	*4.000	*2.000	*1.000	*.397
31	03308500	Green River at Munfordville	8/79 - 9/94	171	24.000	--	*13.200	*4.000	*2.000	*1.000	*.476
32	03310300	Nolin River at White Mills	8/79 - 9/94	170	170.000	--	*16.450	*4.000	*2.000	*1.000	*.383
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	156	47.000	--	*11.300	*4.000	*2.000	*1.000	*.330
30	03314500	Barren River at Bowling Green	6/79 - 9/94	165	260.000	--	*38.500	*9.500	*4.000	*2.000	*.639
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	175	60.000	--	*21.200	*6.000	*4.000	*2.000	*.869
38	03406500	Rockcastle River at Billows	3/79 - 9/94	175	230.000	--	*23.000	*6.000	*3.000	*2.000	*.508
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	174	98.000	--	*15.250	*5.000	*2.000	*1.000	*.455
42	03610200	Clarks River at Almo	4/84 - 9/94	108	36.000	2.000	34.100	28.000	21.000	11.250	4.450
Iron, total, in µg/L as Fe [01045]											
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	161	7700.000	20.000	3659.998	1150.000	610.000	335.000	201.000
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	119	43000.000	60.000	6100.000	1700.000	750.000	420.000	240.000
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	120	49000.000	70.000	4564.998	1400.000	720.000	382.500	180.000
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	119	49000.000	2.000	2400.000	830.000	410.000	300.000	130.000
16	03283500	Red River at Clay City	10/85 - 9/94	104	37000.000	220.000	5825.000	1800.000	870.000	635.000	385.000
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	160	17000.000	1.000	8995.002	1900.000	585.000	230.000	70.000
15	03285000	Dix River near Danville	10/85 - 9/94	106	15000.000	10.000	2294.998	630.000	310.000	180.000	60.000
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	161	13000.000	10.000	8479.986	1850.000	530.000	205.000	80.000
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	118	9800.000	90.000	1415.001	480.000	330.000	250.000	159.500
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	160	30000.000	5.000	9000.000	1900.000	775.000	342.500	120.500
22	03295400	Salt River at Glensboro	2/89 - 9/94	65	17000.000	20.000	6269.997	1300.000	600.000	305.000	105.000
24	03300400	Beech Fork at Maud	4/84 - 9/94	121	25000.000	90.000	9839.996	1500.000	760.000	400.000	212.000
31	03308500	Green River at Munfordville	8/79 - 9/94	161	8200.000	40.000	2490.000	940.000	460.000	220.000	130.000
32	03310300	Nolin River at White Mills	8/79 - 9/94	161	11000.000	10.000	4489.999	760.000	420.000	250.000	130.000
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	147	7700.000	40.000	2840.012	730.000	450.000	280.000	134.000
30	03314500	Barren River at Bowling Green	6/79 - 9/94	160	7300.000	60.000	1995.001	637.500	390.000	240.000	110.000
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	154	28000.000	10.000	4775.000	1625.000	580.000	220.000	57.500
38	03406500	Rockcastle River at Billows	3/79 - 9/94	154	6800.000	10.000	2575.000	312.500	180.000	110.000	47.500
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	155	11000.000	20.000	2420.001	710.000	440.000	290.000	168.000
42	03610200	Clarks River at Almo	4/84 - 9/94	121	30.000	2.000	30.000	20.000	20.000	9.000	3.000

Appendix 8. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase I—Continued

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; mg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum ¹	Minimum ¹	Percent of samples in which values were less than or equal to those shown ¹					
							95	75	50 (median)	25	5	
Lead, total, in µg/L as Pb [01051]												
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	181	410.000	--	*117.800	*8.500	*3.000	*0.780	*0.109	
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	72.000	--	*9.850	*3.000	*1.325	*.564	*.164	
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	122	48.000	--	*6.850	*3.000	*1.032	*.541	*.184	
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	121	18.000	--	*8.900	*2.000	*.822	*.325	*.088	
16	03283500	Red River at Clay City	10/85 - 9/94	104	18.000	--	*5.000	*2.000	*.990	*.444	*.162	
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	170	470.000	--	*150.000	*10.000	*4.000	*1.047	*.202	
15	03285000	Dix River near Danville	10/85 - 9/94	105	78.000	--	*11.100	*2.000	*.661	*.182	*.036	
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	178	390.000	--	*102.000	*10.000	*2.000	*.729	*.092	
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	122	18.000	--	*9.850	*3.250	*2.000	*1.000	*.399	
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	181	310.000	--	*149.000	*12.000	*2.000	*.386	*.038	
22	03295400	Salt River at Glensboro	2/89 - 9/94	65	24.000	--	*13.600	*2.000	*.540	*.178	*.037	
24	03300400	Beech Fork at Maud	4/84 - 9/94	123	24.000	--	*6.600	*2.000	*1.000	*.482	*.168	
31	03308500	Green River at Munfordville	8/79 - 9/94	171	360.000	--	*53.600	*6.000	*1.237	*.311	*.041	
32	03310300	Nolin River at White Mills	8/79 - 9/94	170	150.000	--	*55.900	*7.250	*2.000	*.381	*.055	
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	155	430.000	--	*55.000	*4.000	*1.000	*.239	*.029	
30	03314500	Barren River at Bowling Green	6/79 - 9/94	165	1500.000	--	*130.000	*12.000	*4.000	*1.145	*.207	
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	176	170.000	--	*101.500	*8.000	*3.000	*1.000	*.134	
38	03406500	Rockcastle River at Billows	3/79 - 9/94	174	240.000	--	*72.000	*10.000	*4.000	*1.000	*.199	
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	175	270.000	--	*120.000	*8.000	*2.000	*.441	*.056	
42	03610200	Clarks River at Almo	4/84 - 9/94	120	8.000	6.000	8.000	7.000	7.000	7.000	6.000	
Manganese, total, in µg/L as Mn [01055]												
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	162	990.000	1.000	247.000	140.000	100.000	72.250	43.300	
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	121	820.000	16.000	449.000	165.000	110.000	82.500	40.600	
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	121	470.000	11.000	190.000	130.000	92.000	61.000	46.300	
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	120	420.000	4.000	229.500	137.500	96.000	61.250	37.050	
16	03283500	Red River at Clay City	10/85 - 9/94	105	270.000	26.000	197.000	120.000	83.000	60.000	35.300	
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	161	790.000	15.000	347.000	130.000	80.000	56.500	30.200	
15	03285000	Dix River near Danville	10/85 - 9/94	107	880.000	5.000	118.000	50.000	30.000	15.000	8.800	
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	162	790.000	10.000	444.000	95.500	60.000	40.000	20.150	
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	121	1200.000	10.000	378.000	150.000	100.000	54.000	28.000	
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	164	1300.000	10.000	465.000	110.000	62.000	40.000	18.500	

Appendix 8. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; mg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum ¹	Minimum ¹	Percent of samples in which values were less than or equal to those shown ¹				
							95	75	50 (median)	25	5
22	03295400	Salt River at Glensboro	2/89 - 9/94	66	700.000	6.000	182.500	62.750	40.000	20.000	10.000
24	03300400	Beech Fork at Maud	4/84 - 9/94	122	1600.000	20.000	331.000	120.000	80.000	40.000	25.150
31	03308500	Green River at Munfordville	8/79 - 9/94	163	300.000	10.000	150.000	86.000	51.000	36.000	18.000
32	03310300	Nolin River at White Mills	8/79 - 9/94	162	520.000	10.000	160.000	88.500	60.000	40.000	18.300
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	147	360.000	2.000	202.000	110.000	80.000	57.000	25.600
30	03314500	Barren River at Bowling Green	6/79 - 9/94	161	2200.000	22.000	290.000	170.000	110.000	83.000	50.000
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	155	890.000	10.000	394.001	190.000	110.000	60.000	20.800
38	03406500	Rockcastle River at Billows	3/79 - 9/94	156	510.000	1.000	193.000	90.000	60.000	40.000	21.700
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	156	410.000	15.000	230.000	130.000	100.000	70.000	34.850
42	03610200	Clarks River at Almo	4/84 - 9/94	122	360.000	52.000	250.000	202.500	170.000	137.500	101.500
Zinc, total, in µg/L as Zn [01092]											
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	162	310.000	1.000	60.000	20.000	10.000	7.000	2.000
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	119	390.000	--	*100.000	*30.000	*10.000	*6.000	*1.703
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	119	320.000	--	*80.000	*20.000	*10.000	*5.000	*1.445
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	118	320.000	--	*50.500	*20.000	*8.500	*4.000	*.947
16	03283500	Red River at Clay City	10/85 - 9/94	100	270.000	--	*60.000	*20.000	*10.000	*5.000	*1.427
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	159	1500.000	--	*110.000	*30.000	*20.000	*8.000	*1.827
15	03285000	Dix River near Danville	10/85 - 9/94	105	390.000	--	*114.000	*20.000	*9.000	*4.000	*.848
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	160	450.000	--	*89.500	*30.000	*20.000	*6.250	*1.707
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	119	290.000	1.000	70.000	30.000	20.000	10.000	4.000
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	160	460.000	--	*70.000	*20.000	*10.000	*7.000	*1.474
22	03295400	Salt River at Glensboro	2/89 - 9/94	63	100.000	--	*48.000	*20.000	*6.000	*3.000	*.705
24	03300400	Beech Fork at Maud	4/84 - 9/94	122	350.000	--	*148.000	*20.000	*9.500	*4.000	*.906
31	03308500	Green River at Munfordville	8/79 - 9/94	164	760.000	--	*77.500	*20.000	*10.000	*5.000	*1.000
32	03310300	Nolin River at White Mills	8/79 - 9/94	162	320.000	--	*50.000	*20.000	*10.000	*5.000	*1.455
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	147	320.000	--	*70.000	*20.000	*6.000	*3.000	*.842
30	03314500	Barren River at Bowling Green	6/79 - 9/94	159	520.000	--	*60.000	*20.000	*10.000	*8.000	*2.000
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	153	12000.000	--	*83.000	*20.000	*10.000	*8.000	*1.724
38	03406500	Rockcastle River at Billows	3/79 - 9/94	155	310.000	--	*60.000	*20.000	*10.000	*5.000	*1.343
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	155	930.000	--	*62.000	*20.000	*10.000	*6.000	*1.531
42	03610200	Clarks River at Almo	4/84 - 9/94	63	.000	--	--	--	--	--	--

Appendix 8. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase I—Continued

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; mg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum ¹	Minimum ¹	Percent of samples in which values were less than or equal to those shown ¹				
							95	75	50 (median)	25	5
Aluminum, total, in µg/L as Al [01105]											
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	135	3100.000	5.000	2020.001	500.000	270.000	130.000	50.000
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	122	20000.000	2.000	3495.004	920.000	345.000	145.000	53.000
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	122	12000.000	1.000	3865.005	635.000	245.000	120.000	21.500
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	121	16000.000	1.000	1535.996	350.000	150.000	80.000	30.000
16	03283500	Red River at Clay City	10/85 - 9/94	104	9700.000	2.000	2675.000	797.500	275.000	110.000	45.000
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	130	8300.000	1.000	5189.999	952.500	330.000	137.500	40.000
15	03285000	Dix River near Danville	10/85 - 9/94	106	6300.000	3.000	1429.999	505.000	205.000	90.000	30.000
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	130	7700.000	1.000	4769.998	962.500	290.000	130.000	30.000
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	121	9200.000	6.000	1290.000	380.000	230.000	120.000	40.000
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	130	19000.000	1.000	7369.998	1325.000	590.000	277.500	60.000
22	03295400	Salt River at Glensboro	2/89 - 9/94	66	11000.000	30.000	3890.001	897.500	355.000	177.500	53.500
24	03300400	Beech Fork at Maud	4/84 - 9/94	123	14000.000	5.000	3500.000	890.000	500.000	230.000	70.000
31	03308500	Green River at Munfordville	8/79 - 9/94	131	5800.000	1.000	2079.996	620.000	320.000	140.000	60.000
32	03310300	Nolin River at White Mills	8/79 - 9/94	130	9800.000	2.000	3369.998	602.500	330.000	177.500	70.000
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	129	7200.000	3.000	3300.000	595.000	310.000	120.000	20.000
30	03314500	Barren River at Bowling Green	6/79 - 9/94	129	7600.000	4.000	1650.000	565.000	330.000	185.000	105.000
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	126	13000.000	9.000	2724.997	720.000	195.000	70.000	23.500
38	03406500	Rockcastle River at Billows	3/79 - 9/94	127	3800.000	1.000	1300.000	190.000	90.000	50.000	10.000
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	126	2400.000	6.000	1165.000	230.000	130.000	90.000	30.000
42	03610200	Clarks River at Almo	4/84 - 9/94	118	16000.000	1.000	2510.000	1100.000	820.000	660.000	508.500
Fecal-coliform bacteria, colonies per 100 mL [31616]											
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	169	30000.000	5.000	3800.000	760.000	420.000	230.000	50.000
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	126	12000.000	8.000	5400.000	1400.000	625.000	287.500	43.500
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	126	3000.000	2.000	786.000	240.000	100.000	39.000	10.000
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	126	6000.000	2.000	1365.000	180.000	75.000	30.000	6.000
16	03283500	Red River at Clay City	10/85 - 9/94	107	10000.000	2.000	1860.000	410.000	160.000	60.000	10.000
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	171	9700.000	--	*2064.996	*215.000	*41.000	*10.000	*2.000
15	03285000	Dix River near Danville	10/85 - 9/94	106	6400.000	2.000	3084.995	350.000	125.000	40.000	6.700
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	169	4000.000	3.000	1150.000	225.000	70.000	17.000	6.000
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	122	17000.000	10.000	4000.000	572.500	205.000	60.000	15.150
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	174	33000.000	--	*2370.001	*315.000	*77.000	*25.000	*1.579

Appendix 8. Descriptive statistics at selected ambient monitoring stations in Kentucky, phase I—*Continued*

[USGS, U.S. Geological Survey; N, number of observations; mg/L, milligrams per liter; --, insufficient data to make determination; *, value is estimated by using a log-probability regression to simulate the values of data below detection limit; mg/L, micrograms per liter; mL, milliliters]

Map number (figure 1)	USGS station number	USGS station name	Period of record	N	Maximum ¹	Minimum ¹	Percent of samples in which values were less than or equal to those shown ¹				
							95	75	50 (median)	25	5
22	03295400	Salt River at Glensboro	2/89 - 9/94	66	13000.000	10.000	8550.010	602.500	225.000	70.000	19.600
24	03300400	Beech Fork at Maud	4/84 - 9/94	126	16000.000	2.000	3824.997	447.500	130.000	57.500	10.000
31	03308500	Green River at Munfordville	8/79 - 9/94	158	16000.000	2.000	4200.000	292.500	120.000	43.750	9.950
32	03310300	Nolin River at White Mills	8/79 - 9/94	157	14000.000	4.000	4930.008	465.000	190.000	78.000	36.300
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	156	12000.000	2.000	5544.998	280.000	135.000	65.750	15.100
30	03314500	Barren River at Bowling Green	6/79 - 9/94	141	4800.000	.000	788.999	140.000	59.000	24.500	4.100
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	166	2300.000	--	*889.500	*215.000	*47.000	*10.000	*1.791
38	03406500	Rockcastle River at Billows	3/79 - 9/94	165	2300.000	--	*322.001	*60.000	*24.000	*10.000	*1.968
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	167	7700.000	--	*304.000	*44.000	*16.000	*4.185	*.790
42	03610200	Clarks River at Almo	4/84 - 9/94	121	530.000	1.000	56.200	23.000	14.000	8.500	4.000
Mercury, total, in µg/L as Hg [71900]											
3	03209500	Levisa Fork at Pikeville	3/79 - 9/95	178	15.000	--	*1.500	*.300	*.064	*.016	*.002
18	03280000	North Fork Kentucky River at Jackson	4/84 - 9/94	119	4.700	--	*.400	*.100	*.025	*.007	*.001
19	03281000	Middle Fork Kentucky River at Tallega	4/84 - 9/94	117	.600	--	*.300	*.100	*.035	*.016	*.005
20	03281500	South Fork Kentucky River at Booneville	4/84 - 9/94	118	6.000	--	*.300	*.100	*.020	*.006	*.001
16	03283500	Red River at Clay City	10/85 - 9/94	102	3.600	--	*.285	*.100	*.029	*.011	*.003
12	03284500	Kentucky River at Camp Nelson	1/80 - 9/94	166	6.700	--	*1.300	*.225	*.065	*.018	*.003
15	03285000	Dix River near Danville	10/85 - 9/94	102	.300	--	*.200	*.100	*.051	*.030	*.014
11	03287500	Kentucky River at Lock 4 at Frankfort	3/79 - 9/94	173	110.000	--	*1.860	*.300	*.100	*.018	*.002
14	03289300	South Elkhorn Creek near Midway	4/84 - 9/94	116	3.900	--	*.300	*.100	*.037	*.013	*.003
13	03291500	Eagle Creek at Glencoe	3/79 - 9/94	173	6.000	--	*2.380	*.350	*.100	*.023	*.003
22	03295400	Salt River at Glensboro	2/89 - 9/94	63	--	--	--	--	--	--	--
24	03300400	Beech Fork at Maud	4/84 - 9/94	118	5.100	--	*.300	*.100	*.030	*.011	*.003
31	03308500	Green River at Munfordville	8/79 - 9/94	166	31.000	--	*1.900	*.225	*.059	*.013	*.001
32	03310300	Nolin River at White Mills	8/79 - 9/94	162	5.400	--	*1.485	*.200	*.100	*.019	*.003
33	03310400	Bacon Creek near Priceville	7/79 - 9/94	147	7.400	--	*2.140	*.200	*.044	*.010	*.001
30	03314500	Barren River at Bowling Green	6/79 - 9/94	161	7.000	--	*2.090	*.200	*.054	*.013	*.002
40	03404500	Cumberland River at Cumberland Falls	1/79 - 9/94	169	4.600	--	*2.000	*.300	*.100	*.028	*.005
38	03406500	Rockcastle River at Billows	3/79 - 9/94	163	4.400	--	*2.500	*.400	*.089	*.026	*.004
37	03410500	South Fork Cumberland River near Stearns	3/79 - 9/94	168	32.000	--	*1.710	*.375	*.100	*.023	*.004
42	03610200	Clarks River at Almo	4/84 - 9/94	16	250.000	62.000	250.000	167.500	145.000	132.500	62.000

¹Alternate rounding technique used in phase I analyses.

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