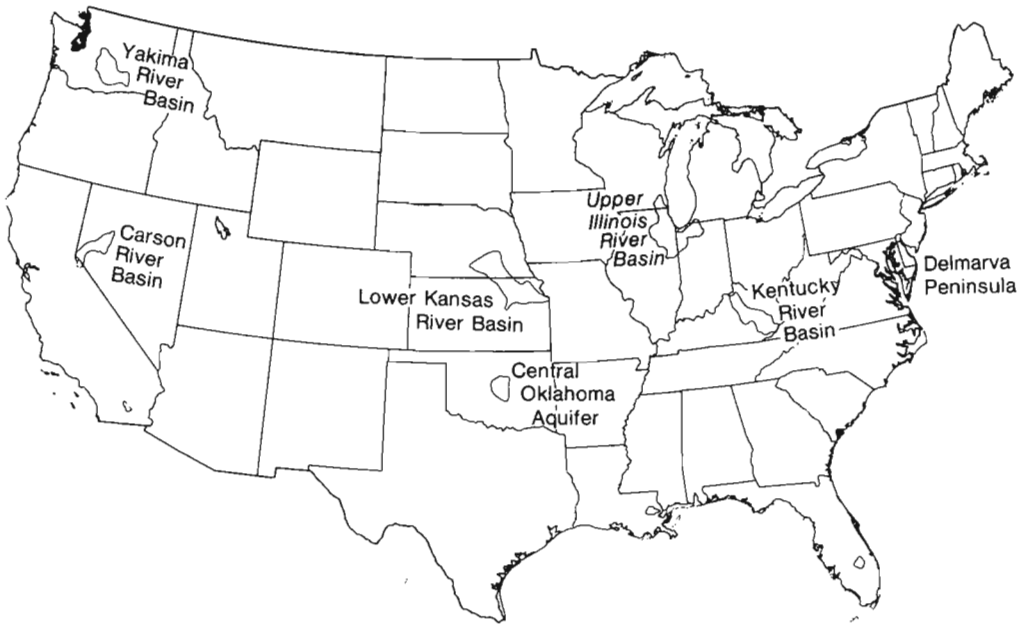
SURFACE-WATER-QUALITY ASSESSMENT OF THE UPPER ILLINOIS RIVER BASIN IN ILLINOIS, INDIANA, AND WISCONSIN: DATA ON AGRICULTURAL ORGANIC COMPOUNDS, NUTRIENTS, AND SEDIMENT IN WATER, 1988-90

by Daniel J. Sullivan and Paul J. Terrio



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CONVERSION FACTORS AND ABBREVIATED WATER-QUALITY UNITS

Multiply	By	To obtain
mile (mi)	1.609	kilometer
square mile (mi^2)	2.590	square kilometer
cubic foot per second (ft^3/s)	0.02832	cubic meter per second

In this report, certain units of measurement, by convention, are reported as International System units of measurement--

Multiply	By	To obtain
liter (L)	0.2642	gallon
liter (L)	33.82	ounce, fluid
milliliter (mL)	0.03382	ounce, fluid
millimeter (mm)	0.03937	inch
micrometer (µm)	0.00003937	inch
milligram per liter (mg/L)	1.0	part per million
microgram per liter (µg/L)	1.0	part per billion

degree Celsius (°C) $°F = 1.8 \times °C + 32$ degree Fahrenheit (°F)

SURFACE-WATER-QUALITY ASSESSMENT OF THE UPPER ILLINOIS RIVER BASIN IN ILLINOIS, INDIANA, AND WISCONSIN: DATA ON AGRICULTURAL ORGANIC COMPOUNDS, NUTRIENTS, AND SEDIMENT IN WATER, 1988-90

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ABSTRACT

This report describes the sampling design and methods and presents data collected to determine the distribution of agricultural organic compounds, nutrients, and sediment in selected areas of the upper Illinois River Basin as part of the National Water-Quality Assessment program. Four stations in small watersheds (two urban, two agricultural) were sampled in 1988 and 1989. Seventeen stations in an agricultural subbasin were sampled in 1990. Samples were collected before, during, and after runoff events from late spring to midsummer to determine concentrations of agricultural organic compounds in surface waters resulting from storm runoff, as well as background concentrations. Over 200 water samples were analyzed for agricultural organic compound, nutrient, and suspended-sediment concentrations. The agricultural organic compounds included triazine and chlorophenoxy-acid herbicides, and organophosphorus insecticides.

INTRODUCTION

In 1986, the U.S. Geological Survey (USGS) began a National Water-Quality Assessment (NAWQA) program to (1) provide nationally consistent descriptions of the current status of water quality for a large, diverse, and geographically distributed part of the Nation's water resources; (2) define trends in water quality that have occurred in recent decades and provide a baseline for evaluating future trends in water quality; and (3) identify and describe the relations of both the status and the trends in water quality to relevant natural factors and the history of land use and land- and waste-management practices (Cohen and others, 1988; Hirsch and others, 1988). This information will be useful for planning future management actions and examining their likely consequences.

The NAWQA program selected seven pilot-project areas to test and modify, if necessary, assessment concepts and approaches in preparation for possible full implementation of the program. The seven pilot studies include four surface-water and three ground-water areas. The surface-water pilot-study areas are the Yakima River Basin in Washington; the lower Kansas River Basin in Kansas and Nebraska; the upper Illinois River Basin (UIRB) in Illinois, Indiana, and Wisconsin; and the Kentucky River Basin in Kentucky.

One of the specific objectives of the NAWQA program is to determine the distribution of agricultural organic compounds in the water of the Nation's riverine systems. The production and use of these compounds has substantially increased over the past 50 years, and the result has been a gradual decrease in the quality of the Nation's surface water (Smith and others, 1988). The UIRB contains large areas of intensive row-crop agriculture as well as urban areas where pesticides are used by municipalities and homeowners.

The data contained in this report are analytical results of surface-water samples collected to determine concentrations of agricultural organic compounds used as herbicides or insecticides in selected areas of the UIRB. These pesticides are used in row-crop agriculture, as well as for home and municipal applications, to help control harmful vegetation and insects. Information on the quantities of various pesticides used in the UIRB is available in Pike and others (1990) and Taylor and others (1989). Samples were collected before, during, and after storm events that were of sufficient intensity to produce runoff to surface waters.

Purpose and Scope

This report presents the analytical results and documents the methods used in the collection, handling, and laboratory analyses of water samples used to determine the distribution of agricultural organic compounds in selected areas of the UIRB from April 1988 through August 1990. Data presented for agricultural organic compounds include concentrations of triazine and chlorophenoxy-acid herbicides, and organophosphorus insecticides for samples collected in 1988 and 1989, and concentrations of triazine herbicides for samples collected in 1990. Data presented for related constituents include nutrients and suspended-sediment concentrations. In addition, quality-assurance and quality-control (QA/QC) measures are documented.

Description of the Study Area

The UIRB drains 10,949 mi^2 of northeastern Illinois, northwestern Indiana, southeastern Wisconsin, and southwestern Michigan (fig. 1). The percentages of total basin drainage for those States are 62, 28, 10, and less than 1, respectively.

The basin is drained by three principal rivers--the Kankakee, Fox, and Des Plaines Rivers. The Kankakee River and its major tributary, the Iroquois River, drain 47.2 percent of the study area; the Fox River drains 24.3 percent; and the Des Plaines River drains 19.3 percent. The Kankakee and Des Plaines Rivers join near Morris, Ill., to form the Illinois River. The Fox River discharges into the Illinois River at the southwestern boundary of the UIRB near Ottawa, Ill. The Illinois River, downstream from the study area, flows west and southwest 240 mi to the Mississippi River.

The UIRB lies in what was formerly a prairie plain. Today, two types of land use are dominant in the UIRB: the urban and industrial area of metropolitan Chicago and rural areas of row-crop agriculture typical of the Midwest.

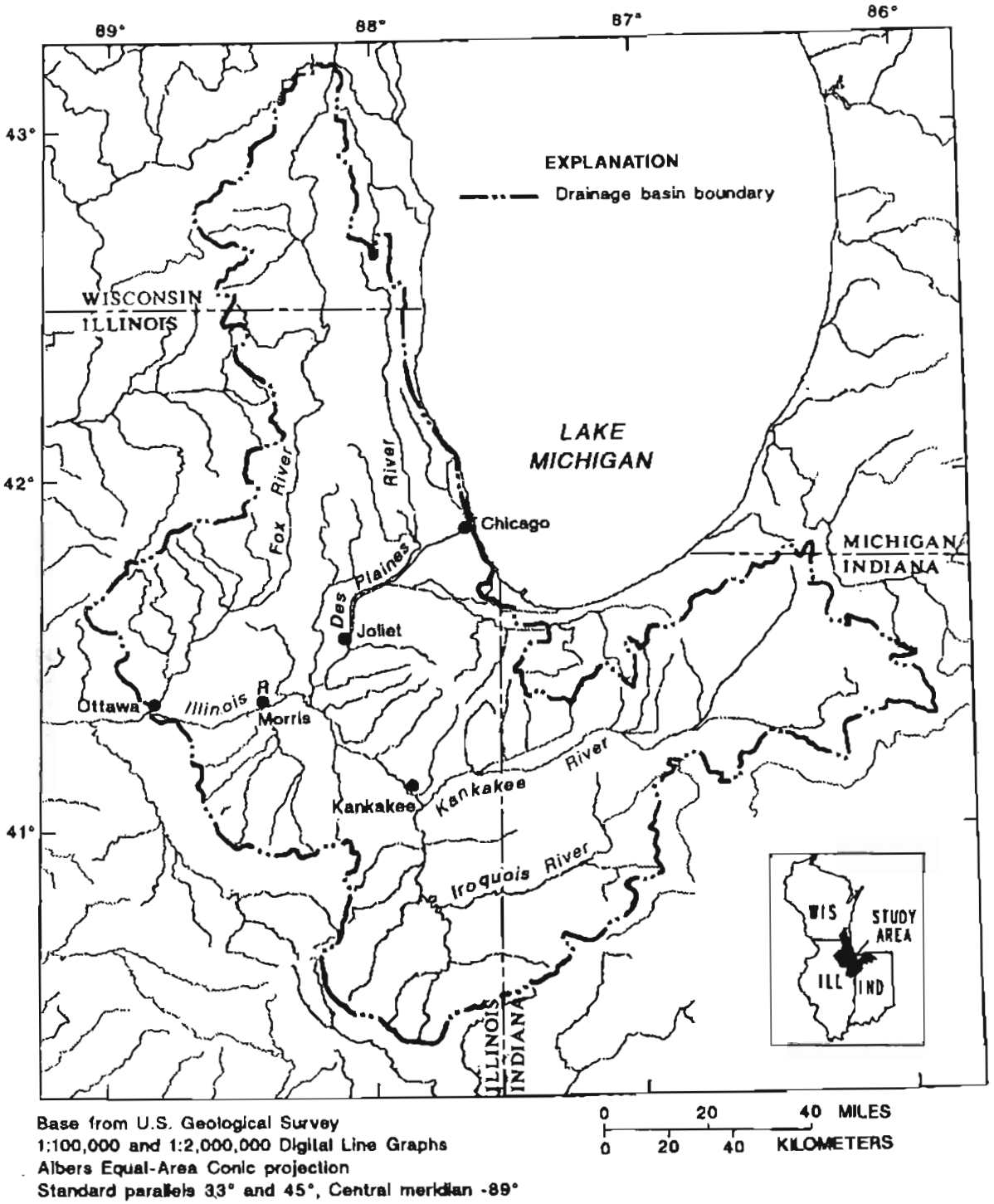

Figure 1.--Location of the upper Illinois River Basin.

Agriculture accounts for about 75 percent of the land use in the basin. Corn is the principal crop, followed by soybeans. Urban and industrial areas account for about 18 percent of the land use in the basin. The remaining 7 percent of land use is forest and pasture lands. The population in the study area is approximately 7 million, of which 6 million live in the Des Plaines River Basin. A more detailed description of the UIRB is presented in Mades (1987, p. 4-15).

SAMPLING DESIGN

The Illinois Environmental Protection Agency (IEPA) has been monitoring pesticide concentrations in streams in the UIRB for several years. The sampling program described in this report was designed to compliment the IEPA programs. The IEPA monitoring programs include fixed-interval sampling at three sites on large rivers with sample analysis for herbicides and organophosphorus insecticides. Ongoing sampling efforts in the UIRB are described by the IEPA (1990, p. 111-115).

Overview of Sampling Design

The NAWQA sampling program for pesticides in surface water was designed to target areas where and times when the largest concentrations of pesticides were expected. Instream concentrations of agricultural organic compounds applied to the land as agricultural and lawn pesticides generally are largest during storm events that cause overland runoff. Most pesticide sampling in the UIRB by other agencies does not target runoff events but is usually done on a fixed schedule. Studies also have shown that pesticide concentrations are often larger in smaller streams (Baker, 1988). Pesticide sampling in urban areas often has been neglected. Based on the estimated use of pesticides in urban areas by Taylor and others (1989), streams in urban areas have the potential for large concentrations of pesticides from storm runoff. The UIRB NAWQA pilot project addressed these considerations by (1) sampling during storm events sufficient to produce runoff, (2) sampling at sites in small watersheds, and (3) sampling at sites in both agricultural and urban areas.

Sampling for agricultural organic compounds was conducted in two phases. Phase I was designed to determine which compounds were detected most often in the UIRB. Phase II was designed to determine the spatial distribution of the compounds identified in Phase I for a selected part of the study area (the Kankakee River Basin). Phase I sampling took place in 1988 and 1989, and Phase II sampling took place in 1990.

Phase I sampling stations were selected by several criteria. Two stations were in areas with homogeneous urban land use and two stations were in areas with homogeneous agricultural land use, in order to be able to relate observed pesticide concentrations to land use. The sampling stations also were in small watersheds where concentrations of the targeted compounds were expected to be large. The stations were all at USGS streamflow-gaging stations. These gaging

stations furnished real-time information on streamflow conditions, which helped to achieve representative sampling of the entire runoff hydrograph. These stations also furnished discharge data for each sample collected. Selected information on the Phase I sampling stations is provided in table 1, and the location of each station is shown in figure 2.

Phase II sampling stations were selected to determine the spatial distribution of pesticides throughout the Kankakee River Basin. The Kankakee River Basin is composed of two major rivers--the Kankakee and Iroquois Rivers. Seventeen stations were sampled in the Kankakee River Basin, six of which were in the Iroquois River subbasin. The stations in the Iroquois River subbasin included five stations on the Iroquois River main stem and one on a major tributary. In this report, these stations will be referred to as "Iroqouis River stations." The remaining 11 stations will be referred to as "Kankakee River stations." All stations were at USGS streamflow-gaging stations. One station, the Iroquois River near Chebanse, was sampled essentially continuously throughout the late spring/midsummer period using an automatic sampler. Selected information on each of the Phase II stations is provided in table 2, and the location of each station is shown in figure 3.

The Kankakee River stations were sampled at or near the peak of the runoff event. Low-flow samples were collected to provide information on background concentrations present in the streams. Data were collected to describe other streamflow and drainage-basin characteristics that may or may not affect the observed concentrations of pesticides. These data included instantaneous discharge at the time the sample was collected, notation of the limb of the hydrograph (rising, peak, or falling) when the sample was collected, the time and magnitude of peak discharge of the event, and suspended-sediment and nitrite plus nitrate nitrogen concentrations. Table 3 presents the date, time, and peak discharge at each station for runoff events that were sampled.

The Iroquois River stations were sampled at intervals throughout entire runoff events, providing a nearly continuous record of pesticide concentrations. From these data, loads at each station can be calculated, and relations of loads and peak concentrations to the streamflow and drainage-basin characteristics can be evaluated. These data also can be used to determine relations between discharge, suspended-sediment concentration, nitrite plus nitrate nitrogen concentration, and pesticide concentrations.

In a concurrent but separate study, over 200 samples were collected by an automatic sampler at the Iroquois River near Chebanse, Ill., for analysis of triazine compounds. These samples were collected as part of a U.S. Geological Survey study of herbicides in water of the midwestern United States (Thurman and others, 1992). These samples were collected at regular intervals during low and medium flows and at an increased frequency during runoff events. Because of the similarities between collection efforts, these data can be used with data collected at the other Iroquois River stations.

Table 1.--Selected information for stations included in Phase I sampling for agricultural organic compounds in the upper Illinois River Basin, 1988-89

[mi^2, square miles; ft^3/s, cubic feet per second]

Station number	Station name and latitude and longitude	Drainage area (mi^2)	River mile above mouth	Years of discharge record (through 1989)
05523000	Bice Ditch near South Marion, Ind. Lat 40°52'00" Long 87°05'32"	21.8	2.3	40
05525500	Sugar Creek at Milford, Ill. Lat 40°37'50" Long 87°43'25"	446	23.9	41
05530990	Salt Creek at Rolling Meadows, Ill. Lat 42°03'37" Long 88°00'59"	30.5	35.6	16
05532000	Addison Creek at Bellwood, Ill. Lat 41°52'48" Long 87°52'07"	17.9	3.2	38

Station number	Mean annual discharge (ft^3/s) (period of record)	Mean annual discharge (ft^3/s)		Maximum instantaneous discharge (ft^3/s)		Minimum daily discharge (ft^3/s)	
		1988	1989	1988	1989	1988	1989
05523000	17.4	13.1	12.1	279	526	0.11	0.23
05525500	362	215	251	2,650	2,200	2.8	3.4
05530990	29.6	28.9	24.1	535	1,110	.37	.82
05532000	15.5	16.9	18.6	370	541	1.9	3.4

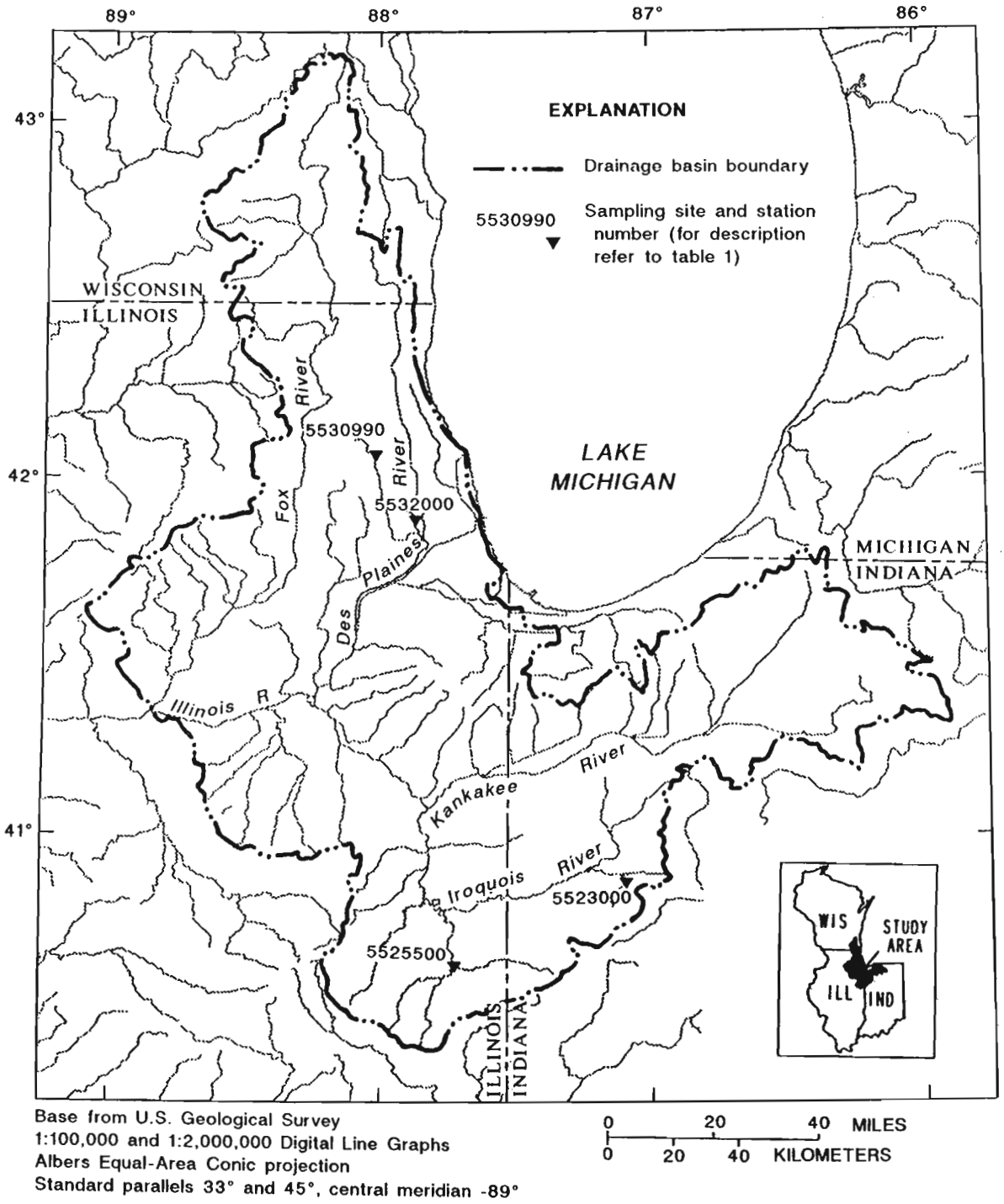

Figure 2.--Location of stations included in Phase I sampling in the upper Illinois River Basin.

Table 2.--Selected information for stations included in Phase II sampling for agricultural organic compounds in the Kankakee River Basin, 1990

[mi^2, square miles; ft^3/s, cubic feet per second]

Station number	Station name and latitude and longitude	Drainage area (mi^2)	River mile above mouth	Years of discharge record (through 1990)	Mean annual discharge (ft^3/s) (period of record)	1990 Water year		
						Mean annual discharge (ft^3/s)	Maximum instantaneous discharge (ft^3/s)	Minimum daily discharge (ft^3/s)
	Kankakee River Stations							
05515000	Kankakee River near North Liberty, Ind. Lat 41°33'50" Long 86°29'50"	174	126.9	39	154	194	694	108
05515500	Kankakee River at Davis, Ind. Lat 41°24'00" Long 86°42'04"	537	110.9	66	508	624	1,430	294
05516500	Yellow River at Plymouth, Ind. Lat 41°20'25" Long 86°18'16"	294	40.3	42	259	286	2,460	34
05517000	Yellow River at Knox, Ind. Lat 41°18'10" Long 86°37'14"	435	11.6	47	398	443	2,440	103
05517500	Kankakee River at Dunns Bridge, Ind. Lat 41°13'17" Long 86°57'52"	1,352	90.8	42	1,341	1,679	4,250	638
05517530	Kankakee River near Kouts, Ind. Lat 41°15'14" Long 87°02'02"	1,376	86.7	16	1,480	1,723	4,360	597
05517890	Cobb Ditch near Kouts, Ind. Lat 41°20'19" Long 87°04'30"	30.3	1.6	22	33.1	37.8	1,070	11
05518000	Kankakee River at Shelby, Ind. Lat 41°10'58" Long 87°20'33"	1,779	67.9	68	1,636	2,189	5,150	794
05519000	Singleton Ditch at Schneider, Ind. Lat 41°12'44" Long 87°26'44"	123	10.1	42	110	149	1,300	37
05520500	Kankakee River at Momence, Ill. Lat 41°09'36" Long 87°40'07"	2,294	47.9	75	1,998	2,750	7,050	895
05527500	Kankakee River near Wilmington, Ill. Lat 41°20'48" Long 88°11'11"	5,150	5.7	57	4,381	6,506	36,700	1,700
	Iroquois River Stations							
05521000	Iroquois River at Rosebud, Ind. Lat 41°02'00" Long 87°10'49"	35.6	93.5	42	27.3	36.5	444	8.6
05522500	Iroquois River at Rensselaer, Ind. Lat 40°56'00" Long 87°07'44"	203	84.9	42	170	238	1,890	44
05524500	Iroquois River near Foresman, Ind. Lat 40°52'14" Long 87°18'24"	449	72.7	41	387	504	4,260	88
05525000	Iroquois River at Iroquois, Ill. Lat 40°49'25" Long 87°34'55"	686	50.4	46	559	712	6,400	90
05525500	Sugar Creek at Milford, Ill. Lat 40°37'50" Long 87°43'25"	446	23.9	42	364	432	14,100	16
05526000	Iroquois River near Chebanse, Ill. Lat 41°00'32" Long 87°49'27"	2,091	6.5	67	1,664	2,259	23,200	180

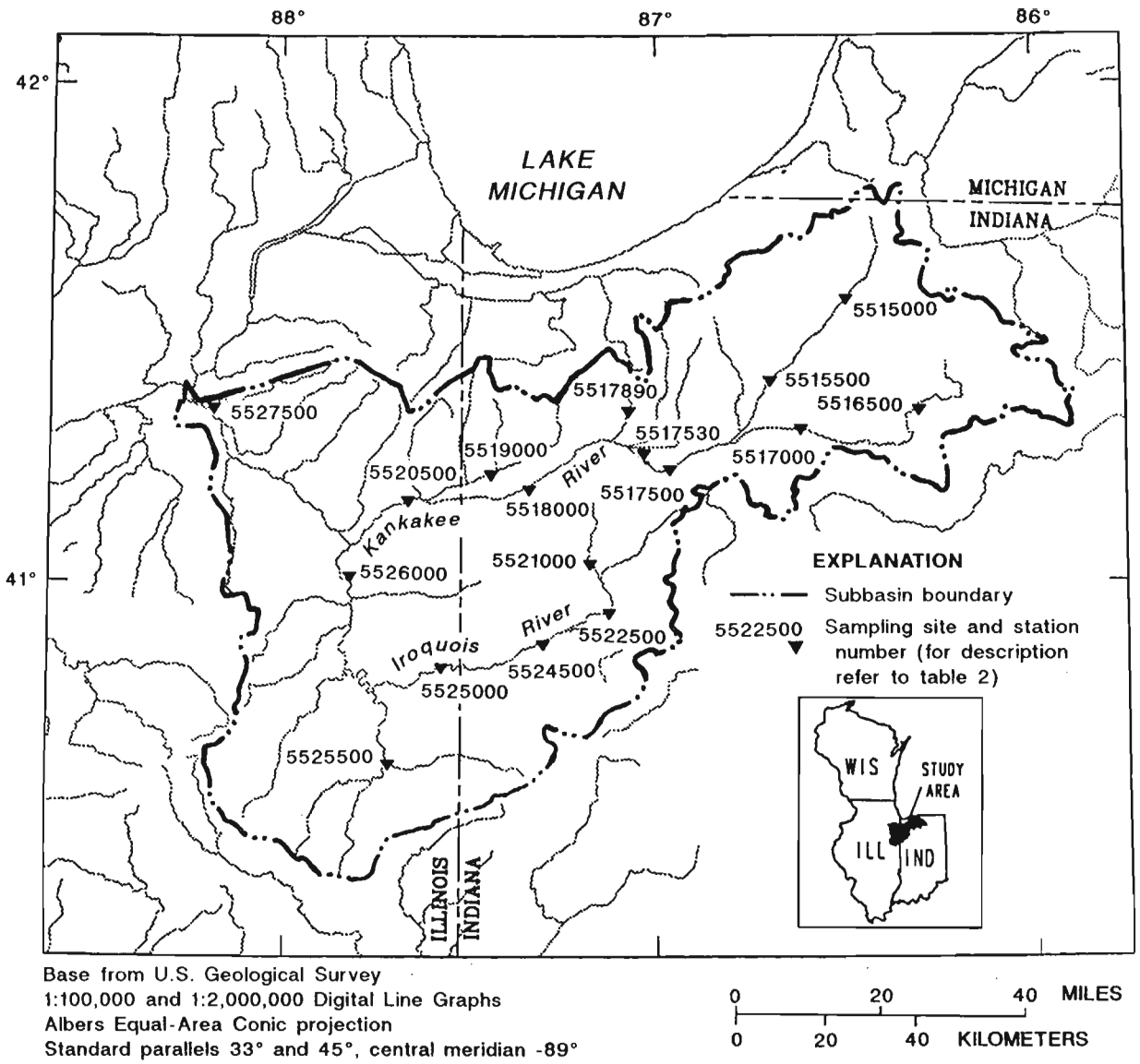

Figure 3.--Location of stations included in Phase II sampling in the Kankakee River Basin.

Table 3.--Dates, times, and peak discharges of storms at stations where samples were collected during the Phase II sampling, 1990

[ft^3/s, cubic feet per second]

Station number	Station name	Date of peak discharge	Time of peak discharge (hours)	Discharge, instantaneous at peak (ft^3/s)
	Kankakee River Stations			
05515000	Kankakee River near North Liberty, Ind.	May 26	1300-1500	331
		June 8	2200	224
		June 24	0300-0800	245
		June 27	0100-0400	238
		July 23	0200	459
05515500	Kankakee River at Davis, Ind.	May 26	2000	938
		June 9	0700-0900	725
		June 24	1200-1300	635
		June 30	0500-0700	820
		July 23	1400	1,130
05516500	Yellow River at Plymouth, Ind.	May 27	0300-0700	554
		June 9	1400-1500	600
		June 24	1000-1400	222
		June 27	1300-1900	225
		July 24	1500-1600	1,250
05517000	Yellow River at Knox, Ind.	May 28	0100-0700	752
		June 10	1500	771
		June 25	0100-1000	356
		June 30	0300-0700	415
		July 26	0700-0800	1,280
05517500	Kankakee River at Dunns Bridge, Ind.	May 28	1500-1600	2,400
		June 11	0015-0700	2,010
		June 26	1300-1500	1,480
		June 30-July 1	2300-0100	1,770
		July 26	1000-1200	2,880
05517530	Kankakee River near Kouts, Ind.	June 11	1100	2,090
		July 25	1600	2,950
05517890	Cobb Ditch near Kouts, Ind.	May 27	0100	40.1
		June 8	1300	96.1
		June 22	1900-2400	25.2
		June 29	1200-1600	26.6
05518000	Kankakee River at Shelby, Ind.	May 19	0100	4,100
		June 10-June 11	1100-1200	2,620
		June 26	1400-1500	1,740
		July 24	1400-1600	3,650

Table 3.--Dates, times, and peak discharges of storms at stations where samples were collected during the Phase II sampling, 1990--Continued

Station number	Station name	Date of peak discharge	Time of peak discharge (hours)	Discharge, instantaneous at peak (ft^3/s)
		Kankakee River Stations--Continued		
05519000	Singleton Ditch at Schneider, Ind.	May 26	0500-1500	204
		June 8	2400	356
		June 28	0300-0600	84.3
		June 29	2300-2400	139
05520500	Kankakee River at Momence, Ill.	May 25	1100-2400	5,060
		June 9	0100-0500	3,730
		June 27	0200-1100	1,960
		July 26-July 27	0300-1000	3,970
05527500	Kankakee River near Wilmington, Ill.	May 27	1500-1900	8,700
		June 11	1200-1800	6,780
		June 23	0900-1000	5,040
		July 2	0915	6,160
		Iroquois River Stations		
05521000	Iroquois River at Rosebud, Ind.	May 16	1600-1700	85.1
		May 31	0500-0900	26.3
		June 8-June 9	2200-0300	36.5
		June 19	0500-0900	16.6
		June 20	0900-1100	17.7
		June 25	0500-1200	17.0
		June 29	1800-2100	22.0
		July 10	0800-1000	21.2
		July 11	2000-2400	29.5
		July 17	0100-1000	25.4
		July 20	2200	195
		July 22	2100	344
05522500	Iroquois River at Rensselaer, Ind.	May 26	1145	210
		June 9	0400-0600	195
		June 18	1700-1800	78.1
		June 22	0015-0200	115
		June 26	1400-1700	78.1
		June 30	0500	111
		July 11	0015-0300	187
		July 21	1000-1400	836
		July 23	1400-1800	1,160

Table 3.--Dates, times, and peak discharges of storms at stations where samples were collected during the Phase II sampling, 1990--Continued

Station number	Station name	Date of peak discharge	Time of peak discharge (hours)	Discharge, instantaneous at peak (ft^3/s)
		Iroquois River Stations--Continued		
05524500	Iroquois River near Foresman, Ind.	May 11	0500-0900	334
		May 15	0400-0700	983
		May 17-May 18	2300-0300	1,010
		June 9	1800-1900	361
		June 23-June 24	2100-0300	204
		June 30	1700-2100	317
		July 12	1000-1200	549
		July 17	1500-1900	440
		July 24	0010-1000	1,610
05525000	Iroquois River at Iroquois, Ill.	May 18	1900	1,850
		May 27	1400-1700	654
		June 10	1030-1300	434
		June 24	1530-2100	223
		July 1	1100-1400	363
		July 13	0700-1000	597
		July 17	1845-2315	532
		July 24	0030, 0330, 1115	2,730
05525500	Sugar Creek at Milford, Ill.	May 17	0400	3,840
		June 21	1800	980
		June 30-July 1	1900-0500	1,120
		July 12	0415-0900	1,100
		July 23	1400-2145	2,100
05526000	Iroquois River near Chebanse, Ill.	June 19	0900	755

Constituents of Interest

Water samples were analyzed for polar, hydrophilic agricultural organic compounds. The compounds analyzed for are pesticides and in Phase I included chlorophenoxy-acid and triazine herbicides and organophosphorus insecticides (table 4). During Phase II, samples were analyzed for triazine herbicides only but were analyzed two different ways. Discrete samples collected at the Iroquois River stations were analyzed using enzyme-linked immunosorbent assay (ELISA) (Pomes and others, 1991) that provided a semiquantitative measure of triazine (as atrazine) concentrations. Composite samples (see sample collection section) were analyzed for total recoverable and dissolved triazines by gas chromatography/mass spectrometry (GC/MS). The dissolved analyses can be used to confirm and further quantify the ELISA analyses and provide a breakdown of the specific compounds detected and their concentrations. Total-recoverable analyses can be used to confirm that most of the triazines are in dissolved form in surface waters. According to Pike (1987), triazines are the most widely used herbicides in agricultural areas in Illinois.

In conjunction with the samples collected during Phase II, additional samples were collected to determine total nitrite plus nitrate nitrogen concentrations. Table 4 includes selected information on samples submitted for nitrogen analysis.

Samples also were collected for analyses of suspended-sediment concentrations and particle size. Suspended-sediment data can be used to evaluate relations between suspended-sediment and pesticide concentrations.

Field measurements of the physical characteristics of the stream water collected during runoff-event sampling included measurements of stage, which were used to estimate discharge, and measurements of specific conductance, which relates to the total amount of dissolved solids present. Specific conductance was measured in 1988 and 1989 but not in 1990. Table 4 includes selected information on field measurements made during the pesticide sampling.

METHODS

Samples were collected, handled, and analyzed according to techniques adopted by the USGS, except where noted. The equipment and techniques used to make field measurements and to collect samples are described in this section. In addition, QA/QC measures are described.

Sample Collection

Water samples for the determination of pesticide concentrations were collected in open-mouth, 1-L, baked-glass bottles. The bottles were placed in a weighted sampler suspended on a rope and lowered and raised through the water column by hand. Depending on the size of the stream, between one and three verticals were used to collect the water. A single vertical was used for small

Table 4.--Laboratory analyses used to determine physical properties and concentrations of agricultural organic compounds, nutrients, and sediment in the upper Illinois River Basin, 1988-90

[µg/L, micrograms per liter; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter at 25 degrees Celsius; ft^3/s, cubic feet per second; dashes (--) indicate not applicable]

Laboratory method: Laboratory method/instrument used to analyze sample--GCC, gas chromatographic: GC/MS, gas chromatographic/mass spectrometric; ELISA, enzyme-linked immunosorbent assay; CDA, colorimetry, diazotization, auto; CCA, colorimetry, Cd-reduction, auto; CA, colorimetry, auto; CPA, colorimetry, phosphomolybdate, auto; Evap, evaporation; WS, wet sieving; PM, portable specific-conductance meter

Laboratory: Laboratory/personnel conducting analysis/measurement--NWQL, U.S. Geological Survey National Water-Quality Laboratory in Denver, Colo.; OGRL, U.S. Geological Survey Organic Geochemical Research Laboratory in Lawrence, Kans.; ISL, U.S. Geological Survey Iowa Sediment Laboratory in Iowa City, Iowa; Field, U.S. Geological Survey field personnel, Illinois District

Compound or constituent	Units	Lab code (schedules[1])	WATSTORE code[2]	Minimum reporting level[3]	Laboratory method	Laboratory
Triazine herbicides						
Ametryne, total recoverable	µg/L	(1389)	82184	0.1	GCC	NWQL
Ametryne, dissolved	µg/L	--	--	.05	GC/MS	OGRL
Atrazine, total recoverable	µg/L	(1389)	39630	.1	GCC	NWQL
Atrazine, dissolved	µg/L	--	--	.05	GC/MS	OGRL
Cyanazine, total recoverable	µg/L	(1389)	81757	.1	GCC	NWQL
Cyanazine, dissolved	µg/L	--	--	.05	GC/MS	OGRL
Desethylatrazine, dissolved	µg/L	--	--	.05	GC/MS	OGRL
Desisopropylatrazine, dissolved	µg/L	--	--	.05	GC/MS	OGRL
Metribuzin, total recoverable	µg/L	(1389)	81408	.1	GCC	NWQL
Metribuzin, dissolved	µg/L	--	--	.05	GC/MS	OGRL
Prometone, total recoverable	µg/L	(1389)	39056	.1	GCC	NWQL
Prometone, dissolved	µg/L	--	--	.05	GC/MS	OGRL
Prometryne, total recoverable	µg/L	(1389)	39057	.1	GCC	NWQL
Prometryne, dissolved	µg/L	--	--	.05	GC/MS	OGRL
Propazine, total recoverable	µg/L	(1389)	39024	.1	GCC	NWQL
Propazine, dissolved	µg/L	--	--	.05	GC/MS	OGRL
Simazine, total recoverable	µg/L	(1389)	39055	.1	GCC	NWQL
Simazine, dissolved	µg/L	--	--	.05	GC/MS	OGRL
Simetryne, total recoverable	µg/L	(1389)	39054	.1	GCC	NWQL
Triazine (immunoassay as atrazine), dissolved	µg/L	--	--	.1	ELISA	OGRL
Terbutryn, dissolved	µg/L	--	--	.05	GC/MS	OGRL
Trifluralin, total recoverable	µg/L	(1389)	39030	.1	GCC	NWQL
Chloro-acetanilide herbicides						
Alachlor, total recoverable	µg/L	(1389)	77825	.1	GCC	NWQL
Alachlor, dissolved	µg/L	--	--	.05	GC/MS	OGRL
Alachlor (immunoassay as atrazine), dissolved	µg/L	--	--	.1	ELISA	OGRL
Metolachlor, total recoverable	µg/L	(1389)	39356	.1	GCC	NWQL
Metolachlor, dissolved	µg/L	--	--	.05	GC/MS	OGRL
Chlorophenoxy-acid herbicides						
2,4-D, total recoverable	µg/L	(0079)	39730	.01	GCC	NWQL
Dicamba, total recoverable	µg/L	(0079)	82052	.01	GCC	NWQL
2,4-DP, total recoverable	µg/L	(0079)	82183	.01	GCC	NWQL
Picloram, total recoverable	µg/L	(0079)	39720	.01	GCC	NWQL
Silvex, total recoverable	µg/L	(0079)	39760	.01	GCC	NWQL
2,4,5-T, total recoverable	µg/L	(0079)	39740	.01	GCC	NWQL

Table 4.--Laboratory analyses used to determine physical properties and concentrations of agricultural organic compounds, nutrients, and sediment in the upper Illinois River Basin, 1988-90--Continued

Compound or constituent	Units	Lab code (schedules[1])	WATSTORE code[2]	Minimum reporting level[3]	Laboratory method	Laboratory
Organophosphorus insecticides						
Chlorpyrifos; Dursban, total recoverable	µg/L	(1319)	38932	0.01	GCC	NWQL
Diazinon, total recoverable	µg/L	(1319)	39570	.01	GCC	NWQL
Disulfoton, total recoverable	µg/L	(1319)	39011	.01	GCC	NWQL
Ethion, total recoverable	µg/L	(1319)	39398	.01	GCC	NWQL
Fonofos, total recoverable	µg/L	(1319)	--	.01	GCC	NWQL
Malathion, total recoverable	µg/L	(1319)	39530	.01	GCC	NWQL
Methyl parathion, total recoverable	µg/L	(1319)	39600	.01	GCC	NWQL
Methyl trithion, total recoverable	µg/L	(1319)	39790	.01	GCC	NWQL
Parathion, total recoverable	µg/L	(1319)	39540	.01	GCC	NWQL
Phorate, total recoverable	µg/L	(1319)	39023	.01	GCC	NWQL
Trithion, total recoverable	µg/L	(1319)	39786	.01	GCC	NWQL
Miscellaneous herbicides						
Terbacil, total recoverable	µg/L	1462	30311	.1	GCC	NWQL
Bromacil, total recoverable	µg/L	1463	30234	.1	GCC	NWQL
Carboxin, total recoverable	µg/L	1464	--	.1	GCC	NWQL
Diphenamid, total recoverable	µg/L	1465	30255	.1	GCC	NWQL
Hexazinone, total recoverable	µg/L	1466	30264	.1	GCC	NWQL
Vernolate, total recoverable	µg/L	1467	30324	.1	GCC	NWQL
Butachlor, total recoverable	µg/L	1468	30235	.1	GCC	NWQL
Cycloate, total recoverable	µg/L	1469	30254	.1	GCC	NWQL
Butylate, total recoverable	µg/L	1470	30236	.1	GCC	NWQL
Propachlor, total recoverable	µg/L	1471	30295	.1	GCC	NWQL
Nutrients						
Nitrogen, NO_2 + NO_3, total, as N	mg/L	0304	00630	.01	CCA	NWQL
Miscellaneous						
Sediment, suspended	mg/L	--	80154	1.0	Evap	ISL
Sediment, suspended, percent finer than 0.062 mm	percent	--	70331	1	WS	ISL
Specific conductance	µS/cm	--	00095	1.0	PM	Field
Discharge, instantaneous	ft^3/s	--	00061	.01	--	Field

[1]Refers to number in U.S. Geological Survey's National Water-Quality Laboratory services catalog used to request a specific type of analytical procedure for a given constituent.
[2]National WATer Data STOrage and REtrieval system; number identifies parameter in computer data base.
[3]Smallest unit results reported for that constituent or compound.

streams, but three verticals were needed to define pesticide concentrations in large streams. When the stream width exceeded 10 ft, samples were collected using the equal-width-increment method and a constant vertical transit rate, as discussed in Ward and Harr (1990, p. 7-8).

At some stations, composite samples representing each of the rising, peak, and falling limbs of runoff hydrographs were collected. Because of the expense of herbicide analyses, numerous discrete samples collected during the entire runoff event were not analyzed individually. Instead, composite samples were obtained from the discrete samples, and these composites were analyzed to determine herbicide concentrations during each limb of the runoff hydrograph. Generally, between 4 and 10 discrete samples were used to obtain a composite sample representative of a limb. Composite samples for the rising, peak, and falling limbs of the hydrograph were obtained by combining discharge-weighted parts of the discrete samples collected during the particular hydrograph limbs. Volumes used from each discrete sample were determined using the following equation:

$$V_s = 1{,}000\,(Q_i/Q), \tag{1}$$

where

V_s is volume, in milliliters, needed from the sample;
Q_i is instantaneous discharge, in cubic feet per second, at time of sample collection;
Q is summation of instantaneous discharges for all samples used in the composite; and
1,000 is a constant that gives a composite sample volume of 1 L.

Bottles containing the discrete samples were shaken to ensure adequate mixing. The calculated volume was then withdrawn and poured into the composite sample.

In 1990, nutrient samples were collected each time a pesticide sample was collected. Nutrient samples were collected in the same manner as the pesticide samples; however, nutrient samples were not composited to coincide with the limbs of runoff hydrographs.

Suspended-sediment samples also were collected whenever a pesticide sample was collected. Suspended-sediment samples were collected using a DH-59 depth-integrating sampler and standard USGS techniques, as presented in Edwards and Glysson (1988). Suspended-sediment samples were collected at the same verticals at which pesticide and nutrient samples were collected. Suspended-sediment samples were not composited.

Measurements of specific conductance and observations of stream and weather conditions were made. Specific-conductance measurements were made in the field during the 1988 and 1989 sampling efforts using portable field meters. The meters were calibrated in the field using specific-conductance standards. No measurements of specific conductance were made in 1990. Notes of stream conditions were recorded, including stage and discharge readings; whether the stage was rising, falling, steady, or peaking; water color and clarity; presence of aquatic vegetation; and other pertinent information.

Observations of weather conditions were noted, including cloud cover, air temperature, wind conditions, and precipitation.

Sample Handling

The sample-handling methods, including processing and preservation methods used to prepare the water-quality samples for analyses at the laboratory, varied according to the type of analyses to be performed on the water sample. Samples analyzed for total-recoverable pesticide concentrations required minimal preparatory work. For these analyses, sample water was collected in 1-L clear or amber baked-glass bottles and placed in a cooler with ice to maintain a temperature of approximately 4°C. Clear bottles were covered with aluminum foil to prevent exposure to light. The samples were shipped to the laboratory by overnight mail within 3 working days after collection.

Samples analyzed for dissolved pesticide concentrations were filtered before being shipped to the laboratory. The sample was passed through a 0.45-µm pore-size glass-fiber filter and collected in 125-mL baked-glass bottles. The 125-mL bottles were immediately capped, covered with aluminum foil, and placed in a cooler with ice. The samples were mailed to the laboratory by overnight mail within 3 working days after collection.

The filtering apparatus and associated equipment used to process the samples were thoroughly washed with laboratory-grade soap, rinsed with deionized water, rinsed with methyl alcohol, and rinsed a final time with organic-free water. All surfaces that would contact sample water were covered with clean aluminum foil until they were used to process subsequent samples.

Nutrient samples collected in 1990 were analyzed for total-recoverable nitrite plus nitrate nitrogen concentrations. The water used for the nutrient analyses was transferred directly from the collection bottle to a 250-mL brown polypropylene bottle. Nutrient samples were preserved by the addition of 1 mL of mercuric chloride/sodium chloride preservative, chilled to 4°C, and shipped to the laboratory with the pesticide samples.

Suspended-sediment samples required no processing. The samples were collected and shipped to the laboratory, generally within 2 weeks, to prevent algal growth and degradation of the sample prior to analysis.

Sample Analysis

The laboratory methods used to determine concentrations of pesticides are listed in table 4. The National Water-Quality Laboratory (NWQL) in Denver, Colo., analyzed samples for total-recoverable pesticide concentrations using GC/MS techniques as presented in Wershaw and others (1987). The Organic Geochemistry Research Laboratory (OGRL) in Lawrence, Kans., analyzed samples for dissolved pesticide concentrations using GC/MS techniques. The OGRL also analyzed samples for triazine concentrations and chloro-acetanilide herbicides using ELISA.

The ELISA procedure was developed as an inexpensive screening tool for storm runoff samples from streams. The following description of the ELISA procedure is from Pomes and others (1991). Res-I-Quantl kits consisting of microtitre plates and reagents were used to analyze triazine and chloro-acetanilide herbicides concentrations. There are 96 wells on the polystyrene microtitre plate, each of which is coated with polyclonal antibodies that adsorb either triazine or chloro-acetanilide herbicide molecules, depending on the analysis. Res-I-Quantl kits additionally used an enzyme conjugate prepared by covalently binding atrazine or alachlor molecules to horseradish peroxidase. The microtitre plate was set up with four standards in triplicate, and duplicates of each of the stream samples. Eighty µL (microliters) of laboratory standards and stream samples were added to the plate, immediately followed by 80 µL of enzyme conjugate. The plate was then covered with parafilm and incubated for 1 hour at room temperature while being rotated at 180 rpm (revolutions per minute) on an orbital shaker. The plate was then flushed and rinsed five times with deionized water, then dried with compressed air. After that, 160 µL of a mixture of substrate and chromogen (mixed in that order) were pipetted into each well. The plate was covered again with parafilm and allowed to incubate for 30 minutes while rotating on an orbital shaker at 180 rpm. The substrate and chromogen reacted with the enzyme conjugate to produce a blue color, which was inversely proportional to the analete concentration. This reaction was halted with the addition of 40 µL of sulfuric acid (2.5 normal) solution, which caused the color of the substrate-chromogen mixture to change to yellow. The plate reader then determined the optical absorbances in all of the wells based on the standards readings, and output the standard curve and concentrations for all the samples.

Analyses of nitrite plus nitrate nitrogen concentrations were performed at the NWQL using methods documented in Fishman and Friedman (1989). Table 4 lists selected information on the nitrite plus nitrate nitrogen analyses performed and the methods used.

Analyses of suspended-sediment concentrations and the percentage of suspended sediment finer than 0.062 mm in diameter were performed by the USGS sediment laboratory in Iowa City, Iowa. The analytical technique used to determine the concentration was the evaporation method described by Guy (1969, p. 11). Particle-size determination was made by sieving, as presented in Guy (1969, p. 28). During the 1990 Phase II sampling, suspended-sediment samples were analyzed for concentration only. Table 4 lists selected information on the suspended-sediment analyses performed and the methods used.

Quality Assurance and Quality Control

Adherence to established QA/QC procedures is vital to the NAWQA program in order to assure national consistency and comparability of data from different areas of the country. General QA/QC guidelines for the NAWQA program are presented in Mattraw and others (1989). The QA/QC for the UIRB NAWQA pesticides sampling program was monitored through the use of sample splits and spiked samples.

The purpose of sample splits was to determine the variation in concentration caused by sample handling procedures. A sample split involved collecting a water sample using the methods previously described and dividing the sample into two distinct samples. These individual samples were then processed separately. Laboratory results from sample splits may be compared to determine differences attributable to sample handling by the field personnel.

The value of sample splits to determine differences attributable to sample handling is contingent upon good laboratory techniques and accurate analyses of the samples. At the USGS laboratories, QA/QC monitoring is an ongoing activity. Sufficient analyses of the analytical methods used and the results obtained have been performed so that excessive variation in sample splits can be identified and attributed to sample collection or handling activities.

During the Phase I sampling in 1989, two sets of sample splits were collected at two stations--Sugar Creek at Milford, Ill., on May 26 and Salt Creek at Rolling Meadows, Ill., on May 20. The results of these samples are presented in table 5.

Spiking of water samples was performed to monitor laboratory analytical techniques and to determine the degradation of compounds between the time of collection and analysis. A sample was collected at Sugar Creek at Milford, Ill., during the Phase I sampling in 1989 and was split into four distinct subsamples. From these four samples, an unspiked split sample was submitted to the laboratory to determine the ambient concentrations of pesticides in the sample. Two samples were spiked in the field by adding known concentrations of pesticides. These two spiked samples were used to determine the extent of interferences on analyte recovery from the ambient water matrix. The relative percentages of difference between the duplicate spike analyses can be calculated to assess the analytical precision of the spike. The final sample was spiked at the laboratory and was used to determine the effects on the analytical results of shipping and storage time prior to analysis. The results of the analyses of the spiked samples are presented in table 6.

The QA/QC measures for the Phase II sampling were incorporated into the concurrent USGS study of herbicides in surface water of the midwestern United States (Thurman and others, 1992). The two studies used comparable sampling and analyses methods. The results of the QA/QC analyses are not presented in this report.

DATA ON AGRICULTURAL ORGANIC COMPOUNDS, NUTRIENTS, AND SEDIMENT IN WATER

Tables 7-10 (at end of report) contain the analytical results of pesticide samples collected as part of the UIRB NAWQA program and associated QA/QC samples. Tables 7 and 8 present the results of the laboratory analyses and field measurements for the Phase I sampling efforts in 1988 and 1989, respectively. Tables 9 and 10 present the results of the laboratory analyses and field measurements of samples collected during the Phase II sampling efforts. Table 9 presents the results of the ELISA analyses and nutrient and suspended-sediment concentrations, and table 10 presents the results of GC/MS analyses.

Table 5.--Results of analyses of split samples collected during Phase I sampling in the upper Illinois River Basin, 1989

[all concentrations in micrograms per liter; <, less than]

Compound name	Sugar Creek at Milford, Ill. May 26		Salt Creek at Rolling Meadows, Ill. May 20	
	Sample 1	Sample 2	Sample 1	Sample 2
Triazines and other nitrogen-containing herbicides				
Alachlor	4.20	4.00	0.30	0.20
Ametryne	<.10	<.10	<.10	<.10
Atrazine	15	12	.30	.20
Bromacil	<.1	<.1	.9	.9
Butachlor	<.1	<.1	<.1	<.1
Butylate	.3	.2	<.1	<.1
Cyanazine	11.0	13.0	<.1	.1
Cycloate	<.1	<.1	<.1	<.1
Diphenamid	<.1	<.1	<.1	<.1
Hexazinone	.2	.1	.2	.3
Metolachlor	3.4	3.3	<.1	.1
Metribuzin	.5	.5	<.1	<.1
Prometone	.1	.1	.1	.1
Prometryne	<.1	<.1	<.1	<.1
Propachlor	.1	.1	<.1	<.1
Propazine	.10	.10	<.10	<.10
Simazine	.10	.10	.20	.20
Simetryne	<.1	<.1	<.1	<.1
Terbacil	<.1	<.1	<.1	.1
Trifluralin	.10	.10	<.10	<.10
Vernolate	.1	.1	<.1	<.1
Chlorophenoxy-acid herbicides				
2,4-D	.23	.23	2.3	2.0
Dicamba	.28	.28	.21	.18
2,4-DP	<.01	<.01	.06	.05
Picloram	<.01	<.01	<.01	<.01
Silvex	<.01	<.01	<.01	<.01
2,4,5-T	<.01	<.01	<.01	<.01
Organophosphorus insecticides				
Diazinon	<.01	<.01	.06	.06
Ethion	<.01	<.01	<.01	<.01
Malathion	<.01	<.01	.09	.11
Methyl parathion	<.01	<.01	<.01	<.01
Methyl trithion	<.01	<.01	<.01	<.01
Total trithion	<.01	<.01	<.01	<.01
Parathion	<.01	<.01	<.01	<.01

Table 6.--Results of spiking analysis for Salt Creek at Rolling Meadows, Ill. (05530990), at 11 a.m., July 12, 1990

[All concentrations in micrograms per liter; <, less than]

Compound name	Expected spike concentration	Unspiked sample concentration	Field spike 1 concentration	Field spike 2 concentration	Laboratory spike concentration
Triazines and other nitrogen-containing herbicides					
Alachlor	1.0	<0.10	1.20	1.30	1.10
Atrazine	1.0	.50	1.4	1.4	1.4
Metolachlor	1.0	<.1	1.1	1.1	1.1
Prometryne	1.0	<.1	.9	1.0	.9
Simazine	1.0	.20	1.2	1.1	1.4
Trifluralin	1.0	<.10	.90	.90	1.0
Chlorophenoxy-acid herbicides					
2,4-D	.1	<.10	<.10	.30	.30
Dicamba	.1	.13	.13	.13	.13
Picloram	.1	<.03	<.03	.04	.04
Silvex	.1	<.10	<.10	.07	.07
2,4,5-T	.1	<.10	<.10	.08	.03
Organophosphorus insecticides					
Diazinon	.1	.14	.14	.18	.14
Malathion	1.0	1.0	1.0	1.3	1.0
Parathion	.1	<.10	<.10	.14	.08

These tables include the location, date, and time of sample collection; the laboratory that analyzed the sample; and the results of the analyses. Results of the analyses of the samples collected by the automatic sampler at the Iroquois River near Chebanse are not included in this report because they were collected for a separate study. The following information is included as an aid to interpreting the data contained in tables 7-10.

Time.--The sample-collection times indicated are expressed in 24-hour standard time. For example, 0030 is 12:30 a.m., and 1330 is 1:30 p.m.

Missing data.--Missing data will appear in the data tables as dashes.

Parameter codes.--Each column heading has a number that is the parameter code used in the U.S. Geological Survey WATer Data STOrage and REtrieval System (WATSTORE) to reference parameters related to water quality (Hutchison, 1975). The collecting agency and analyzing agencies identified by the parameter codes in tables 7-10 are as follows:

81700 - USGS field personnel,
80020 - USGS National Water Quality Laboratory, and
82013 - Organic Geochemistry Research Laboratory.

Remarks.--The value for each water-quality parameter may be qualified by a remark. The remark and the corresponding symbol that may be printed in the data tables are listed below.

Symbol	Remark
<	Actual value is known to be less than the value shown.

REFERENCES CITED

Baker, D.B., 1988, Sediment, nutrient, and pesticide transport in selected lower Great Lakes tributaries: EPA-905/4-88-01, U.S. Government Printing Office, 244 p.

Cohen, Philip, Alley, W.M., and Wilber, W.G., 1988, National water-quality assessment, Future direction of the U.S. Geological Survey: Water-Resources Bulletin, v. 24, no. 6, p. 1147-1151.

Edwards, T.K., and Glysson, G.D., 1988, Field methods for measurement of fluvial sediment: U.S. Geological Survey Open-File Report 86-531, 118 p.

Fishman, M.J., and Friedman, L.C., eds. 1989, Methods for determination of inorganic substances in water and fluvial sediments: U.S. Geological Survey Techniques of Water-Resources Investigations, book 5, chap. A1, 545 p.

Guy, H.P., 1969, Laboratory theory and methods for sediment analysis: U.S. Geological Survey Techniques of Water-Resources Investigations, book 5, chap. C1, 58 p.

Hirsch, R.M., Alley, W.M., and Wilber, W.G., 1988, Concepts for a national water-quality assessment program: U.S. Geological Survey Circular 1021, 42 p.

Hutchison, N.E., compiler, 1975, WATSTORE--National Water Data Storage and Retrieval System of the U.S. Geological Survey--user's guide: U.S. Geological Survey Open-File Report 75-426, v. 3, Chapter 4A, p. 1-105.

Illinois Environmental Protection Agency, 1990, Illinois water-quality report 1988-89: Illinois Environmental Protection Agency, Division of Water Pollution Control 90-160, 352 p.

Mades, D.M., 1987, Surface-water-quality assessment of the upper Illinois River Basin in Illinois, Indiana, and Wisconsin, Project description: U.S. Geological Survey Open-File Report 87-473, 35 p.

Mattraw, H.C., Jr., Wilber, W.G., and Alley, W.M., 1989, Quality-assurance plan for the pilot National Water-Quality Assessment program: U.S. Geological Survey Open-File Report 88-726, 21 p.

Pike, D.R., 1987, 1985 Illinois major crop pesticide use and safety survey report: University of Illinois, Urbana-Champaign, 29 p.

Pike, D.R., Knake, E.L., Kuhlman, D.E., McGlamery, M.D., and Pataky, N.R., 1990, Pesticide use in Illinois: results of a 1988 survey of major crops: University of Illinois at Urbana-Champaign Cooperative Extension Service, 26 p.

Pomes, M.L., Thurman, E.M., and Goolsby, D.A., 1991, Comparison of microtitre-plate, enzyme-linked immunosorbent assay (ELISA) and gas chromatography/mass spectrometry (GC/MS) for analysis of herbicides in storm runoff samples: U.S. Geological Survey Toxic Substances Hydrology Program--Proceedings of the technical meeting, Monterey, California, March 11-15, 1991: U.S. Geological Survey Water-Resources Investigations Report 91-4034, p. 572-575.

Smith, J.A., Witkowski, P.J., and Fusillo, T.V., 1988, Manmade organic compounds in the surface waters of the United States-a review of current understanding: U.S. Geological Survey Circular 1007, 92 p.

Taylor, Kent, Hudson, Holly, and Schaefer, G.C., 1989, Pesticide, herbicide, and algicide usage in urban/suburban northeastern Illinois: Northeastern Illinois Planning Commission, 50 p.

Thurman, E.M., Goolsby, D.A., Meyer, M.T., Mills, M.S., Pomes, M.L., and Kolpin, D.W., 1992, A reconnaissance study of herbicides and their metabolites in surface water of the midwestern United States using immunoassay and gas chromatography/mass spectrometry: Environmental Science and Technology, v. 26, no. 12, p. 2440-2447.

Ward, J.R., and Harr, C.A., eds., 1990, Methods for collection and processing of surface-water and bed-material samples for physical and chemical analyses: U.S. Geological Survey Open-File Report 90-140, 71 p.

Wershaw, R.L., Fishman, M.J., Grabbe, R.R., and Lowe, L.E., eds., 1987, Methods for the determination of organic substances in water and fluvial sediments: U.S. Geological Survey Techniques of Water-Resources Investigations, book 5, chap. A3, 80 p.

TABLES 7-10

Table 7.--Physical properties and concentrations of agricultural organic compounds, nutrients, and sediment in water samples collected during Phase I sampling in the upper Illinois River Basin, 1988

[µg/L, micrograms per liter; %, percent; mm, millimeters; mg/L, milligrams per liter; <, less than; dashes indicate no data]

Date	Time	Ending date	Ending time	Agency collecting sample (code number) (00027)	Agency analyzing sample (code number) (00028)	Discharge inst. cubic feet per second (00061)	Bromacil water whole recoverable (µg/L) (30234)	Butachlor water whole recoverable (µg/L) (30235)	Butylate water whole recoverable (µg/L) (30236)	Cycloate water whole recoverable (µg/L) (30254)	Diphenamid water whole recoverable (µg/L) (30255)
				05523000 Bice Ditch near South Marion, Ind.							
5-24	1300	--	--	81700	80020	[1]2.7	--	--	--	--	--
				05530990 Salt Creek at Rolling Meadows, Ill.							
8-17	2115	8-18	0115	81700	80020	[2]35	<0.1	<0.1	<0.1	<0.1	<0.1
8-18	0215	8-18	0815	81700	80020	[2]24	<.1	<.1	<.1	<.1	<.1
				05532000 Addison Creek at Bellwood, Ill.							
6-20	0755	6-21	1255	81700	80020	[2]25	<.1	<.1	<.1	<.1	<.1
6-20	1955	--	--	81700	80020	--	--	--	--	--	--
6-20	2055	--	--	81700	80020	--	--	--	--	--	--
6-20	2155	--	--	81700	80020	--	--	--	--	--	--
6-20	2255	--	--	81700	80020	--	--	--	--	--	--
6-20	2355	--	--	81700	80020	--	--	--	--	--	--
6-21	0155	6-21	0455	81700	80020	[2]35	30	<.1	<.1	<.1	<.1
6-21	0255	--	--	81700	80020	--	--	--	--	--	--
6-21	0355	--	--	81700	80020	--	--	--	--	--	--
6-21	0455	--	--	81700	80020	--	--	--	--	--	--
6-21	0555	6-21	0955	81700	80020	[2]24	1.0	<.1	<.1	<.1	<.1
6-21	0655	--	--	81700	80020	--	--	--	--	--	--
6-21	1255	--	--	81700	80020	--	--	--	--	--	--
6-28	1130	6-29	0330	81700	80020	[2]44	<.1	<.1	<.1	<.1	<.1
6-29	0430	6-29	0830	81700	80020	[2]55	3.0	<.1	<.1	<.1	<.1
6-29	0930	6-29	1430	81700	80020	[2]37	1.7	<.1	<.1	<.1	<.1
7-13	1015	--	--	81700	80020	12	<.1	<.1	<.1	<.1	<.1

Table 7.--Physical properties and concentrations of agricultural organic compounds, nutrients, and sediment in water samples collected during Phase I sampling in the upper Illinois River Basin, 1988--Continued

Date	Hexazinone water whole recoverable (µg/L) (30264)	Propachlor water whole recoverable (µg/L) (30295)	Terbacil water whole recoverable (µg/L) (30311)	Vernolate water whole recoverable (µg/L) (30324)	Propazine total (µg/L) (39024)	Trifluralin total recoverable (µg/L) (39030)	Simetryne total (µg/L) (39054)	Simazine total (µg/L) (39055)	Prometone total (µg/L) (39056)	Prometryne total (µg/L) (39057)	Ethion, total (µg/L) (39398)
					05523000 Bice Ditch near South Marion, Ind.--Continued						
5-24	--	--	--	--	< 0.10	<0.10	<0.1	<0.10	<0.1	<0.1	<0.01
					05530990 Salt Creek at Rolling Meadows, Ill.--Continued						
8-17	0.1	<0.1	<0.1	<0.1	<.10	<.10	<.1	.20	.6	<.1	<.01
8-18	.1	<.1	<.1	<.1	<.10	<.10	<.1	.40	.6	<.1	<.01
					05532000 Addison Creek at Bellwood, Ill.--Continued						
6-20	<.1	.7	<.1	<.1	<.10	<.10	<.1	.30	.6	<.1	--
6-20	--	--	--	--	--	--	--	--	--	--	--
6-20	--	--	--	--	--	--	--	--	--	--	--
6-20	--	--	--	--	--	--	--	--	--	--	--
6-20	--	--	--	--	--	--	--	--	--	--	--
6-20	--	--	--	--	--	--	--	--	--	--	--
6-21	<.1	<.1	<.1	<.1	<.10	<.10	<.1	.40	<.1	<.1	<.01
6-21	--	--	--	--	--	--	--	--	--	--	--
6-21	--	--	--	--	--	--	--	--	--	--	--
6-21	--	--	--	--	--	--	--	--	--	--	--
6-21	<.1	<.1	<.1	<.1	<.10	<.10	<.1	.20	<.1	<.1	<.01
6-21	--	--	--	--	--	--	--	--	--	--	--
6-21	--	--	--	--	--	--	--	--	--	--	--
6-28	<.1	<.1	<.1	<.1	<.10	<.10	<.1	.20	.4	<.1	<.01
6-29	<.1	.7	<.1	<.1	<.10	<.10	<.1	.10	<.1	<.1	<.01
6-29	<.1	.6	<.1	<.1	<.10	<.10	<.1	.30	<.1	<.1	<.01
7-13	<.1	<.1	<.1	<.1	<.10	<.10	<.1	.20	<.1	<.1	<.01

Table 7.--Physical properties and concentrations of agricultural organic compounds, nutrients, and sediment in water samples collected during Phase I sampling in the upper Illinois River Basin, 1988--Continued

Date	Malathion total (µg/L) (39530)	Parathion total (µg/L) (39540)	Diazinon, total (µg/L) (39570)	Methyl parathion total (µg/L) (39600)	Atrazine, total (µg/L) (39630)	Piclo-ram (Tordon) (Amdon) total (µg/L) (39720)	2,4-D total (µg/L) (39730)	2,4,5-T total (µg/L) (39740)	Silvex, total (µg/L) (39760)	Total trithion (µg/L) (39786)
				05523000 Bice Ditch near South Marion, Ind.--Continued						
5-24	<0.01	<0.01	<0.01	<0.01	1.0	--	--	--	--	<0.01
				05530990 Salt Creek at Rolling Meadows, Ill.--Continued						
8-17	.05	.01	.03	<.01	.10	<0.10	0.22	<0.10	<0.10	<.01
8-18	.03	<.01	.03	<.01	.10	<.10	.19	<.10	<.10	<.01
				05532000 Addison Creek at Bellwood, Ill.--Continued						
6-20	--	--	--	--	2.0	<.10	.76	<.10	.51	--
6-20	--	--	--	--	--	--	--	--	--	--
6-20	--	--	--	--	--	--	--	--	--	--
6-20	--	--	--	--	--	--	--	--	--	--
6-20	--	--	--	--	--	--	--	--	--	--
6-20	--	--	--	--	--	--	--	--	--	--
6-21	.02	<.01	.04	<.01	16.00	<.10	1.7	<.10	1.6	<.01
6-21	--	--	--	--	--	--	--	--	--	--
6-21	--	--	--	--	--	--	--	--	--	--
6-21	--	--	--	--	--	--	--	--	--	--
6-21	.03	<.01	.06	<.01	3.90	<.10	.14	<.10	<.10	<.01
6-21	--	--	--	--	--	--	--	--	--	--
6-21	--	--	--	--	--	--	--	--	--	--
6-28	.02	<.01	.05	<.01	1.4	<.10	.68	<.10	<.10	<.01
6-29	.05	<.01	.05	<.01	4.8	<1.0	1.0	<1.0	<1.0	<.01
6-29	.04	<.01	.06	<.01	5.7	<.10	.75	<.10	<.10	<.01
7-13	2.3	<.01	.01	<.01	.30	<.01	<.01	<.01	<.01	<.01

Table 7.--Physical properties and concentrations of agricultural organic compounds, nutrients, and sediment in water samples collected during Phase I sampling in the upper Illinois River Basin, 1988--Continued

Date	Methyl trithion total (µg/L) (39790)	Alachlor total recoverable (µg/L) (77825)	Cyanazine total (µg/L) (81757)	Dicamba (Mediben) (Banvel D) total (µg/L) (82052)	2,4-DP total (µg/L) (82183)	Ametryne total (µg/L) (82184)	Metribuzin water whole total recoverable (µg/L) (82611)	Metolachlor water whole total recoverable (µg/L) (82612)	Sediment suspended sieve diameter % finer than .062 mm (70331)	Sediment, suspended (mg/L) (80154)
				05523000 Bice Ditch near South Marion, Ind.--Continued						
6-24	<0.01	0.10	1.20	--	--	<0.10	<0.1	0.8	--	--
				05530990 Salt Creek at Rolling Meadows, Ill.--Continued						
8-17	<.01	<.10	<.10	0.13	<0.10	<.10	<.1	<.1	100	84
8-18	<.01	<.10	<.10	.13	<.10	<.10	<.1	<.1	--	--
				05532000 Addison Creek at Bellwood, Ill.--Continued						
6-20	--	<.10	<.10	1.1	<.10	<.10	<.1	<.1	--	--
6-20	--	--	--	--	--	--	--	--	85	20
6-20	--	--	--	--	--	--	--	--	93	41
6-20	--	--	--	--	--	--	--	--	95	25
6-20	--	--	--	--	--	--	--	--	91	159
6-20	--	--	--	--	--	--	--	--	95	60
6-21	<.01	<.10	<.10	1.7	<.10	<.10	<.1	<.1	93	55
6-21	--	--	--	--	--	--	--	--	100	115
6-21	--	--	--	--	--	--	--	--	84	275
6-21	--	--	--	--	--	--	--	--	92	39
6-21	<.01	<.10	<.10	<.10	<.10	<.10	<.1	<.1	87	19
6-21	--	--	--	--	--	--	--	--	100	9
6-21	--	--	--	--	--	--	--	--	94	35
6-28	<.01	<.10	<.10	.31	<.10	<.10	<.1	<.1	--	--
6-29	<.01	<.10	<.10	.44	<1.0	<.10	<.1	<.1	--	--
6-29	<.01	<.10	<.10	.38	<.10	<.10	<.1	<.1	--	--
7-13	<.01	<.10	<.10	<.01	<.01	<.10	<.1	<.1	--	--

[1]Estimated value.
[2]Mean value.

Table 8.--Physical properties and concentrations of agricultural organic compounds, nutrients, and sediment in water samples collected during Phase I sampling in the upper Illinois River Basin, 1989

[µS/cm, microsiemens per centimeter at 25 degrees Celsius; µg/L, micrograms per liter; %, percent; mm, millimeters; mg/L, milligrams per liter; <, less than; dashes indicate no data]

Date	Time	Ending date	Ending time	Agency collecting sample (code number) (00027)	Agency analyzing sample (code number) (00028)	Discharge, inst. cubic feet per second (00061)	Gage height (feet) (00065)	Specific conductance (µS/cm) (00095)	Bromacil water whole recoverable (µg/L) (30234)	Butachlor water whole recoverable (µg/L) (30235)	Butylate water whole recoverable (µg/L) (30236)
					05523000 Bice Ditch near South Marion, Ind.						
5-01	1300	--	--	81700	80020	[1]2.6	1.46	--	<0.1	<0.1	<0.1
5-30	1215	--	--	81700	80020	96	4.04	--	<.1	<.1	<.1
7-12	1400	--	--	81700	80020	4.7	1.71	--	<.1	<.1	<.1
					05525500 Sugar Creek at Milford, Ill.						
5-01	1505	--	--	81700	80020	--	--	--	--	--	--
5-26	1000	--	--	81700	80020	1,420	11.92	1,080	--	--	--
5-26	1000	5-26	1900	81700	80020	[2]1,710	--	--	<.1	<.1	.2
5-26	1300	--	--	81700	80020	1,640	12.97	918	--	--	--
5-26	1500	--	--	81700	80020	1,760	13.49	930	--	--	--
5-26	1700	--	--	81700	80020	1,850	13.89	1,040	--	--	--
5-26	1900	--	--	81700	80020	1,890	--	1,050	--	--	--
5-26	2100	--	--	81700	80020	2,060	14.62	1,050	--	--	--
5-26	2100	5-27	2100	81700	80020	[2]2,140	--	--	<.1	<.1	.3
5-26	2101	5-27	2101	81700	80020	[2]2,140	--	--	<.1	<.1	.2
5-26	2300	--	--	81700	80020	2,100	14.76	1,040	--	--	--
5-27	0100	--	--	81700	80020	2,150	14.90	1,030	--	--	--
5-27	0500	--	--	81700	80020	2,190	15.02	1,010	--	--	--
5-27	0700	--	--	81700	80020	2,200	15.05	1,010	--	--	--
5-27	0900	--	--	81700	80020	2,200	15.05	1,020	--	--	--
5-27	1100	--	--	81700	80020	2,180	15.01	1,030	--	--	--
5-27	1300	--	--	81700	80020	2,170	14.98	1,080	--	--	--
5-27	1500	--	--	81700	80020	2,140	14.88	1,070	--	--	--
5-27	1700	--	--	81700	80020	2,110	14.77	863	--	--	--
5-27	1900	--	--	81700	80020	2,070	14.66	878	--	--	--
5-27	2100	--	--	81700	80020	2,020	14.50	880	--	--	--
5-28	0300	--	--	81700	80020	1,860	13.97	997	--	--	--
5-28	0300	5-28	2100	81700	80020	[2]1,620	--	--	<.1	<.1	.1
5-28	0900	--	--	81700	80020	1,720	13.30	1,010	--	--	--
5-28	1500	--	--	81700	80020	1,540	12.50	1,030	--	--	--
5-28	2100	--	--	81700	80020	1,350	11.55	1,050	--	--	--
7-12	1600	--	--	81700	80020	26	--	--	<.1	<.1	<.1

Table 8.--Physical properties and concentratiopns of agricultural organic compounds, nutrients, and sediment in water samples collected during Phase I sampling in the upper Illinois River Basin, 1989--Continued

Date	Cyclo-ate water whole recov-erable (µg/L) (30254)	Diphen-amid water whole recov-erable (µg/L) (30255)	Hexazi-none water whole recov-erable (µg/L) (30264)	Propa-chlor water whole recov-erable (µg/L) (30295)	Ter-bacil water whole recov-erable (µg/L) (30311)	Ver-nolate water whole recov-erable (µg/L) (30324)	Propa-zine total (µg/L) (39024)	Tri-flura-lin total recov-erable (µg/L) (39030)	Sime-tryne total (µg/L) (39054)	Sima-zine total (µg/L) (39055)	Prome-tone total (µg/L) (39056)
					05523000 Bice Ditch near South Marion, Ind.--Continued						
5-01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.10	<0.1
5-30	<.1	<.1	<.1	<.1	<.1	<.1	.10	<.10	<.1	<.10	.7
7-12	<.1	<.1	<.1	<.1	<.1	<.1	<.10	<.10	<.1	<.10	<.1
					05525500 Sugar Creek at Milford, Ill.--Continued						
5-01	--	--	--	--	--	--	--	--	--	--	--
5-26	--	--	--	--	--	--	--	--	--	--	--
5-26	<.1	<.1	.2	<.1	<.1	.1	.10	.20	<.1	.10	.1
5-26	--	--	--	--	--	--	--	--	--	--	--
5-26	--	--	--	--	--	--	--	--	--	--	--
5-26	--	--	--	--	--	--	--	--	--	--	--
5-26	--	--	--	--	--	--	--	--	--	--	--
5-26	<.1	<.1	.2	.1	<.1	.1	.10	.10	<.1	.10	.1
5-26	<.1	<.1	.1	.1	<.1	.1	.10	.10	<.1	.10	.1
5-26	--	--	--	--	--	--	--	--	--	--	--
5-27	--	--	--	--	--	--	--	--	--	--	--
5-27	--	--	--	--	--	--	--	--	--	--	--
5-27	--	--	--	--	--	--	--	--	--	--	--
5-27	--	--	--	--	--	--	--	--	--	--	--
5-27	--	--	--	--	--	--	--	--	--	--	--
5-27	--	--	--	--	--	--	--	--	--	--	--
5-27	--	--	--	--	--	--	--	--	--	--	--
5-27	--	--	--	--	--	--	--	--	--	--	--
5-28	--	--	--	--	--	--	--	--	--	--	--
5-28	<.1	<.1	.1	.1	<.1	<.1	.10	<.10	<.1	.10	<.1
5-28	--	--	--	--	--	--	--	--	--	--	--
5-28	--	--	--	--	--	--	--	--	--	--	--
5-28	--	--	--	--	--	--	--	--	--	--	--
7-12	<.1	<.1	<.1	<.1	<.1	<.1	<.10	<.10	<.1	<.10	<.1

Table 8.--Physical properties and concentratiopns of agricultural organic compounds, nutrients, and sediment in water samples collected during Phase I sampling in the upper Illinois River Basin, 1989--Continued

Date	Prometryne total (µg/L) (39057)	Ethion, total (µg/L) (39398)	Malathion total (µg/L) (39530)	Parathion total (µg/L) (39540)	Diazinon, total (µg/L) (39570)	Methyl parathion total (µg/L) (39600)	Atrazine, total (µg/L) (39630)	Piclo-ram (Tordon) (Amdon) total (µg/L) (39720)	2,4-D total (µg/L) (39730)	2,4,5-T total (µg/L) (39740)	Silvex, total (µg/L) (39760)
					05523000 Bice Ditch near South Marion, Ind.--Continued						
5-01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	0.20	<0.01	<0.01	<0.01	<0.01
5-30	<.1	<.01	<.01	<.01	<.01	<.01	4.7	<.01	.18	<.01	<.01
7-12	<.1	<.01	<.01	<.01	<.01	<.01	.20	.01	<.01	<.01	<.01
					05525500 Sugar Creek at Milford, Ill.--Continued						
5-01	--	--	--	--	--	--	--	--	--	--	--
5-26	--	--	--	--	--	--	--	--	--	--	--
5-26	<.1	<.01	.01	<.01	.01	<.01	12	<.01	.30	<.01	<.01
5-26	--	--	--	--	--	--	--	--	--	--	--
5-26	--	--	--	--	--	--	--	--	--	--	--
5-26	--	--	--	--	--	--	--	--	--	--	--
5-26	--	--	--	--	--	--	--	--	--	--	--
5-26	--	--	--	--	--	--	--	--	--	--	--
5-26	<.1	<.01	<.01	<.01	<.01	<.01	15	<.01	.23	<.01	<.01
5-26	<.1	<.01	<.01	<.01	<.01	<.01	12	<.01	.23	<.01	<.01
5-26	--	--	--	--	--	--	--	--	--	--	--
5-27	--	--	--	--	--	--	--	--	--	--	--
5-27	--	--	--	--	--	--	--	--	--	--	--
5-27	--	--	--	--	--	--	--	--	--	--	--
5-27	--	--	--	--	--	--	--	--	--	--	--
5-27	--	--	--	--	--	--	--	--	--	--	--
5-27	--	--	--	--	--	--	--	--	--	--	--
5-27	--	--	--	--	--	--	--	--	--	--	--
5-27	--	--	--	--	--	--	--	--	--	--	--
5-27	--	--	--	--	--	--	--	--	--	--	--
5-28	--	--	--	--	--	--	--	--	--	--	--
5-28	<.1	<.01	<.01	<.01	<.01	<.01	9.1	<.01	.11	<.01	<.01
5-28	--	--	--	--	--	--	--	--	--	--	--
5-28	--	--	--	--	--	--	--	--	--	--	--
5-28	--	--	--	--	--	--	--	--	--	--	--
7-12	<.1	<.01	<.01	<.01	<.01	<.01	.70	<.01	<.01	<.01	<.01

Table 8.--Physical properties and concentratiopns of agricultural organic compounds, nutrients, and sediment in water samples collected during Phase I sampling in the upper Illinois River Basin, 1989--Continued

Date	Total trithion (µg/L) (39786)	Methyl trithion, total (µg/L) (39790)	Alachlor total recoverable (µg/L) (77825)	Cyanazine total (µg/L) (81757)	Dicamba (Mediben) (Banvel D) total (µg/L) (82052)	2,4-DP total (µg/L) (82183)	Ametryne total (µg/L) (82184)	Metribuzin water whole total recoverable (µg/L) (82611)	Metolachlor water whole total recoverable (µg/L) (82612)	Sediment suspended sieve diameter % finer than .062 mm (70331)	Sediment, suspended (mg/L) (80154)
					05523000 Bice Ditch near South Marion, Ind.--Continued						
5-01	<0.01	<0.01	<0.10	0.20	<0.01	<0.01	<0.10	<0.1	0.1	98	14
5-30	<.01	<.01	1.80	1.0	.41	<.01	<.10	.2	2.0	84	30
7-12	<.01	<.01	<.10	<.10	.01	<.01	<.10	<.1	.1	64	18
					05525500 Sugar Creek at Milford, Ill.--Continued						
5-01	--	--	--	--	--	--	--	--	--	100	157
5-26	--	--	--	--	--	--	--	--	--	100	2,350
5-26	<.01	<.01	4.70	8.8	.44	<.01	<.10	.4	5.6	--	--
5-26	--	--	--	--	--	--	--	--	--	100	1,970
5-26	--	--	--	--	--	--	--	--	--	100	1,420
5-26	--	--	--	--	--	--	--	--	--	99	994
5-26	--	--	--	--	--	--	--	--	--	99	1,020
5-26	--	--	--	--	--	--	--	--	--	99	953
5-26	<.01	<.01	4.20	11.0	.28	<.01	<.10	.5	3.4	--	--
5-26	<.01	<.01	4.00	13.0	.28	<.01	<.10	.5	3.3	--	--
5-26	--	--	--	--	--	--	--	--	--	98	983
5-27	--	--	--	--	--	--	--	--	--	99	988
5-27	--	--	--	--	--	--	--	--	--	99	991
5-27	--	--	--	--	--	--	--	--	--	99	952
5-27	--	--	--	--	--	--	--	--	--	100	868
5-27	--	--	--	--	--	--	--	--	--	99	800
5-27	--	--	--	--	--	--	--	--	--	100	700
5-27	--	--	--	--	--	--	--	--	--	100	620
5-27	--	--	--	--	--	--	--	--	--	100	562
5-27	--	--	--	--	--	--	--	--	--	100	491
5-27	--	--	--	--	--	--	--	--	--	100	459
5-28	--	--	--	--	--	--	--	--	--	99	153
5-28	<.01	<.01	3.20	9.9	.25	<.01	<.10	.4	1.7	--	--
5-28	--	--	--	--	--	--	--	--	--	97	121
5-28	--	--	--	--	--	--	--	--	--	98	112
5-28	--	--	--	--	--	--	--	--	--	98	110
7-12	<.01	<.01	<.10	.40	<.01	<.01	<.10	<.1	.2	83	106

Table 8.--Physical properties and concentratiopns of agricultural organic compounds, nutrients, and sediment in water samples collected during Phase I sampling in the upper Illinois River Basin, 1989--Continued

Date	Time	Ending date	Ending time	Agency collecting sample (code number) (00027)	Agency analyzing sample (code number) (00028)	Discharge, inst. cubic feet per second (00061)	Gage height (feet) (00065)	Specific conductance (µS/cm) (00095)	Bromacil water whole recoverable (µg/L) (30234)	Butachlor water whole recoverable (µg/L) (30235)	Butylate water whole recoverable (µg/L) (30236)
				05530990 Salt Creek at Rolling Meadows, Ill.							
4-25	1230	--	--	81700	80020	13	2.26	--	--	--	--
5-19	1415	5-19	1815	81700	80020	[2]46	--	--	0.1	<0.1	<0.1
5-19	1515	--	--	81700	80020	--	--	--	--	--	--
5-19	1615	--	--	81700	80020	--	--	--	--	--	--
5-19	1715	--	--	81700	80020	--	--	--	--	--	--
5-19	1815	--	--	81700	80020	--	--	--	--	--	--
5-19	1915	5-19	2315	81700	80020	[2]38	--	--	.2	<.1	<.1
5-19	2015	--	--	81700	80020	--	--	--	--	--	--
5-19	2115	--	--	81700	80020	--	--	--	--	--	--
5-19	2215	--	--	81700	80020	--	--	--	--	--	--
5-19	2315	--	--	81700	80020	--	--	--	--	--	--
5-20	0015	--	--	81700	80020	--	--	--	--	--	--
5-20	0016	5-20	0416	81700	80020	[2]25	--	--	.9	.1	<.1
5-20	0017	5-20	0417	81700	80020	[2]25	--	--	.9	<.1	<.1
5-20	0115	--	--	81700	80020	--	--	--	--	--	--
6-22	1020	--	--	81700	80020	50	2.84	--	<.1	<.1	<.1
7-12	1100	--	--	81700	80020	[1]8.0	--	--	.1	<.1	<.1
				05532000 Addison Creek at Bellwood, Ill.							
5-01	1045	--	--	81700	80020	8.0	1.29	--	.1	<.1	<.1
6-22	1130	--	--	81700	80020	6.4	1.25	--	.1	<.1	<.1

Table 8.--Physical properties and concentratiopns of agricultural organic compounds, nutrients, and sediment in water samples collected during Phase I sampling in the upper Illinois River Basin, 1989--Continued

Date	Cyclo-ate water whole recov-erable (µg/L) (30254)	Diphen-amid water whole recov-erable (µg/L) (30255)	Hexazi-none water whole recov-erable (µg/L) (30264)	Propa-chlor water whole recov-erable (µg/L) (30295)	Ter-bacil water whole recov-erable (µg/L) (30311)	Ver-nolate water whole recov-erable (µg/L) (30324)	Propa-zine total (µg/L) (39024)	Tri-flura-lin total recov-erable (µg/L) (39030)	Sime-tryne total (µg/L) (39054)	Sima-zine total (µg/L) (39055)	Prome-tone total (µg/L) (39056)
05530990 Salt Creek at Rolling Meadows, Ill.--Continued											
4-25	--	--	--	--	--	--	<0.10	<0.10	<0.1	5.5	<0.1
5-19	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<.10	<.10	<.1	.30	.1
5-19	--	--	--	--	--	--	--	--	--	--	--
5-19	--	--	--	--	--	--	--	--	--	--	--
5-19	--	--	--	--	--	--	--	--	--	--	--
5-19	--	--	--	--	--	--	--	--	--	--	--
5-19	<.1	<.1	.1	<.1	<.1	<.1	<.10	<.10	<.1	.20	.1
5-19	--	--	--	--	--	--	--	--	--	--	--
5-19	--	--	--	--	--	--	--	--	--	--	--
5-19	--	--	--	--	--	--	--	--	--	--	--
5-19	--	--	--	--	--	--	--	--	--	--	--
5-20	--	--	--	--	--	--	--	--	--	--	--
5-20	<.1	<.1	.2	<.1	<.1	<.1	<.10	<.10	<.1	.20	.1
5-20	<.1	<.1	.3	<.1	.1	<.1	<.10	<.10	<.1	.20	.1
5-20	--	--	--	--	--	--	--	--	--	--	--
6-22	<.1	<.1	.2	<.1	.1	<.1	<.10	<.10	<.1	.30	.1
7-12	<.1	<.1	.1	<.1	.1	<.1	<.10	<.10	<.1	.20	<.1
05532000 Addison Creek at Bellwood, Ill.--Continued											
5-01	<.1	<.1	<.1	<.1	<.1	<.1	<.10	<.10	<.1	.20	.2
6-22	<.1	<.1	.2	<.1	.2	<.1	<.10	<.10	<.1	.10	.1

Table 8.--Physical properties and concentratiopns of agricultural organic compounds, nutrients, and sediment in water samples collected during Phase I sampling in the upper Illinois River Basin, 1989--Continued

Date	Prometryne total (µg/L) (39057)	Ethion, total (µg/L) (39398)	Malathion total (µg/L) (39530)	Parathion total (µg/L) (39540)	Diazinon, total (µg/L) (39570)	Methyl parathion total (µg/L) (39600)	Atrazine, total (µg/L) (39630)	Piclo-ram (Tordon) (Amdon) total (µg/L) (39720)	2,4-D total (µg/L) (39730)	2,4,5-T total (µg/L) (39740)	Silvex, total (µg/L) (39760)
					05530990 Salt Creek at Rolling Meadows, Ill.--Continued						
4-25	<0.1	--	--	--	--	--	0.30	<0.01	<0.01	<0.01	<0.01
5-19	<.1	<0.01	0.28	<0.01	0.06	<0.01	.20	<.01	1.5	<.01	<.01
5-19	--	--	--	--	--	--	--	--	--	--	--
5-19	--	--	--	--	--	--	--	--	--	--	--
5-19	--	--	--	--	--	--	--	--	--	--	--
5-19	--	--	--	--	--	--	--	--	--	--	--
5-19	<.1	<.01	.20	<.01	.05	<.01	.20	<.01	1.8	<.01	<.01
5-19	--	--	--	--	--	--	--	--	--	--	--
5-19	--	--	--	--	--	--	--	--	--	--	--
5-19	--	--	--	--	--	--	--	--	--	--	--
5-19	--	--	--	--	--	--	--	--	--	--	--
5-20	--	--	--	--	--	--	--	--	--	--	--
5-20	<.1	<.01	.09	<.01	.06	<.01	.30	<.01	2.3	<.01	<.01
5-20	<.1	<.01	.11	<.01	.06	<.01	.20	<.01	2.0	<.01	<.01
5-20	--	--	--	--	--	--	--	--	--	--	--
6-22	<.1	<.01	<.01	<.01	.02	<.01	.10	--	--	--	--
7-12	<.1	<.01	1.0	<.10	.14	<.01	.50	<.03	<.10	<.10	<.10
					05532000 Addison Creek at Bellwood, Ill.--Continued						
5-01	<.1	<.01	.01	<.01	.05	<.01	.30	<.01	1.3	<.01	<.01
6-22	<.1	<.01	.01	<.01	.02	<.01	.70	--	--	--	--

Table 8.--Physical properties and concentratiopns of agricultural organic compounds, nutrients, and sediment in water samples collected during Phase I sampling in the upper Illinois River Basin, 1989--Continued

Date	Total trithion (µg/L) (39786)	Methyl trithion total (µg/L) (39790)	Alachlor total recoverable (µg/L) (77825)	Cyanazine total (µg/L) (81757)	Dicamba (Mediben) (Banvel D) total (µg/L) (82052)	2,4-DP total (µg/L) (82183)	Ametryne total (µg/L) (82184)	Metribuzin water whole total recoverable (µg/L) (82611)	Metolachlor water whole total recoverable (µg/L) (82612)	Sediment suspended sieve diameter % finer than .062 mm (70331)	Sediment, suspended (mg/L) (80154)
					05530990 Salt Creek at Rolling Meadows, Ill.--Continued						
4-25	--	--	0.10	0.20	<0.01	<0.01	<0.10	<0.1	<0.1	99	22
5-19	<0.01	<0.01	.20	.10	.18	.02	<.10	<.1	.1	98	198
5-19	--	--	--	--	--	--	--	--	--	100	180
5-19	--	--	--	--	--	--	--	--	--	99	171
5-19	--	--	--	--	--	--	--	--	--	100	207
5-19	--	--	--	--	--	--	--	--	--	99	152
5-19	<.01	<.01	.30	<.10	.19	.05	<.10	<.1	.4	99	100
5-19	--	--	--	--	--	--	--	--	--	98	105
5-19	--	--	--	--	--	--	--	--	--	99	100
5-19	--	--	--	--	--	--	--	--	--	99	121
5-19	--	--	--	--	--	--	--	--	--	99	129
5-20	--	--	--	--	--	--	--	--	--	98	127
5-20	<.01	--	.30	<.10	.21	.06	<.10	<.1	<.1	98	127
5-20	<.01	<.01	.20	.10	.18	.05	<.10	<.1	.1	--	--
5-20	--	--	--	--	--	--	--	--	--	98	106
6-22	<.01	<.01	<.10	<.10	--	--	<.10	<.1	<.1	89	50
7-12	<.01	<.01	<.10	<.10	.13	<.10	<.10	<.1	<.1	100	99
					05532000 Addison Creek at Bellwood, Ill.--Continued						
5-01	<.01	<.01	<.10	<.10	.17	<.01	<.10	<.1	<.1	100	6
6-22	<.01	<.01	<.10	<.10	--	--	<.10	<.1	<.1	100	2

[1]Estimated value.
[2]Mean value.

Table 9.--Physical properties and concentrations of agricultural organic compounds (determined by immunoassay analysis), nutrients, and sediment in water samples collected during Phase II sampling in the Kankakee River Basin, 1990

[mg/L, milligrams per liter; µg/L, micrograms per liter; ELISA, enzyme-linked immunosorbent assay; <, less than; dashes indicate no data]

Date	Time	Ending date	Ending time	Agency collecting sample (code number) (00027)	Agency analyzing sample (code number) (00028)	Discharge instantaneous cubic feet per second (00061)	Nitrogen, NO2+NO3 total (mg/L as N) (00630)	Triazine screen (ELISA) water dissolved recoverable, as atrazine (34756)	Alachlor screen water dissolved recoverable, as alachlor (-----)	Sediment, suspended (mg/L) (80154)
KANKAKEE RIVER STATIONS										
05515000 Kankakee River near North Liberty, Ind.										
5-30	2115	--	--	81700	80020	230	1.20	--	--	199
5-30	2116	--	--	81700	82013	230	--	<0.10	2.2	--
6-08	1540	--	--	81700	80020	218	1.10	--	--	80
6-08	1541	--	--	81700	82013	218	--	.14	1.4	--
6-26	1840	--	--	81700	80020	231	1.20	--	--	53
6-26	1841	--	--	81700	82013	231	--	<.10	.89	--
7-23	1620	--	--	81700	80020	409	2.00	--	--	69
7-23	1621	--	--	81700	82013	409	--	.64	2.1	--
05515500 Kankakee River at Davis, Ind.										
5-30	1645	--	--	81700	80020	758	1.40	--	--	166
5-30	1646	--	--	81700	82013	758	--	<.10	1.0	--
6-08	2025	--	--	81700	80020	685	1.30	--	--	65
6-08	2026	--	--	81700	82013	685	--	.12	1.3	--
6-26	1735	--	--	81700	80020	575	1.40	--	--	52
6-26	1736	--	--	81700	82013	575	--	.59	1.5	--
7-23	1730	--	--	81700	80020	1,130	3.20	--	--	58
7-23	1731	--	--	81700	82013	1,130	--	2.5	4.6	--
05516500 Yellow River at Plymouth, Ind.										
5-30	1935	--	--	81700	80020	225	7.00	--	--	45
5-30	1936	--	--	81700	82013	225	--	1.5	3.9	--
6-09	1150	--	--	81700	80020	589	15.0	--	--	303
6-09	1151	--	--	81700	82013	589	--	2.5	3.4	--
6-26	1950	--	--	81700	80020	151	6.40	--	--	58
6-26	1951	--	--	81700	82013	151	--	2.5	4.1	--
6-29	1645	--	--	81700	80020	257	5.00	--	--	79
6-29	1646	--	--	81700	82013	257	--	4.6	8.4	--
7-23	1820	--	--	81700	80020	1,040	9.90	--	--	138
7-23	1821	--	--	81700	82013	1,040	--	6.2	6.5	--
7-24	1245	--	--	81700	80020	1,240	11.0	--	--	44
7-24	1246	--	--	81700	82013	1,240	--	6.8	6.3	--

Table 9.--Physical properties and concentrations of agricultural organic compounds (determined by immunoassay analysis), nutrients, and sediment in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Time	Ending date	Ending time	Agency collecting sample (code number) (00027)	Agency analyzing sample (code number) (00028)	Discharge instantaneous cubic feet per second (00061)	Nitrogen, NO2+NO3 total (mg/L as N) (00630)	Triazine screen (ELISA) water dissolved recoverable, as atrazine (34756)	Alachlor screen water dissolved recoverable, as alachlor (-----)	Sediment, suspended (mg/L) (80154)
				KANKAKEE RIVER STATIONS--Continued						
				05517000 Yellow River at Knox, Ind.						
5-30	1820	--	--	81700	80020	483	5.70	--	--	39
5-30	1821	--	--	81700	82013	483	--	1.9	3.5	--
6-09	1300	--	--	81700	80020	530	6.90	--	--	84
6-09	1301	--	--	81700	82013	530	--	6.4	4.4	--
6-27	0700	--	--	81700	80020	282	6.30	--	--	47
6-27	0701	--	--	81700	82013	282	--	2.2	3.6	--
6-29	1730	--	--	81700	80020	396	6.10	--	--	74
6-29	1731	--	--	81700	82013	396	--	4.7	4.2	--
7-25	1245	--	--	81700	80020	1,220	9.20	--	--	332
7-25	1246	--	--	81700	82013	1,220	--	4.0	6.8	--
				05517500 Kankakee River at Dunns Bridge, Ind.						
5-30	1500	--	--	81700	80020	2,160	2.50	--	--	169
5-30	1501	--	--	81700	82013	2,160	--	.44	2.0	--
6-11	1645	--	--	81700	80020	1,960	4.40	--	--	72
6-11	1646	--	--	81700	82013	1,960	--	5.1	5.5	--
6-27	0810	--	--	81700	80020	1,350	2.60	--	--	65
6-27	0811	--	--	81700	82013	1,350	--	1.5	3.1	--
7-24	1430	--	--	81700	80020	2,840	4.20	--	--	50
7-24	1431	--	--	81700	82013	2,840	--	2.8	5.1	--
7-25	1145	--	--	81700	80020	2,870	4.50	--	--	48
7-25	1146	--	--	81700	82013	2,870	--	2.9	5.7	--
				05517530 Kankakee River near Kouts, Ind.						
5-30	1310	--	--	81700	80020	1,530	2.40	--	--	134
5-30	1311	--	--	81700	82013	1,530	--	.63	2.3	--
6-11	1820	--	--	81700	80020	2,100	4.40	--	--	71
6-11	1821	--	--	81700	82013	2,100	--	6.0	6.1	--
6-27	0900	--	--	81700	80020	1,390	2.70	--	--	58
6-27	0901	--	--	81700	82013	1,390	--	.89	2.8	--
7-25	1400	--	--	81700	80020	2,930	4.30	--	--	48
7-25	1401	--	--	81700	82013	2,930	--	2.5	5.2	--
				05517890 Cobb Ditch near Kouts, Ind.						
5-30	1145	--	--	81700	80020	29	0.800	--	--	78
5-30	1146	--	--	81700	82013	29	--	<0.10	1.3	--
6-08	1345	--	--	81700	80020	95	3.10	--	--	1,720
6-08	1346	--	--	81700	82013	95	--	25	23	--
6-27	0945	--	--	81700	80020	23	.500	--	--	57
6-27	0946	--	--	81700	82013	23	--	1.0	1.4	--
6-29	1420	--	--	81700	80020	26	1.20	--	--	276

Table 9.--Physical properties and concentrations of agricultural organic compounds (determined by immunoassay analysis), nutrients, and sediment in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Time	Ending date	Ending time	Agency collecting sample (code number) (00027)	Agency analyzing sample (code number) (00028)	Discharge instantaneous cubic feet per second (00061)	Nitrogen, NO2+NO3 total (mg/L as N) (00630)	Triazine screen (ELISA) water dissolved recoverable, as atrazine (34756)	Alachlor screen water dissolved recoverable, as alachlor (-----)	Sediment, suspended (mg/L) (80154)
KANKAKEE RIVER STATIONS--Continued										
05518000 Kankakee River at Shelby, Ind.										
5-31	0750	--	--	81700	80020	2,750	1.90	--	--	54
5-31	0751	--	--	81700	82013	2,750	--	.84	2.6	--
6-11	1945	--	--	81700	80020	2,600	4.10	--	--	74
6-11	1946	--	--	81700	82013	2,600	--	5.6	7.0	--
6-27	1035	--	--	81700	80020	1,660	2.20	--	--	71
6-27	1036	--	--	81700	82013	1,660	--	.99	3.0	--
7-26	1245	--	--	81700	80020	3,570	3.80	--	--	37
7-26	1246	--	--	81700	82013	3,570	--	1.8	3.7	--
05519000 Singleton Ditch at Schneider, Ind.										
5-31	0915	--	--	81700	80020	124	1.70	--	--	80
5-31	0916	--	--	81700	82013	124	--	.28	2.7	--
6-08	1230	--	--	81700	80020	140	1.80	--	--	128
6-08	1231	--	--	81700	82013	140	--	2.6	3.6	--
6-27	1130	--	--	81700	80020	67	1.40	--	--	105
6-27	1131	--	--	81700	82013	67	--	2.5	2.2	--
6-29	1315	--	--	81700	80020	97	1.30	--	--	298
6-29	1316	--	--	81700	82013	97	--	5.6	2.1	--
05520500 Kankakee River at Momence, Ill.										
5-31	1830	--	--	81700	80020	3,840	1.90	--	--	59
5-31	1831	--	--	81700	82013	3,840	--	.89	2.7	--
6-11	2100	--	--	81700	80020	3,330	2.40	--	--	61
6-11	2101	--	--	81700	82013	3,330	--	3.1	4.1	--
6-27	1355	--	--	81700	80020	1,940	1.80	--	--	59
6-27	1356	--	--	81700	82013	1,940	--	1.1	1.6	--
7-26	1400	--	--	81700	80020	3,970	3.00	--	--	27
7-26	1401	--	--	81700	82013	3,970	--	1.3	3.3	--
05527500 Kankakee River near Wilmington, Ill.										
5-31	2030	--	--	81700	80020	6,400	6.50	--	--	173
5-31	2031	--	--	81700	82013	6,400	--	1.2	2.2	--
6-11	2230	--	--	81700	80020	6,640	4.40	--	--	106
6-11	2231	--	--	81700	82013	6,640	--	4.4	3.4	--
6-27	1535	--	--	81700	80020	3,680	6.90	--	--	57
6-27	1536	--	--	81700	82013	3,680	--	3.1	3.3	--
7-03	1350	--	--	81700	80020	5,660	8.10	--	--	100
7-03	1351	--	--	81700	82013	5,660	--	2.5	3.8	--

Table 9.--Physical properties and concentrations of agricultural organic compounds (determined by immunoassay analysis), nutrients, and sediment in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Time	Ending date	Ending time	Agency collecting sample (code number) (00027)	Agency analyzing sample (code number) (00028)	Discharge instantaneous cubic feet per second (00061)	Nitrogen, NO2+NO3 total (mg/L as N) (00630)	Triazine screen (ELISA) water dissolved recoverable, as atrazine (34756)	Alachlor screen water dissolved recoverable, as alachlor (-----)	Sediment, suspended (mg/L) (80154)
					IROQUOIS RIVER STATIONS					
					05521000 Iroquois River at Rosebud, Ind.					
5-16	1300	--	--	81700	80020	81	9.10	--	--	29
5-16	1301	--	--	81700	82013	81	--	15	6.1	--
5-31	1215	--	--	81700	80020	25	3.40	--	--	38
5-31	1216	--	--	81700	82013	25	--	.21	3.1	--
6-08	1800	--	--	81700	80020	35	5.90	--	--	41
6-08	1801	--	--	81700	82013	35	--	.58	.35	--
6-19	1335	--	--	81700	80020	16	1.80	--	--	20
6-19	1336	--	--	81700	82013	16	--	.15	1.9	--
6-26	1400	--	--	81700	80020	14	2.10	--	--	88
6-26	1401	--	--	81700	82013	14	--	.27	2.1	--
6-29	1700	--	--	81700	80020	22	2.60	--	--	40
6-29	1701	--	--	81700	82013	22	--	.33	1.9	--
7-10	1400	--	--	81700	80020	20	2.10	--	--	38
7-10	1401	--	--	81700	82013	20	--	.46	2.9	--
7-12	1145	--	--	81700	80020	26	4.70	--	--	39
7-12	1146	--	--	81700	82013	26	--	.71	3.0	--
7-19	1115	--	--	81700	80020	18	2.20	--	--	71
7-19	1116	--	--	81700	82013	18	--	.21	2.0	--
7-20	1150	--	--	81700	80020	88	8.60	--	--	382
7-20	1151	--	--	81700	82013	88	--	2.7	3.9	--
7-21	1100	--	--	81700	80020	138	8.70	--	--	40
7-21	1101	--	--	81700	82013	138	--	3.5	3.6	--
7-23	1230	--	--	81700	80020	208	9.00	--	--	40
7-23	1231	--	--	81700	82013	208	--	3.1	3.4	--
7-25	1500	--	--	81700	80020	70	5.10	--	--	24
7-25	1501	--	--	81700	82013	70	--	2.1	3.5	--
					05522500 Iroquois River at Rensselaer, Ind.					
5-10	1516	--	--	81700	82013	153	--	1.7	1.2	--
5-14	2000	--	--	81700	80020	611	5.80	--	--	28
5-14	2001	--	--	81700	82013	611	--	3.8	3.0	--
5-16	1430	--	--	81700	80020	448	9.50	--	--	28
5-16	1431	--	--	81700	82013	448	--	3.5	2.3	--
5-31	1300	--	--	81700	80020	128	5.30	--	--	61
5-31	1301	--	--	81700	82013	128	--	.64	2.7	--
6-08	1645	--	--	81700	80020	162	5.30	--	--	87
6-08	1646	--	--	81700	82013	162	--	2.1	3.5	--
6-19	1255	--	--	81700	80020	75	2.90	--	--	59

Table 9.--Physical properties and concentrations of agricultural organic compounds (determined by immunoassay analysis), nutrients, and sediment in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Time	Ending date	Ending time	Agency collecting sample (code number) (00027)	Agency analyzing sample (code number) (00028)	Discharge instantaneous cubic feet per second (00061)	Nitrogen, NO2+NO3 total (mg/L as N) (00630)	Triazine screen (ELISA) water dissolved recoverable, as atrazine (34756)	Alachlor screen water dissolved recoverable, as alachlor (-----)	Sediment, suspended (mg/L) (80154)
IROQUOIS RIVER STATIONS--Continued										
05522500 Iroquois River at Rensselaer, Ind.--Continued										
6-19	1256	--	--	81700	82013	75	--	.55	2.4	--
6-26	1445	--	--	81700	80020	78	2.90	--	--	48
6-26	1446	--	--	81700	82013	78	--	.76	2.2	--
6-29	1900	--	--	81700	80020	93	2.60	--	--	55
6-29	1901	--	--	81700	82013	93	--	1.2	2.4	--
6-30	1400	--	--	81700	80020	104	3.40	--	--	--
6-30	1401	--	--	81700	82013	104	--	1.4	2.9	--
7-10	1530	--	--	81700	80020	79	1.80	--	--	107
7-10	1531	--	--	81700	82013	79	--	1.5	2.9	--
7-12	1130	--	--	81700	80020	169	7.10	--	--	43
7-12	1131	--	--	81700	82013	169	--	2.8	5.0	--
7-19	1145	--	--	81700	80020	96	4.40	--	--	115
7-19	1146	--	--	81700	82013	96	--	.70	2.4	--
7-20	1225	--	--	81700	80020	683	9.10	--	--	322
7-20	1226	--	--	81700	82013	683	--	5.6	7.7	--
7-21	1200	--	--	81700	80020	836	11.0	--	--	66
7-21	1201	--	--	81700	82013	836	--	4.8	6.0	--
7-23	1730	--	--	81700	80020	1,160	8.80	--	--	34
7-23	1731	--	--	81700	82013	1,160	--	3.8	4.7	--
7-25	1400	--	--	81700	80020	873	7.60	--	--	29
7-25	1401	--	--	81700	82013	873	--	3.2	3.6	--
05524500 Iroquois River near Foresman, Ind.										
5-11	0931	--	--	81700	82013	333	--	7.3	3.5	--
5-14	2145	--	--	81700	80020	979	5.80	--	--	261
5-14	2146	--	--	81700	82013	979	--	9.4	3.5	--
5-16	1530	--	--	81700	80020	941	11.0	--	--	32
5-16	1531	--	--	81700	82013	941	--	1.1	3.0	--
5-31	1430	--	--	81700	80020	293	6.80	--	--	65
5-31	1431	--	--	81700	82013	293	--	.27	2.0	--
6-08	1500	--	--	81700	80020	255	5.90	--	--	104
6-08	1501	--	--	81700	82013	255	--	1.8	2.1	--
6-19	1200	--	--	81700	80020	152	3.50	--	--	74
6-19	1201	--	--	81700	82013	152	--	0.71	1.3	--
6-26	1550	--	--	81700	80020	158	3.50	--	--	85
6-26	1551	--	--	81700	82013	158	--	.93	2.1	--
6-29	2030	--	--	81700	80020	217	4.50	--	--	111
6-29	2031	--	--	81700	82013	217	--	2.3	1.8	--

Table 9.--Physical properties and concentrations of agricultural organic compounds (determined by immunoassay analysis), nutrients, and sediment in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Time	Ending date	Ending time	Agency collecting sample (code number) (00027)	Agency analyzing sample (code number) (00028)	Discharge instantaneous cubic feet per second (00061)	Nitrogen, NO2+NO3 total (mg/L as N) (00630)	Triazine screen (ELISA) water dissolved recoverable, as atrazine (34756)	Alachlor screen water dissolved recoverable, as alachlor (-----)	Sediment, suspended (mg/L) (80154)
IROQUOIS RIVER STATIONS--Continued										
05524500 Iroquois River near Foresman, Ind.--Continued										
6-30	1200	--	--	81700	80020	238	7.00	--	--	--
6-30	1201	--	--	81700	82013	238	--	2.2	2.8	--
6-30	1630	--	--	81700	80020	316	6.50	--	--	235
6-30	1631	--	--	81700	82013	316	--	1.8	3.2	--
7-10	1430	--	--	81700	80020	128	1.70	--	--	118
7-10	1431	--	--	81700	82013	128	--	1.2	1.4	--
7-10	1745	--	--	81700	80020	152	1.80	--	--	48
7-10	1746	--	--	81700	82013	152	--	.89	1.3	--
7-11	1025	--	--	81700	80020	203	2.60	--	--	113
7-11	1026	--	--	81700	82013	203	--	1.5	2.6	--
7-11	1600	--	--	81700	80020	337	5.30	--	--	61
7-11	1601	--	--	81700	82013	337	--	1.7	2.7	--
7-11	1715	--	--	81700	80020	365	6.30	--	--	91
7-11	1716	--	--	81700	82013	365	--	2.3	2.8	--
7-11	2200	--	--	81700	80020	464	7.20	--	--	90
7-11	2201	--	--	81700	82013	464	--	2.6	3.9	--
7-12	1015	--	--	81700	80020	549	8.70	--	--	82
7-12	1016	--	--	81700	82013	549	--	2.7	3.0	--
7-12	1245	--	--	81700	80020	548	8.90	--	--	68
7-12	1246	--	--	81700	82013	548	--	2.3	3.8	--
7-13	1015	--	--	81700	80020	444	9.10	--	--	28
7-13	1016	--	--	81700	82013	444	--	2.5	4.3	--
7-19	1255	--	--	81700	80020	246	--	--	--	70
7-19	1256	--	--	81700	82013	246	--	1.3	1.9	--
7-20	1310	--	--	81700	80020	699	6.00	--	--	326
7-20	1311	--	--	81700	82013	699	--	3.7	3.5	--
7-21	1300	--	--	81700	80020	1,060	11.0	--	--	65
7-21	1301	--	--	81700	82013	1,060	--	4.3	6.2	--
7-23	1800	--	--	81700	80020	1,590	9.00	--	--	27
7-23	1801	--	--	81700	82013	1,590	--	4.2	6.3	--
7-25	1215	--	--	81700	80020	1,510	8.60	--	--	23
7-25	1216	--	--	81700	82013	1,510	--	3.3	4.5	--
05525000 Iroquois River at Iroquois, Ill.										
5-14	1645	--	--	81700	80020	1,710	5.80	--	--	56
5-14	1646	--	--	81700	82013	1,710	--	20	7.4	--
5-16	1645	--	--	81700	80020	1,450	13.0	--	--	34
5-16	1646	--	--	81700	82013	1,450	--	2.9	2.3	--
5-17	1300	--	--	81700	80020	1,550	13.0	--	--	145

Table 9.--Physical properties and concentrations of agricultural organic compounds (determined by immunoassay analysis), nutrients, and sediment in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Time	Ending date	Ending time	Agency collecting sample (code number) (00027)	Agency analyzing sample (code number) (00028)	Discharge instantaneous cubic feet per second (00061)	Nitrogen, NO2+NO3 total (mg/L as N) (00630)	Triazine screen (ELISA) water dissolved recoverable, as atrazine (34756)	Alachlor screen water dissolved recoverable, as alachlor (-----)	Sediment, suspended (mg/L) (80154)
IROQUOIS RIVER STATIONS--Continued										
05525000 Iroquois River at Iroquois, Ill.--Continued										
5-17	1301	--	--	81700	82013	1,550	--	2.7	3.2	--
5-18	0030	--	--	81700	80020	1,570	13.0	--	--	54
5-18	0031	--	--	81700	82013	1,570	--	4.1	3.6	--
5-18	1100	--	--	81700	80020	1,590	14.0	--	--	162
5-18	1101	--	--	81700	82013	1,590	--	6.7	5.1	--
5-18	2300	--	--	81700	80020	1,560	14.0	--	--	166
5-18	2301	--	--	81700	82013	1,560	--	3.5	3.0	--
5-19	1100	--	--	81700	80020	1,520	13.0	--	--	62
5-19	1101	--	--	81700	82013	1,520	--	3.7	2.2	--
5-19	2300	--	--	81700	80020	1,450	13.0	--	--	165
5-19	2301	--	--	81700	82013	1,450	--	3.9	3.1	--
5-20	1100	--	--	81700	80020	1,350	12.0	--	--	167
5-20	1101	--	--	81700	82013	1,350	--	3.5	3.1	--
5-20	2300	--	--	81700	80020	1,230	12.0	--	--	169
5-20	2301	--	--	81700	82013	1,230	--	3.2	2.7	--
5-22	1230	--	--	81700	80020	879	5.00	--	--	173
5-22	1231	--	--	81700	82013	879	--	1.5	1.5	--
5-24	1315	--	--	81700	80020	615	10.0	--	--	77
5-24	1316	--	--	81700	82013	615	--	.88	.45	--
5-31	1530	--	--	81700	80020	436	10.0	--	--	70
5-31	1531	--	--	81700	82013	436	--	.25	2.1	--
6-08	1930	--	--	81700	80020	335	9.00	--	--	112
6-08	1931	--	--	81700	82013	335	--	.29	.38	--
6-18	1330	--	--	81700	80020	213	5.40	--	--	110
6-18	1331	--	--	81700	82013	213	--	.81	1.3	--
6-20	1400	--	--	81700	80020	194	15.0	--	--	--
6-20	1401	--	--	81700	82013	194	--	.57	1.0	--
6-23	0915	--	--	81700	80020	201	5.50	--	--	100
6-23	0916	--	--	81700	82013	201	--	7.0	6.4	--
6-25	1245	--	--	81700	80020	216	5.20	--	--	96
6-25	1246	--	--	81700	82013	216	--	2.7	4.8	--
6-27	1325	--	--	81700	80020	185	5.30	--	--	193
6-27	1326	--	--	81700	82013	185	--	2.1	3.8	--
6-28	1400	--	--	81700	80020	171	4.80	--	--	83
6-28	1401	--	--	81700	82013	171	--	3.4	3.3	--
6-30	1830	--	--	81700	80020	316	6.80	--	--	261
6-30	1831	--	--	81700	82013	316	--	3.2	4.7	--
7-02	1320	--	--	81700	80020	317	8.30	--	--	131
7-02	1321	--	--	81700	82013	317	--	2.0	1.6	--
7-05	1240	--	--	81700	80020	175	5.90	--	--	73

Table 9.--Physical properties and concentrations of agricultural organic compounds (determined by immunoassay analysis), nutrients, and sediment in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Time	Ending date	Ending time	Agency collecting sample (code number) (00027)	Agency analyzing sample (code number) (00028)	Discharge instantaneous cubic feet per second (00061)	Nitrogen, NO2+NO3 total (mg/L as N) (00630)	Triazine screen (ELISA) water dissolved recoverable, as atrazine (34756)	Alachlor screen water dissolved recoverable, as alachlor (-----)	Sediment, suspended (mg/L) (80154)
				IROQUOIS RIVER STATIONS--Continued						
				05525000 Iroquois River at Iroquois, Ill.--Continued						
7-10	1840	--	--	81700	80020	129	2.70	--	--	79
7-10	1841	--	--	81700	82013	129	--	0.62	1.4	--
7-11	0930	--	--	81700	80020	171	3.70	--	--	98
7-11	0931	--	--	81700	82013	171	--	5.2	7.3	--
7-11	1445	--	--	81700	80020	194	3.90	--	--	103
7-11	1446	--	--	81700	82013	194	--	2.5	4.3	--
7-11	1830	--	--	81700	80020	220	3.80	--	--	121
7-11	1831	--	--	81700	82013	220	--	1.9	3.3	--
7-11	2115	--	--	81700	80020	248	4.20	--	--	95
7-11	2116	--	--	81700	82013	248	--	2.8	3.5	--
7-12	0915	--	--	81700	80020	435	6.30	--	--	69
7-12	0916	--	--	81700	82013	435	--	2.0	4.7	--
7-12	1315	--	--	81700	80020	493	5.80	--	--	74
7-12	1316	--	--	81700	82013	493	--	2.0	3.3	--
7-13	1130	--	--	81700	80020	593	8.60	--	--	97
7-13	1131	--	--	81700	82013	593	--	2.9	4.7	--
7-19	1355	--	--	81700	80020	406	8.90	--	--	119
7-19	1356	--	--	81700	82013	406	--	1.6	2.8	--
7-20	1410	--	--	81700	80020	650	8.60	--	--	270
7-20	1411	--	--	81700	82013	650	--	2.6	3.4	--
7-21	1500	--	--	81700	80020	1,460	8.70	--	--	209
7-21	1501	--	--	81700	82013	1,460	--	3.8	5.1	--
7-23	1845	--	--	81700	80020	2,710	5.40	--	--	51
7-23	1846	--	--	81700	82013	2,710	--	3.9	5.9	--
7-25	1100	--	--	81700	80020	2,580	9.20	--	--	35
7-25	1101	--	--	81700	82013	2,580	--	3.7	5.5	--
				05525500 Sugar Creek at Milford, Ill.						
5-16	0940	--	--	81700	80020	802	15.0	--	--	317
5-16	0941	--	--	81700	82013	802	--	4.3	2.1	--
5-16	1040	--	--	81700	80020	915	16.0	--	--	439
5-16	1041	--	--	81700	82013	915	--	10	2.9	--
5-16	1120	--	--	81700	80020	968	16.0	--	--	419
5-16	1121	--	--	81700	82013	968	--	14	3.4	--
5-16	1215	--	--	81700	80020	1,120	16.0	--	--	398
5-16	1216	--	--	81700	82013	1,120	--	12	3.7	--
5-16	1300	--	--	81700	80020	1,220	16.0	--	--	446
5-16	1530	--	--	81700	80020	1,580	13.0	--	--	1,360

Table 9.--Physical properties and concentrations of agricultural organic compounds (determined by immunoassay analysis), nutrients, and sediment in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Time	Ending date	Ending time	Agency collecting sample (code number) (00027)	Agency analyzing sample (code number) (00028)	Discharge instantaneous cubic feet per second (00061)	Nitrogen, NO2+NO3 total (mg/L as N) (00630)	Triazine screen (ELISA) water dissolved recoverable, as atrazine (34756)	Alachlor screen water dissolved recoverable, as alachlor (-----)	Sediment, suspended (mg/L) (80154)
IROQUOIS RIVER STATIONS--Continued										
05525500 Sugar Creek at Milford, Ill.--Continued										
5-16	1531	--	--	81700	82013	1,580	--	18	6.5	--
5-16	1720	--	--	81700	80020	1,890	10.0	--	--	2,610
5-16	1721	--	--	81700	82013	1,890	--	28	8.3	--
5-16	1900	--	--	81700	80020	2,310	8.40	--	--	2,960
5-16	1901	--	--	81700	82013	2,310	--	34	5.1	--
5-16	2100	--	--	81700	80020	3,030	6.00	--	--	3,280
5-16	2101	--	--	81700	82013	3,030	--	34	6.9	--
5-17	0001	5-17	1130	81700	82013	[1]3,620	--	35	9.5	--
5-17	0230	--	--	81700	80020	3,810	7.70	--	--	1,590
5-17	0231	--	--	81700	82013	3,810	--	38	9.0	--
5-17	0430	--	--	81700	80020	3,840	8.80	--	--	1,130
5-17	0431	--	--	81700	82013	3,840	--	40	17	--
5-17	0730	--	--	81700	80020	3,750	8.90	--	--	1,100
5-17	0731	--	--	81700	82013	3,750	--	36	4.7	--
5-17	1130	--	--	81700	80020	3,570	8.80	--	--	497
5-17	1131	--	--	81700	82013	3,570	--	32	4.4	--
5-17	2216	5-20	2100	81700	82013	[1]1,900	--	17	6.9	--
5-17	2220	--	--	81700	80020	3,200	11.0	--	--	1,430
5-17	2221	--	--	81700	82013	3,200	--	33	5.4	--
5-18	0900	--	--	81700	80020	3,190	13.0	--	--	297
5-18	0901	--	--	81700	82013	3,190	--	32	7.7	--
5-18	2100	--	--	81700	80020	2,260	15.0	--	--	184
5-18	2101	--	--	81700	82013	2,260	--	17	6.5	--
5-19	0900	--	--	81700	80020	1,850	16.0	--	--	195
5-19	0901	--	--	81700	82013	1,850	--	13	5.4	--
5-19	2100	--	--	81700	80020	1,410	16.0	--	--	232
5-19	2101	--	--	81700	82013	1,410	--	10	4.2	--
5-20	0900	--	--	81700	80020	1,030	16.0	--	--	257
5-20	0901	--	--	81700	82013	1,030	--	6.7	4.5	--
5-20	2100	--	--	81700	80020	824	16.0	--	--	253
5-20	2101	--	--	81700	82013	824	--	4.8	3.1	--
5-22	1100	--	--	81700	80020	518	16.0	--	--	214
5-22	1101	--	--	81700	82013	518	--	2.7	1.7	--
5-24	1130	--	--	81700	80020	395	15.0	--	--	237
5-24	1131	--	--	81700	82013	395	--	2.5	.92	--
5-31	1700	--	--	81700	80020	383	16.0	--	--	116
5-31	1701	--	--	81700	82013	333	--	.81	2.0	--
6-08	1245	--	--	81700	80020	273	13.0	--	--	250
6-08	1246	--	--	81700	82013	273	--	2.1	1.1	--
6-18	1230	--	--	81700	80020	179	5.40	--	--	131

Table 9.--Physical properties and concentrations of agricultural organic compounds (determined by immunoassay analysis), nutrients, and sediment in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Time	Ending date	Ending time	Agency collecting sample (code number) (00027)	Agency analyzing sample (code number) (00028)	Discharge instantaneous cubic feet per second (00061)	Nitrogen, NO2+NO3 total (mg/L as N) (00630)	Triazine screen (ELISA) water dissolved recoverable, as atrazine (34756)	Alachlor screen water dissolved recoverable, as alachlor (-----)	Sediment, suspended (mg/L) (80154)
IROQUOIS RIVER STATIONS--Continued										
05525500 Sugar Creek at Milford, Ill.--Continued										
6-18	1231	--	--	81700	82013	179	--	1.5	1.0	--
6-20	1145	--	--	81700	80020	222	12.0	--	--	298
6-20	1146	--	--	81700	82013	222	--	1.8	1.7	--
6-20	1146	6-20	1651	81700	82013	[1]252	--	2.1	2.0	--
6-20	1445	--	--	81700	80020	239	13.0	--	--	--
6-20	1446	--	--	81700	82013	239	--	1.9	1.6	--
6-20	1650	--	--	81700	80020	277	12.0	--	--	274
6-20	1651	--	--	81700	82013	277	--	2.6	2.2	--
6-20	1916	6-21	0720	81700	82013	[1]685	--	7.6	4.9	--
6-20	1920	--	--	81700	80020	416	13.0	--	--	313
6-20	1921	--	--	81700	82013	416	--	3.0	1.5	--
6-20	2200	--	--	81700	80020	586	17.0	--	--	--
6-20	2201	--	--	81700	82013	586	--	2.4	6.0	--
6-21	0100	--	--	81700	80020	727	13.0	--	--	908
6-21	0101	--	--	81700	82013	727	--	5.2	2.2	--
6-21	0400	--	--	81700	80020	818	17.0	--	--	1,020
6-21	0401	--	--	81700	82013	818	--	8.2	3.1	--
6-21	0720	--	--	81700	80020	883	12.0	--	--	1,000
6-21	0721	--	--	81700	82013	883	--	11	6.7	--
6-21	1200	--	--	81700	80020	950	15.0	--	--	686
6-21	1201	--	--	81700	82013	950	--	11	8.0	--
6-21	1301	--	--	81700	82013	958	--	11	6.8	--
6-21	1500	--	--	81700	80020	972	12.0	--	--	556
6-21	1501	--	--	81700	82013	972	--	9.6	7.9	--
6-21	1801	6-22	0346	81700	82013	[1]950	--	13	7.1	--
6-21	1805	--	--	81700	80020	980	16.0	--	--	448
6-21	1806	--	--	81700	82013	980	--	9.7	7.7	--
6-21	2100	--	--	81700	80020	972	12.0	--	--	389
6-21	2101	--	--	81700	82013	972	--	10	11	--
6-22	0045	--	--	81700	80020	946	15.0	--	--	336
6-22	0046	--	--	81700	82013	946	--	12	13	--
6-22	0345	--	--	81700	80020	915	17.0	--	--	301
6-22	0346	--	--	81700	82013	915	--	9.4	8.8	--
6-22	0635	--	--	81700	80020	884	8.90	--	--	--
6-22	0636	--	--	81700	82013	884	--	9.9	7.9	--
6-22	0930	--	--	81700	80020	845	17.0	--	--	263
6-22	0931	--	--	81700	82013	845	--	9.3	11	--
6-22	1700	--	--	81700	80020	747	18.0	--	--	119
6-22	1701	--	--	81700	82013	747	--	6.9	5.3	--
6-22	2400	--	--	81700	80020	654	18.0	--	--	235

Table 9.--Physical properties and concentrations of agricultural organic compounds (determined by immunoassay analysis), nutrients, and sediment in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Time	Ending date	Ending time	Agency collecting sample (code number) (00027)	Agency analyzing sample (code number) (00028)	Discharge instantaneous cubic feet per second (00061)	Nitrogen, NO2+NO3 total (mg/L as N) (00630)	Triazine screen (ELISA) water dissolved recoverable, as atrazine (34756)	Alachlor screen water dissolved recoverable, as alachlor (-----)	Sediment, suspended (mg/L) (80154)
IROQUOIS RIVER STATIONS--Continued										
05525500 Sugar Creek at Milford, Ill.--Continued										
6-23	0805	--	--	81700	80020	662	17.0	--	--	243
6-23	0806	--	--	81700	82013	662	--	5.5	5.3	--
6-23	1600	--	--	81700	80020	607	18.0	--	--	243
6-23	1601	--	--	81700	82013	607	--	4.7	5.0	--
6-23	2300	--	--	81700	80020	548	17.0	--	--	242
6-23	2301	--	--	81700	82013	548	--	4.2	4.4	--
6-25	1135	--	--	81700	80020	307	16.0	--	--	--
6-25	1136	--	--	81700	82013	309	--	3.7	4.5	--
6-27	1200	--	--	81700	80020	208	5.70	--	--	256
6-27	1201	--	--	81700	82013	208	--	1.7	2.6	--
6-28	1300	--	--	81700	80020	176	14.0	--	--	121
6-28	1301	--	--	81700	82013	176	--	1.9	.66	--
6-30	1945	--	--	81700	80020	1,110	11.0	--	--	1,220
6-30	1946	--	--	81700	82013	1,110	--	8.6	4.5	--
7-02	1210	--	--	81700	80020	595	15.0	--	--	235
7-02	1211	--	--	81700	82013	595	--	3.6	4.1	--
7-05	1130	--	--	81700	80020	168	14.0	--	--	238
7-05	1131	--	--	81700	82013	168	--	1.4	2.5	--
7-10	1300	--	--	81700	80020	334	9.50	--	--	1,040
7-10	1301	--	--	81700	82013	334	--	2.3	4.2	--
7-10	1910	--	--	81700	80020	629	11.0	--	--	609
7-10	1911	--	--	81700	82013	629	--	2.4	3.9	--
7-11	0850	--	--	81700	80020	876	9.90	--	--	494
7-11	0851	--	--	81700	82013	876	--	3.0	3.5	--
7-11	1345	--	--	81700	80020	870	10.0	--	--	463
7-11	1346	--	--	81700	82013	870	--	3.4	3.7	--
7-11	1800	--	--	81700	80020	914	10.0	--	--	393
7-11	1801	--	--	81700	82013	914	--	3.1	4.1	--
7-11	2300	--	--	81700	80020	1,040	11.0	--	--	260
7-11	2301	--	--	81700	82013	1,040	--	3.2	3.9	--
7-12	0830	--	--	81700	80020	1,100	9.80	--	--	395
7-12	0831	--	--	81700	82013	1,100	--	3.3	3.9	--
7-12	1400	--	--	81700	80020	1,070	10.0	--	--	342
7-12	1401	--	--	81700	82013	1,070	--	3.1	3.4	--
7-13	1215	--	--	81700	80020	636	12.0	--	--	242

Table 9.--Physical properties and concentrations of agricultural organic compounds (determined by immunoassay analysis), nutrients, and sediment in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Time	Ending date	Ending time	Agency collecting sample (code number) (00027)	Agency analyzing sample (code number) (00028)	Discharge instantaneous cubic feet per second (00061)	Nitrogen, NO2+NO3 total (mg/L as N) (00630)	Triazine screen (ELISA) water dissolved recoverable, as atrazine (34756)	Alachlor screen water dissolved recoverable, as alachlor (-----)	Sediment, suspended (mg/L) (80154)
					IROQUOIS RIVER STATIONS--Continued					
					05525500 Sugar Creek at Milford, Ill.--Continued					
7-13	1216	--	--	81700	82013	636	--	2.7	4.1	--
7-19	1445	--	--	81700	80020	161	11.0	--	--	133
7-19	1446	--	--	81700	82013	161	--	1.1	1.3	--
7-20	1450	--	--	81700	80020	649	9.60	--	--	345
7-20	1451	--	--	81700	82013	649	--	1.3	1.4	--
7-21	1600	--	--	81700	80020	1,540	15.0	--	--	565
7-21	1601	--	--	81700	82013	1,540	--	3.4	1.9	--
7-23	2000	--	--	81700	80020	2,100	5.40	--	--	289
7-23	2001	--	--	81700	82013	2,100	--	3.3	2.4	--
7-25	1000	--	--	81700	80020	1,240	8.50	--	--	210
7-25	1001	--	--	81700	82013	1,240	--	2.8	2.9	--
					05526000 Iroquois River near Chebanse, Ill.					
5-16	2100	--	--	81700	80020	5,300	14.0	--	--	272
5-16	2101	--	--	81700	82013	5,300	--	10	4.8	--

[1]Average value.

Table 10.--Physical properties and concentrations of agricultural organic compounds (determined by gas chromatography/mass spectrometry) in water samples collected during Phase II sampling in the Kankakee River Basin, 1990

[µg/L, micrograms per liter; <, less than; dashes indicate no data]

Date	Time	Ending date	Ending time	Agency collecting sample (code number) (00027)	Agency analyzing sample (code number) (00028)	Discharge, inst. cubic feet per second (00061)	Bromacil water whole recoverable (µg/L) (30234)	Butachlor water whole recoverable (µg/L) (30235)	Butylate water whole recoverable (µg/L) (30236)	Carboxin water whole recoverable (µg/L) (30245)
KANKAKEE RIVER STATIONS										
05515500 Kankakee River at Davis, Ind.										
6-08	2026	--	--	81700	82013	685	--	--	--	--
6-26	1736	--	--	81700	82013	575	--	--	--	--
7-23	1730	--	--	81700	80020	1,130	--	--	--	--
7-23	1731	--	--	81700	82013	1,130	--	--	--	--
05516500 Yellow River at Plymouth, Ind.										
7-24	1245	--	--	81700	80020	1,240	--	--	--	--
05517000 Yellow River at Knox, Ind.										
7-25	1245	--	--	81700	80020	1,220	--	--	--	--
7-25	1246	--	--	81700	82013	1,220	--	--	--	--
05517500 Kankakee River at Dunns Bridge, Ind.										
6-11	1645	--	--	81700	80020	1,960	--	--	--	--
6-11	1646	--	--	81700	82013	1,960	--	--	--	--
6-27	0811	--	--	81700	82013	1,350	--	--	--	--
7-24	1431	--	--	81700	82013	2,840	--	--	--	--
7-25	1145	--	--	81700	80020	2,870	--	--	--	--
7-25	1146	--	--	81700	82013	2,870	--	--	--	--
05517530 Kankakee River near Kouts, Ind.										
6-11	1820	--	--	81700	80020	2,100	--	--	--	--
6-11	1821	--	--	81700	82013	2,100	--	--	--	--
7-25	1400	--	--	81700	80020	2,930	--	--	--	--
7-25	1401	--	--	81700	82013	2,930	--	--	--	--
05518000 Kankakee River at Shelby, Ind.										
6-11	1945	--	--	81700	80020	2,600	--	--	--	--
6-11	1946	--	--	81700	82013	2,600	--	--	--	--
6-27	1036	--	--	81700	82013	1,660	--	--	--	--
7-26	1246	--	--	81700	82013	3,570	--	--	--	--
05520500 Kankakee River at Momence, Ill.										
6-11	2100	--	--	81700	80020	3,330	--	--	--	--
6-11	2101	--	--	81700	82013	3,330	--	--	--	--
6-27	1356	--	--	81700	82013	1,940	--	--	--	--
7-26	1400	--	--	81700	80020	3,970	--	--	--	--
7-26	1401	--	--	81700	82013	3,970	--	--	--	--
05527500 Kankakee River near Wilmington, Ill.										
6-11	2230	--	--	81700	80020	6,640	--	--	--	--
6-11	2231	--	--	81700	82013	6,640	--	--	--	--
6-27	1536	--	--	81700	82013	3,680	--	--	--	--
7-03	1351	--	--	81700	82013	5,660	--	--	--	--

Table 10.--Physical properties and concentrations of agricultural organic compounds (determined by gas chromatography/mass spectrometry) in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Cyclo-ate water whole recov-erable (µg/L) (30254)	Ame-tryne water dis-solved recov-erable (µg/L) (38401)	Propa-zine water dis-solved recov-erable (µg/L) (38535)	Ter-butryn water dis-solved recov-erable (µg/L) (38888)	Propa-zine total (µg/L) (39024)	Tri-flura-lin total recov-erable (µg/L) (39030)	Sime-tryne total (µg/L) (39054)	Sima-zine total (µg/L) (-----)[2]	Sima-zine total (µg/L) (39055)
KANKAKEE RIVER STATIONS--Continued									
05515500 Kankakee River at Davis, Ind.--Continued									
6-08	--	<0.05	<0.05	<0.05	--	--	--	0.110	--
6-26	--	<.05	<.05	<.05	--	--	--	.210	--
7-23	--	--	--	--	<0.10	<0.10	<0.10	--	0.20
7-23	--	<.05	<.05	<.05	--	--	--	.240	--
05516500 Yellow River at Plymouth, Ind.--Continued									
7-24	--	--	<.10	--	--	<.10	<.10	--	.10
05517000 Yellow River at Knox, Ind.--Continued									
7-25	--	--	--	--	<.10	<.10	<.10	--	.10
7-25	--	<.05	<.06	<.05	--	--	--	.070	--
05517500 Kankakee River at Dunns Bridge, Ind.--Continued									
6-11	--	--	--	--	<.10	<.10	<.10	--	.20
6-11	--	<.05	<.05	<.05	--	--	--	.210	--
6-27	--	<.05	<.05	<.05	--	--	--	.200	--
7-24	--	<.05	<.05	<.05	--	--	--	.110	--
7-25	--	--	--	--	<.10	<.10	<.10	--	.10
7-25	--	<.05	<.05	<.05	--	--	--	.080	--
05517530 Kankakee River near Kouts, Ind.--Continued									
6-11	--	--	--	--	<.10	<.10	<.10	--	.20
6-11	--	<.05	<.05	<.05				.200	--
7-25	--	--	--	--	<.10	<.10	<.10	--	.10
7-25	--	<.05	<.05	<.05	--	--	--	.080	--
05518000 Kankakee River at Shelby, Ind.--Continued									
6-11	--	--	--	--	<.10	<.10	<.10	--	.10
6-11	--	<.05	<.05	<.05	--	--	--	.140	--
6-27	--	<.05	<.05	<.05	--	--	--	.200	--
7-26	--	<.05	<.05	<.05	--	--	--	<.050	--
05520500 Kankakee River at Momence, Ill.--Continued									
6-11	--	--	--	--	<.10	<.10	<.10	--	.20
6-11	--	<.05	<.05	<.05	--	--	--	.170	--
6-27	--	<.05	<.05	<.05	--	--	--	.150	--
7-26	--	--	--	--	.20	<.10	<.10	--	<.10
7-26	--	<.05	<.05	<.05	--	--	--	<.050	--
05527500 Kankakee River near Wilmington, Ill.--Continued									
6-11	--	--	--	--	<.10	<.10	<.10	--	.10
6-11	--	<.05	<.05	<.05	--	--	--	.150	--
6-27	--	<.05	<.05	<.05	--	--	--	.170	--
7-03	--	<.05	<.05	<.05	--	--	--	<.050	--

Table 10.--Physical properties and concentrations of agricultural organic compounds (determined by gas chromatography/mass spectrometry) in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Prometone total (µg/L) (-----)[2]	Prometone total (µg/L) (39056)	Prometryne total (µg/L) (-----)[2]	Prometryne total (µg/L) (39057)	Metolachlor water dissolved (µg/L) (39415)	Atrazine, total (µg/L) (39630)	Atrazine, water dissolved recoverable (µg/L) (39632)	Alachlor (lasso) water dissolved recov. (µg/L) (46342)	Des-isopropyl-atrazine, water, whole total (µg/L) (-----)[2]
				KANKAKEE RIVER STATIONS--Continued					
				05515500 Kankakee River at Davis, Ind.--Continued					
6-08	<0.050	--	<0.050	--	0.13	--	0.38	0.27	0.06
6-26	<.050	--	<.050	--	.06	--	.33	.06	.07
7-23	--	<0.1	--	<0.1	--	1.7	--	--	--
7-23	<.050	--	<.050	--	.61	--	1.9	.30	.31
				05516500 Yellow River at Plymouth, Ind.--Continued					
7-24	--	<.1	--	<.1	--	4.3	--	--	--
				05517000 Yellow River at Knox, Ind.--Continued					
7-25	--	<.1	--	<.1	--	3.3	--	--	--
7-25	<.050	--	<.050	--	.67	--	4.6	.66	.55
				05517500 Kankakee River at Dunns Bridge, Ind.--Continued					
6-11	--	<.1	--	<.1	--	4.7	--	--	--
6-11	<.050	--	<.050	--	.78	--	4.5	2.5	.23
6-27	<.050	--	<.050	--	.21	--	.85	.25	.14
7-24	<.050	--	<.050	--	.05	--	1.8	.35	.25
7-25	--	<.1	--	<.1	--	1.9	--	--	--
7-25	<.050	--	<.050	--	.07	--	1.9	.26	.25
				05517530 Kankakee River near Kouts, Ind.--Continued					
6-11	--	<.1	--	<.1	--	5.8	--	--	--
6-11	<.050	--	<.050	--	.85	--	4.5	2.5	.25
7-25	--	<.1	--	<.1	--	1.8	--	--	--
7-25	<.050	--	< .050	--	.46	--	2.0	.33	.25
				05518000 Kankakee River at Shelby, Ind.--Continued					
6-11	--	<.1	--	<.1	--	5.6	--	--	--
6-11	<.050	--	<.050	--	1.1	--	4.4	2.8	0.25
6-27	<.050	--	<.050	--	.29	--	.77	.26	.10
7-26	<.050	--	<.050	--	.39	--	1.8	.25	.20
				05520500 Kankakee River at Momence, Ill.--Continued					
6-11	--	<.1	--	<.1	--	3.0	--	--	--
6-11	<.050	--	<.050	--	1.1	--	3.4	1.5	.23
6-27	<.050	--	<.050	--	.18	--	.60	.11	.09
7-26	--	<.1	--	<.1	--	11	--	--	--
7-26	<.050	--	<.050	--	.52	--	1.6	.21	.24
				05527500 Kankakee River near Wilmington, Ill.--Continued					
6-11	--	<.1	--	<.1	--	3.3	--	--	--
6-11	<.050	--	<.050	--	1.1	--	3.6	1.4	.21
6-27	<.050	--	<.050	--	.57	--	2.1	.46	.33
7-03	<.050	--	<.050	--	.57	--	1.9	.39	.33

Table 10.--Physical properties and concentrations of agricultural organic compounds (determined by gas chromatography/mass spectrometry) in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Des-ethyl-atra-zine, water whole total (µg/L) (-----)[2]	Ala-chlor total recov-erable (µg/L) (77825)	Cyan-azine total (µg/L) (-----)[2]	Cyan-azine total (µg/L) (81757)	Ame-tryne total (µg/L) (82184)	Metri-buzin water whole total recov-erable (µg/L) (82611)	Metola-chlor water whole total recov-erable (µg/L) (82612)	Metri-buzin sencor dis-solved (µg/L) (82630)
			KANKAKEE RIVER STATIONS--Continued					
			05515500 Kankakee River at Davis, Ind.--Continued					
6-08	0.05	--	<0.050	--	--	--	--	<0.05
6-26	.07	--	.080	--	--	--	--	<.05
7-23	--	0.30	--	0.50	<0.10	0.1	0.6	--
7-23	.62	--	.220	--	--	--	--	.20
			05516500 Yellow River at Plymouth, Ind.--Continued					
7-24	--	.80	--	.60	<.10	.3	.7	--
			05517000 Yellow River at Knox, Ind.--Continued					
7-25	--	.60	--	.40	<.10	.2	.5	--
7-25	1.6	--	.230	--	--	--	--	.44
			05517500 Kankakee River at Dunns Bridge, Ind.--Continued					
6-11	--	2.40	--	1.1	<.10	.3	1.2	--
6-11	.49	--	1.10	--	--	--	--	.25
6-27	.21	--	.110	--	--	--	--	<.05
7-24	.63	--	.140	--	--	--	--	.11
7-25	--	.30	--	.30	<.10	.1	.5	--
7-25	.67	--	.150	--	--	--	--	.17
			05517530 Kankakee River near Kouts, Ind.--Continued					
6-11	--	3.00	--	1.5	<.10	.4	1.5	--
6-11	.50	--	.750	--	--	--	--	.26
7-25	--	.30	--	.30	<.10	.1	.4	--
7-25	.67	--	.140	--	--	--	--	.16
			05518000 Kankakee River at Shelby, Ind.--Continued					
6-11	--	3.20	--	1.7	<.10	.4	1.7	--
6-11	.52	--	.900	--	--	--	--	.27
6-27	.17	--	.120	--	--	--	--	.10
7-26	.60	--	.090	--	--	--	--	.14
			05520500 Kankakee River at Momence, Ill.--Continued					
6-11	--	1.20	--	1.6	<.10	.1	1.3	--
6-11	.33	--	1.51	--	--	--	--	.14
6-27	.12	--	.080	--	--	--	--	<.05
7-26	--	<.10	--	1.4	<.10	<.1	3.7	--
7-26	.59	--	.090	--	--	--	--	.10
			05527500 Kankakee River near Wilmington, Ill.--Continued					
6-11	--	1.30	--	2.1	<.10	.1	1.3	--
6-11	.32	--	1.23	--	--	--	--	<.05
6-27	.38	--	.950	--	--	--	--	<.05
7-03	.39	--	.550	--	--	--	--	.72

Table 10.--Physical properties and concentrations of agricultural organic compounds (determined by gas chromatography/mass spectrometry) in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Time	Ending date	Ending time	Agency collecting sample (code number) (00027)	Agency analyzing sample (code number) (00028)	Discharge, inst. cubic feet per second (00061)	Bromacil water whole recoverable (µg/L) (30234)	Butachlor water whole recoverable (µg/L) (30235)	Butylate water whole recoverable (µg/L) (30236)	Carboxin water whole recoverable (µg/L) (30245)	Cycloate water whole recoverable (µg/L) (30254)
					IROQUOIS RIVER STATIONS						
					05521000 Iroquois River at Rosebud, Ind.						
7-10	1401	--	--	81700	82013	20	--	--	--	--	--
7-12	1146	--	--	81700	82013	26	--	--	--	--	--
					05522500 Iroquois River at Rensselaer, Ind.						
5-10	1515	--	--	81700	80020	153	--	--	--	--	--
5-14	2000	--	--	81700	80020	611	--	--	--	--	--
5-14	2001	--	--	81700	82013	611	--	--	--	--	--
5-16	1430	--	--	81700	80020	448	--	--	--	--	--
5-16	1431	--	--	81700	82013	448	--	--	--	--	--
6-08	1645	--	--	81700	80020	162	--	--	--	--	--
6-08	1646	--	--	81700	82013	162	--	--	--	--	--
6-26	1446	--	--	81700	82013	78	--	--	--	--	--
6-29	1901	--	--	81700	82013	93	--	--	--	--	--
6-30	1401	--	--	81700	82013	104	--	--	--	--	--
7-10	1531	--	--	81700	82013	79	--	--	--	--	--
7-12	1131	--	--	81700	82013	169	--	--	--	--	--
7-21	1200	--	--	81700	80020	836	--	--	--	--	--
7-23	1731	--	--	81700	82013	1,160	--	--	--	--	--
					05524500 Iroquois River near Foresman, Ind.						
7-10	1431	--	--	81700	82013	128	--	--	--	--	--
7-11	1026	--	--	81700	82013	203	--	--	--	--	--
7-11	2201	--	--	81700	82013	464	--	--	--	--	--
7-12	1246	--	--	81700	82013	548	--	--	--	--	--
					05525000 Iroquois River at Iroquois, Ill.						
5-14	1645	--	--	81700	80020	1,710	--	--	--	--	--
5-14	1646	--	--	81700	82013	1,710	--	--	--	--	--
5-16	1645	--	--	81700	80020	1,450	--	--	--	--	--
5-16	1646	--	--	81700	82013	1,450	--	--	--	--	--
6-08	1930	--	--	81700	80020	335	--	--	--	--	--
6-08	1931	--	--	81700	82013	335	--	--	--	--	--
6-20	1401	--	--	81700	82013	194	--	--	--	--	--
6-25	1246	--	--	81700	82013	216	--	--	--	--	--
6-30	1831	--	--	81700	82013	316	--	--	--	--	--
7-05	1241	--	--	81700	82013	175	--	--	--	--	--
7-10	1841	--	--	81700	82013	129	--	--	--	--	--
7-11	0931	--	--	81700	82013	171	--	--	--	--	--
7-11	1831	--	--	81700	82013	220	--	--	--	--	--
7-12	1316	--	--	81700	82013	493	--	--	--	--	--
7-23	1845	--	--	81700	80020	2,710	--	--	--	--	--
7-23	1846	--	--	81700	82013	2,710	--	--	--	--	--

Table 10.--Physical properties and concentrations of agricultural organic compounds (determined by gas chromatography/mass spectrometry) in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Diphenamid water whole recoverable (µg/L) (30255)	Hexazinone water whole recoverable (µg/L) (30264)	Propachlor water whole recoverable (µg/L) (30295)	Terbacil water whole recoverable (µg/L) (30311)	Vernolate water whole recoverable (µg/L) (30324)	Atrazine water dissolved recoverable (µg/L) (38401)	Propazine water dissolved recoverable (µg/L) (38535)	Terbutryn water dissolved recoverable (µg/L) (38888)	Propazine total (µg/L) (39024)	Trifluralin total recoverable (µg/L) (39030)
					IROQUOIS RIVER STATIONS--Continued					
					05521000 Iroquois River at Rosebud, Ind.--Continued					
7-10	--	--	--	--	--	<0.05	<0.05	<0.05	--	--
7-12	--	--	--	--	--	<.05	<.05	<.05	--	--
					05522500 Iroquois River at Rensselaer, Ind.--Continued					
5-10	--	--	--	--	--	--	--	--	<.10	<0.10
5-14	--	--	--	--	--	--	--	--	<.10	<.10
5-14	--	--	--	--	--	<.05	.09	<.05	--	--
5-16	--	--	--	--	--	--	--	--	<.10	<.10
5-16	--	--	--	--	--	<.05	.11	<.05	--	--
6-08	--	--	--	--	--	--	--	--	<.10	<.10
6-08	--	--	--	--	--	<.05	<.05	<.05	--	--
6-26	--	--	--	--	--	<.05	<.05	<.05	--	--
6-29	--	--	--	--	--	<.05	<.05	<.05	--	--
6-30	--	--	--	--	--	<.05	<.05	<.05	--	--
7-10	--	--	--	--	--	<.05	<.05	<.05	--	--
7-12	--	--	--	--	--	<.05	<.05	<.05	--	--
7-21	--	--	--	--	--	--	--	--	<.10	<.10
7-23	--	--	--	--	--	<.05	<.05	<.05	--	--
					05524500 Iroquois River near Foresman, Ind.--Continued					
7-10	--	--	--	--	--	<.05	<.05	<.05	--	--
7-11	--	--	--	--	--	<.05	<.05	<.05	--	--
7-11	--	--	--	--	--	<.05	<.05	<.05	--	--
7-12	--	--	--	--	--	<.05	<.05	<.05	--	--
					05525000 Iroquois River at Iroquois, Ill.--Continued					
5-14	--	--	--	--	--	--	--	--	.10	<.10
5-14	--	--	--	--	--	<.05	.14	<.05	--	--
5-16	--	--	--	--	--	--	--	--	<.10	<.10
5-16	--	--	--	--	--	<.05	.08	<.05	--	--
6-08	--	--	--	--	--	--	--	--	<.10	<.10
6-08	--	--	--	--	--	<.05	<.05	<.05	--	--
6-20	--	--	--	--	--	<.05	<.05	<.05	--	--
6-25	--	--	--	--	--	<.05	<.05	<.05	--	--
6-30	--	--	--	--	--	<.05	<.05	<.05	--	--
7-05	--	--	--	--	--	<.05	<.05	<.05	--	--
7-10	--	--	--	--	--	<.05	<.05	<.05	--	--
7-11	--	--	--	--	--	<.05	.05	<.05	--	--
7-11	--	--	--	--	--	<.05	<.05	<.05	--	--
7-12	--	--	--	--	--	<.05	<.05	<.05	--	--
7-23	--	--	--	--	--	--	--	--	<.10	<.10
7-23	--	--	--	--	--	<.05	<.05	<.05	--	--

Table 10.--Physical properties and concentrations of agricultural organic compounds (determined by gas chromatography/mass spectrometry) in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Simetryne total (µg/L) (39054)	Simazine total (µg/L) (-----)[2]	Simazine total (µg/L) (39055)	Prometone total (µg/L) (-----)[2]	Prometone total (µg/L) (39056)	Prometryne total (µg/L) (-----)[2]	Prometryne total (µg/L) (39057)	Metolachlor water dissolved (µg/L) (39415)	Atrazine, total (µg/L) (39630)	Atrazine-water, dissolved (µg/L) (39632)
				IROQUOIS RIVER STATIONS--Continued						
				05521000 Iroquois River at Rosebud, Ind.--Continued						
7-10	--	<0.050	--	<0.050	--	<0.050	--	0.10	--	0.42
7-12	--	<.050	--	<.050	--	<.050	--	.14	--	.46
				05522500 Iroquois River at Rensselaer, Ind.--Continued						
5-10	<0.1	--	<0.10	--	<0.1	--	<0.1	--	0.50	--
5-14	<.1	--	<.10	--	<.1	--	<.1	--	5.2	--
5-14	--	<.050	--	<.050	--	<.050	--	1.5	--	6.5
5-16	<.1	--	<.10	--	<.1	--	<.1	--	3.3	--
5-16	--	<.050	--	<.050	--	<.050	--	1.5	--	3.7
6-08	<.1	--	.10	--	<.1	--	<.1	--	1.8	--
6-08	--	.090	--	<.050	--	<.050	--	.57	--	1.5
6-26	--	.120	--	<.050	--	<.050	--	.11	--	.56
6-29	--	.110	--	<.050	--	<.050	--	.16	--	.63
6-30	--	.120	--	<.050	--	<.050	--	.14	--	.81
7-10	--	<.050	--	<.050	--	<.050	--	.20	--	.96
7-12	--	<.050	--	<.050	--	<.050	--	.38	--	2.6
7-21	<.1	--	<.10	--	<.1	--	<.1	--	3.7	--
7-23	--	.600	--	<.050	--	<.050	--	.78	--	3.9
				05524500 Iroquois River near Foresman, Ind.--Continued						
7-10	--	.200	--	<.050	--	<.050	--	.18	--	.98
7-11	--	.120	--	<.050	--	<.050	--	.33	--	1.2
7-11	--	<.050	--	.070	--	<.050	--	1.1	--	2.3
7-12	--	.090	--	<.050	--	<.050	--	.60	--	2.0
				05525000 Iroquois River at Iroquois, Ill.--Continued						
5-14	<.1	--	.40	--	<.1	--	<.1	--	8.8	--
5-14	--	1.16	--	<.050	--	<.050	--	3.0	--	13
5-16	<.1	--	.20	--	<.1	--	<.1	--	2.6	--
5-16	--	.320	--	.050	--	<.050	--	.87	--	2.9
6-08	<.1	--	<.10	--	<.1	--	<.1	--	.80	--
6-08	--	.060	--	<.050	--	<.050	--	.32	--	.79
6-20	--	.150	--	<.050	--	<.050	--	.19	--	.50
6-25	--	.160	--	<.050	--	<.050	--	.39	--	1.7
6-30	--	.060	--	<.050	--	<.050	--	.51	--	1.8
7-05	--	<.050	--	.060	--	--	--	.18	--	.80
7-10	--	.310	--	.280	--	<.050	--	.09	--	.42
7-11	--	.240	--	.050	--	<.050	--	1.3	--	5.3
7-11	--	.190	--	<.050	--	<.050	--	.30	--	1.5
7-12	--	.080	--	.100	--	<.050	--	1.1	--	1.6
7-23	<.1	--	<.10	--	<.1	--	<.1	--	3.2	--
7-23	--	<.050	--	<.050	--	<.050	--	1.0	--	3.4

Table 10.--Physical properties and concentrations of agricultural organic compounds (determined by gas chromatography/mass spectrometry) in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Alachlor (Lasso) water dissolved (µg/L) (46342)	Des-isopropyl-atrazine, water whole total (µg/L) (-----)[2]	Des-ethyl-atrazine, water whole total (µg/L) (-----)[2]	Alachlor total recoverable (µg/L) (77825)	Cyanazine, total (µg/L) (-----)[2]	Cyanazine, total (µg/L) (81757)	Ametryne total (µg/L) (82184)	Metribuzin water whole total recoverable (µg/L) (82611)	Metolachlor water whole total recoverable (µg/L) (82612)	Metribuzin sencor dissolved (µg/L) (82630)
				IROQUOIS RIVER STATIONS--Continued						
				05521000 Iroquois River at Rosebud, Ind.--Continued						
7-10	0.34	0.10	0.14	--	0.190	--	--	--	--	<0.05
7-12	.20	.17	.19	--	.300	--	--	--	--	<.05
				05522500 Iroquois River at Rensselaer, Ind.--Continued						
5-10	--	--	--	0.20	--	0.70	<0.10	<0.1	0.3	--
5-14	--	--	--	1.30	--	6.2	<.10	<.1	.9	--
5-14	1.8	<.05	.44	--	.060	--	--	--	--	<.05
5-16	--	--	--	.70	--	6.7	<.10	<.1	1.0	--
5-16	1.1	<.05	.36	--	.320	--	--	--	--	<.05
6-08	--	--	--	.60	--	2.4	<.10	<.1	.8	--
6-08	.47	.26	.29	--	1.23	--	--	--	--	<.05
6-26	<.05	.18	.17	--	.150	--	--	--	--	<.05
6-29	.07	.15	.14	--	.580	--	--	--	--	<.05
6-30	.22	.21	.21	--	.260	--	--	--	--	<.05
7-10	.17	.13	.23	--	.650	--	--	--	--	<.05
7-12	.55	.43	.94	--	.980	--	--	--	--	.18
7-21	--	--	--	.40	--	1.6	<.10	.1	.6	--
7-23	.30	.64	1.2	--	.860	--	--	--	--	.09
				05524500 Iroquois River near Foresman, Ind.--Continued						
7-10	.08	.07	.14	--	.870	--	--	--	--	<.05
7-11	.66	.23	.33	--	1.20	--	--	--	--	<.05
7-11	.41	.61	.85	--	1.32	--	--	--	--	.10
7-12	.33	.49	.85	--	1.14	--	--	--	--	.10
				05525000 Iroquois River at Iroquois, Ill.--Continued						
5-14	--	--	--	3.80	--	8.8	<.10	<.1	1.5	--
5-14	6.0	.56	.60	--	5.70	--	--	--	--	<.05
5-16	--	--	--	.80	--	3.7	<.10	<.1	.8	--
5-16	1.0	<.05	.31	--	.240	--	--	--	--	<.05
6-08	--	--	--	.30	--	.80	<.10	<.1	.4	--
6-08	.23	.13	.17	--	.470	--	--	--	--	<.05
6-20	<.05	.17	.13	--	.180	--	--	--	--	<.05
6-25	2.5	.18	.17	--	.340	--	--	--	--	<.05
6-30	1.9	.24	.23	--	.210	--	--	--	--	<.05
7-05	.28	.12	.24	--	.280	--	--	--	--	<.05
7-10	.09	.17	.16	--	.190	--	--	--	--	<.05
7-11	3.9	.16	.30	--	.320	--	--	--	--	<.05
7-11	1.0	.14	.25	--	.220	--	--	--	--	<.05
7-12	.60	.20	.33	--	.750	--	--	--	--	<.05
7-23	--	--	--	.40	--	1.2	<.10	<.1	1.0	--
7-23	.47	.60	.97	--	.630	--	--	--	--	.09

Table 10.--Physical properties and concentrations of agricultural organic compounds (determined by gas chromatography/mass spectrometry) in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Time	Ending date	Ending time	Agency collecting sample (code number) (00027)	Agency analyzing sample (code number) (00028)	Discharge, inst. cubic feet per second (00061)	Bromacil water whole recoverable (µg/L) (30234)	Butachlor water whole recoverable (µg/L) (30235)	Butylate water whole recoverable (µg/L) (30236)	Carboxin water whole recoverable (µg/L) (30245)	Cycloate water whole recoverable (µg/L) (30254)
					IROQUOIS RIVER STATIONS--Continued						
					05525500 Sugar Creek at Milford, Ill.						
5-16	1300	5-16	2100	81700	80020	[1]1,930	--	--	--	--	--
5-16	1301	5-16	2100	81700	82013	[1]1,930	--	--	--	--	--
5-16	2400	5-17	1130	81700	80020	[1]3,620	--	--	--	--	--
5-17	0001	5-17	1130	81700	82013	[1]3,620	--	--	--	--	--
5-17	0430	--	--	81700	80020	3,840	--	--	--	--	--
5-17	0431	--	--	81700	82013	3,840	--	--	--	--	--
5-17	2215	5-20	2100	81700	80020	[1]1,900	--	--	--	--	--
5-17	2216	5-20	2100	81700	82013	[1]1,900	--	--	--	--	--
6-20	1145	6-20	1650	81700	80020	[1]252	--	--	--	--	--
6-20	1146	6-20	1651	81700	82013	[1]252	--	--	--	--	--
6-20	1915	6-21	0720	81700	80020	[1]685	--	--	--	--	--
6-20	1916	6-21	0720	81700	82013	[1]685	--	--	--	--	--
6-21	1800	6-22	0345	81700	80020	[1]950	--	--	--	--	--
6-21	1801	6-22	0346	81700	82013	[1]950	--	--	--	--	--
6-22	0630	6-22	2400	81700	80020	[1]806	--	--	--	--	--
6-22	0631	6-23	0001	81700	82013	[1]806	--	--	--	--	--
6-23	0001	--	--	81700	82013	650	--	--	--	--	--
6-23	0800	6-23	2300	81700	80020	[1]605	--	--	--	--	--
6-23	0801	6-23	2301	81700	82013	[1]605	--	--	--	--	--
6-25	1136	--	--	81700	82013	309	--	--	--	--	--
6-30	1946	--	--	81700	82013	1,110	--	--	--	--	--
7-05	1131	--	--	81700	82013	168	--	--	--	--	--
7-10	1301	--	--	81700	82013	334	--	--	--	--	--
7-10	1911	--	--	81700	82013	629	--	--	--	--	--
7-11	1801	--	--	81700	82013	914	--	--	--	--	--
7-12	0831	--	--	81700	82013	1,100	--	--	--	--	--
7-20	1451	--	--	81700	82013	649	--	--	--	--	--
7-21	1601	--	--	81700	82013	1,540	--	--	--	--	--
7-23	2000	--	--	81700	80020	2,100	--	--	--	--	--
7-23	2001	--	--	81700	82013	2,100	--	--	--	--	--
7-25	1246	--	--	81700	82013	1,150	--	--	--	--	--
					05526000 Iroquois River near Chebanse, Ill.						
5-16	2100	--	--	81700	80020	5,300	<0.1	<0.1	<0.1	<0.1	<0.1
5-16	2101	--	--	81700	82013	5,300	--	--	--	--	--

Table 10.--Physical properties and concentrations of agricultural organic compounds (determined by gas chromatography/mass spectrometry) in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Diphen-amid water whole recov-erable (µg/L) (30255)	Hexazi-none water whole recov-erable (µg/L) (30264)	Propa-chlor water whole recov-erable (µg/L) (30295)	Ter-bacil water whole recov-erable (µg/L) (30311)	Ver-nolate water whole recov-erable (µg/L) (30324)	Ame-tryne water dis-solved recov-erable (µg/L) (38401)	Propa-zine water dis-solved recov-erable (µg/L) (38535)	Ter-butryn water dis-solved recov-erable (µg/L) (38888)	Propa-zine total (µg/L) (39024)	Tri-flura-lin total recov-erable (µg/L) (39030)
					IROQUOIS RIVER STATIONS--Continued					
					05525500 Sugar Creek at Milford, Ill.--Continued					
5-16	--	--	--	--	--	--	--	--	.10	.10
5-16	--	--	--	--	--	<.05	.11	<.05	--	--
5-16	--	--	--	--	--	--	--	--	.20	.10
5-17	--	--	--	--	--	<.05	.29	<.05	--	--
5-17	--	--	--	--	--	--	--	--	.20	<.10
5-17	--	--	--	--	--	<.05	.17	<.05	--	--
5-17	--	--	--	--	--	--	--	--	.10	<.10
5-17	--	--	--	--	--	<.05	.10	<.05	--	--
6-20	--	--	--	--	--	--	--	--	<.10	<.10
6-20	--	--	--	--	--	<.05	<.05	<.05	--	--
6-20	--	--	--	--	--	--	--	--	<.10	<.10
6-20	--	--	--	--	--	<.05	.07	<.05	--	--
6-21	--	--	--	--	--	--	--	--	.10	<.10
6-21	--	--	--	--	--	<.05	.14	<.05	--	--
6-22	--	--	--	--	--	--	--	--	.10	<.10
6-22	--	--	--	--	--	<.05	.08	<.05	--	--
6-23	--	--	--	--	--	<.05	.08	<.05	--	--
6-23	--	--	--	--	--	--	--	--	<.10	<.10
6-23	--	--	--	--	--	<.05	<.05	<.05	--	--
6-25	--	--	--	--	--	<.05	<.05	<.05	--	--
6-30	--	--	--	--	--	<.05	.05	<.05	--	--
7-05	--	--	--	--	--	<.05	<.05	<.05	--	--
7-10	--	--	--	--	--	<.05	<.05	<.05	--	--
7-10	--	--	--	--	--	<.05	<.05	<.05	--	--
7-11	--	--	--	--	--	<.05	<.05	<.05	--	--
7-12	--	--	--	--	--	<.05	<.05	<.05	--	--
7-20	--	--	--	--	--	<.05	<.05	<.05	--	--
7-21	--	--	--	--	--	<.05	<.05	<.05	--	--
7-23	--	--	--	--	--	--	--	--	<.10	<.10
7-23	--	--	--	--	--	<.05	<.05	<.05	--	--
7-25	--	--	--	--	--	--	.06	--	--	--
					05526000 Iroquois River near Chebanse, Ill.--Continued					
5-16	<0.1	0.1	<0.1	<0.1	<0.1	--	--	--	<.10	<.10
5-16	--	--	--	--	--	<.05	<.16	<.05	--	--

Table 10.--Physical properties and concentrations of agricultural organic compounds (determined by gas chromatography/mass spectrometry) in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Simetryne total (µg/L) (39054)	Simazine total (µg/L) (-----)[2]	Simazine total (µg/L) (39055)	Prometone total (µg/L) (-----)[2]	Prometone total (µg/L) (39056)	Prometryne total (µg/L) (-----)[2]	Prometryne total (µg/L) (39057)	Metolachlor water dissolved (µg/L) (39415)	Atrazine, total (µg/L) (39630)	Atrazine-water, dissolved (µg/L) (39632)
					IROQUOIS RIVER STATIONS--Continued					
					05525500 Sugar Creek at Milford, Ill.--Continued					
5-16	<.1	--	.10	--	<.1	--	<.1	--	16	--
5-16	--	.180	--	<.050	--	<.050	--	8.3	--	20
5-16	<.1	--	.10	--	<.1	--	<.1	--	22	--
5-17	--	28.0	--	<.050	--	<.050	--	7.0	--	17
5-17	<.1	--	.10	--	<.1	--	<.1	--	23	--
5-17	--	.200	--	<.050	--	<.050	--	6.7	--	18
5-17	<.1	--	.10	--	<.1	--	<.1	--	9.9	--
5-17	--	.130	--	<.050	--	<.050	--	2.0	--	12
6-20	<.1	--	.10	--	.1	--	<.1	--	1.8	--
6-20	--	.140	--	<.050	--	<.050	--	.39	--	1.6
6-20	<.1	--	.10	--	<.1	--	<.1	--	5.2	--
6-20	--	.120	--	<.050	--	<.050	--	1.3	--	4.6
6-21	<.1	--	.10	--	<.1	--	<.1	--	8.3	--
6-21	--	.150	--	<.050	--	<.050	--	3.2	--	8.9
6-22	<.1	--	.10	--	<.1	--	<.1	--	8.5	--
6-22	--	.100	--	<.050	--	<.050	--	2.3	--	6.4
6-23	--	.100	--	<.050	--	<.050	--	2.2	--	6.4
6-23	<.1	--	.10	--	<.1	--	<.1	--	3.8	--
6-23	--	.100	--	<.050	--	<.050	--	.94	--	3.5
6-25	--	.140	--	<.050	--	<.050	--	.47	--	2.8
6-30	--	<.050	--	<.050	--	<.050	--	.98	--	6.1
7-05	--	<.050	--	<.050	--	<.050	--	.16	--	1.1
7-10	--	<.050	--	<.050	--	<.050	--	.16	--	1.7
7-10	--	<.050	--	<.050	--	<.050	--	.17	--	2.0
7-11	--	<.050	--	<.050	--	<.050	--	.60	--	2.4
7-12	--	<.050	--	<.050	--	<.050	--	.60	--	2.7
7-20	--	<.050	--	<.050	--	<.050	--	.19	--	1.1
7-21	--	<.050	--	<.050	--	<.050	--	.50	--	2.6
7-23	<.1	--	<.10	--	<.1	--	<.1	--	1.8	--
7-23	--	<.050	--	<.050	--	<.050	--	.36	--	2.6
7-25	--	.070	--	<.050	--	--	--	.67	--	4.6
					05526000 Iroquois River near Chebanse, Ill.--Continued					
5-16	<.1	--	.10	--	<.1	--	<.1	--	5.6	--
5-16	--	.140	--	<.050	--	<.050	--	2.5	--	6.1

Table 10.--Physical properties and concentrations of agricultural organic compounds (determined by gas chromatography/mass spectrometry) in water samples collected during Phase II sampling in the Kankakee River Basin, 1990--Continued

Date	Ala-chlor (Lasso) water dis-solved (µg/L) (46342)	Des-iso-propyl-atra-zine, water whole total (µg/L) (-----)[2]	Des-ethyl-atra-zine, water whole total (µg/L) (-----)[2]	Ala-chlor total recov-erable (µg/L) (77825)	Cyan-azine, total (µg/L) (-----)[2]	Cyan-azine, total (µg/L) (81757)	Ame-tryne total (µg/L) (82184)	Metri-buzin water whole total recov-erable (µg/L) (82611)	Metola-chlor water whole total recov-erable (µg/L) (82612)	Metri-buzin sencor dis-solved (µg/L) (82630)
				IROQUOIS RIVER STATIONS--Continued						
				05525500 Sugar Creek at Milford, Ill.--Continued						
5-16	--	--	--	6.10	--	15.0	<.10	.3	6.6	--
5-16	.74	1.7	1.4	--	9.24	--	--	--	--	.40
5-16	--	--	--	4.30	--	19.0	<.10	.3	6.7	--
5-17	5.1	1.4	1.4	--	36.5	--	--	--	--	.70
5-17	--	--	--	4.70	--	18.0	<.10	.3	7.2	--
5-17	4.2	1.2	1.4	--	35.6	--	--	--	--	.70
5-17	--	--	--	2.30	--	7.1	<.10	.3	2.1	--
5-17	2.6	.71	.96	--	1.30	--	--	--	--	.29
6-20	--	--	--	.20	--	1.3	<.10	.2	.4	--
6-20	.18	.45	.35	--	.700	--	--	--	--	.19
6-20	--	--	--	1.00	--	6.0	<.10	.7	1.2	--
6-20	1.0	1.2	.88	--	3.92	--	--	--	--	.84
6-21	--	--	--	1.30	--	7.2	<.10	1.9	1.7	--
6-21	1.8	2.3	1.9	--	6.78	--	--	--	--	2.7
6-22	--	--	--	1.70	--	7.8	<.10	1.6	1.7	--
6-22	1.7	1.2	1.2	--	3.74	--	--	--	--	1.3
6-23	1.7	1.2	1.2	--	3.74	--	--	--	--	1.4
6-23	--	--	--	.90	--	3.4	<.10	.5	.9	--
6-23	1.1	.77	.71	--	2.60	--	--	--	--	.55
6-25	.60	.72	.62	--	1.66	--	--	--	--	.33
6-30	.40	1.7	1.3	--	3.10	--	--	--	--	.88
7-05	.06	.45	.28	--	.400	--	--	--	--	.06
7-10	.42	.39	.46	--	.280	--	--	--	--	.07
7-10	.43	.40	.53	--	.560	--	--	--	--	.19
7-11	.35	1.0	.86	--	1.07	--	--	--	--	.47
7-12	<.05	.91	.77	--	1.16	--	--	--	--	.28
7-20	.13	.58	.37	--	.350	--	--	--	--	.10
7-21	.11	1.0	.73	--	1.36	--	--	--	--	.24
7-23	--	--	--	.10	--	1.2	<.10	.1	.2	--
7-23	.11	.78	.73	--	.890	--	--	--	--	.14
7-25	.66	.55	1.6	--	.230	--	--	--	--	.44
				05526000 Iroquois River near Chebanse, Ill.--Continued						
5-16	--	--	--	1.70	--	8.4	<.10	.1	1.8	--
5-16	2.8	<.05	.45	--	10.4	--	--	--	--	<.05

[1]Average value.
[2]Analysis performed by the Ogranic Geochemistry Research Laboratory in Lawrence, Kans.--no parameter code for this analysis.