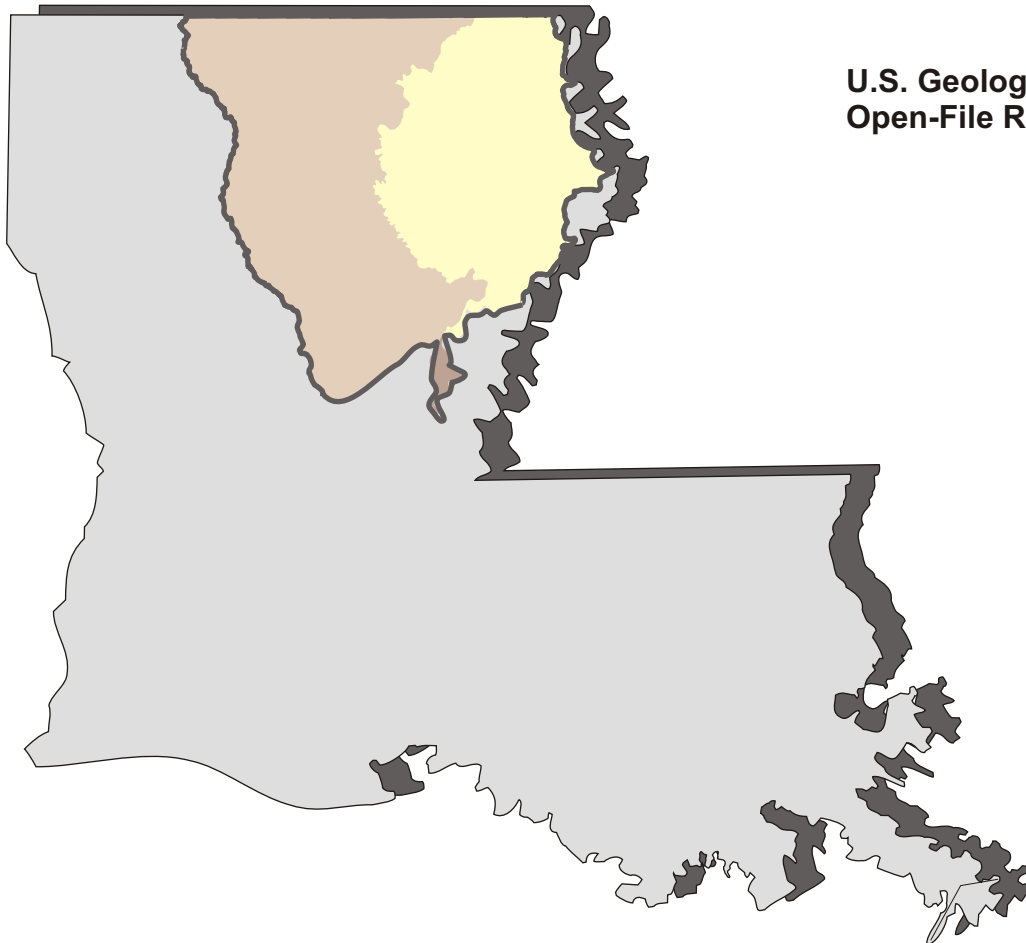


In cooperation with the

U.S. ENVIRONMENTAL PROTECTION AGENCY REGION 6



Pesticides and Oil and Grease in Selected Streams and Lakes in Northeastern Louisiana, 2001



U.S. Geological Survey
Open-File Report 03-386

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By Benton D. McGee

U.S. GEOLOGICAL SURVEY

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Baton Rouge, Louisiana

2003

U.S. DEPARTMENT OF THE INTERIOR

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U.S. GEOLOGICAL SURVEY

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CONVERSION FACTORS, DATUM, AND ABBREVIATED WATER-QUALITY UNITS

Multiply	By	To obtain
mile (mi)	1.609	kilometer (km)
million gallons per day (Mgal/d)	3,785	cubic meter per day (m ³ /d)
square mile (mi ²)	2.590	square kilometer (km ²)

Temperature in degrees Celsius (°C) can be converted to degrees Fahrenheit (°F) as follows: °F = 1.8(°C) + 32.

Horizontal coordinate information in this report is referenced to the North American Datum of 1983.

Abbreviated water-quality units:

liter (L)
 milligrams per liter (mg/L)
 nanograms per liter (ng/L)

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ABSTRACT

A 6-month study was begun in April 2001 to determine the concentrations of pesticides or oil and grease in selected stream reaches and lakes within the Ouachita, Tensas, and Black River Basins in northeastern Louisiana. During April through September 2001, six monthly water samples for analysis of pesticides were collected from 22 sites: 17 sites were on 11 streams, and 5 sites were on 5 lakes. During April through July 2001, four monthly samples for analysis of oil and grease were collected from 5 sites: 4 sites were on three streams, and 1 site was on a lake.

A total of 131 water samples were analyzed for 17 pesticides (15 insecticides and 2 herbicides). The following classes of pesticides, as classified from the Pesticide Analysis (U.S. Environmental Protection Agency Region 6 Laboratory), are reported: organochlorine, nitrogen-phosphorus, and carbamate. The 8 pesticides detected in samples, in decreasing frequency, were as follows: atrazine, molinate, methyl parathion, 4,4'-DDT, carbofuran, diazinon, toxaphene, and 4,4'-DDE.

Organochlorine pesticides (insecticides) represented the majority (12 out of 17) of the pesticides analyzed. Of those 12 organochlorine pesticides, only 3 (4,4'-DDT, 4,4'-DDE, and toxaphene) were detected in the 131 samples. Of the organochlorine pesticides, 4,4'-DDT was detected most frequently (in 11 percent of the samples), and concentrations ranged from 1.22 to 4.70 ng/L (nanograms per liter).

Nitrogen-phosphorus pesticides were the most frequently detected and abundant pesticides. Of all the pesticides analyzed, atrazine and molinate (nitrogen-phosphorus herbicides) were the pesticides most frequently detected (in 93 and 21 percent of the samples), had the highest and most wide-ranging concentrations (10.8 to 15,100 ng/L and 10.0 to 11,600 ng/L), and were most widely distributed throughout the study area.

Carbofuran, a carbamate insecticide, was detected at 8 of the 22 pesticide data-collection sites and in 9.2 percent of the 131 samples analyzed for pesticides. Concentrations of carbofuran ranged from 30.7 to 946 ng/L.

Of the 22 pesticide data-collection sites, the frequency of pesticide detection was highest at 6 sites: Boeuf River near Arkansas-Louisiana State line, Boeuf River near Fort Necessity, Big Creek at Louisiana Highway 135 near Winnsboro, Crew Lake at Crew Lake, Joe's Bayou near Waverly; and Bayou Macon at Louisiana Highway 562 near Wisner. All water samples analyzed for oil and grease had concentrations less than the reporting limit of 5 milligrams per liter.

INTRODUCTION

The U.S. Environmental Protection Agency (USEPA) uses selected water-quality data in the assessment of the impairment of surface-water bodies (streams and lakes). Additionally, the data are used to develop total maximum daily loads (TMDL's) for the water bodies. Pesticide and oil and grease data were needed to determine the degree of impairment and to evaluate the necessity of TMDL's for selected streams

and lakes in northeastern Louisiana. In April 2001, the U.S. Geological Survey (USGS), in cooperation with the USEPA, began a study to collect data to determine concentrations of selected pesticides and oil and grease in the surface waters of the Ouachita, Tensas, and Black River Basins in northeastern Louisiana.

Purpose and Scope

This report presents pesticide and oil and grease data from sites on selected streams and lakes in the Ouachita, Tensas, and Black River Basins. Water samples were collected from 22 sites on streams and lakes (table 1) and analyzed for a small suite of 17 pesticides (15 insecticides and 2 herbicides, table 2). The following classes of pesticides, as classified from the Pesticide Analysis (USEPA Region 6 Laboratory), are reported: organochlorine (12), nitrogen-phosphorus (4), and carbamate (1). Additionally, water samples were collected from five sites in the Ouachita River Basin and analyzed for oil and grease. Sampling methods and quality-assurance and quality-control procedures are discussed. The resulting data from this study were used by the USEPA to determine the impairment status for these streams and lakes listed in the 1999 court-ordered 303(d) list for Louisiana and to develop TMDL's as appropriate (J.L. Franks and Philip Crocker, U.S. Environmental Protection Agency, written commun., 2003).

Description of Study Area

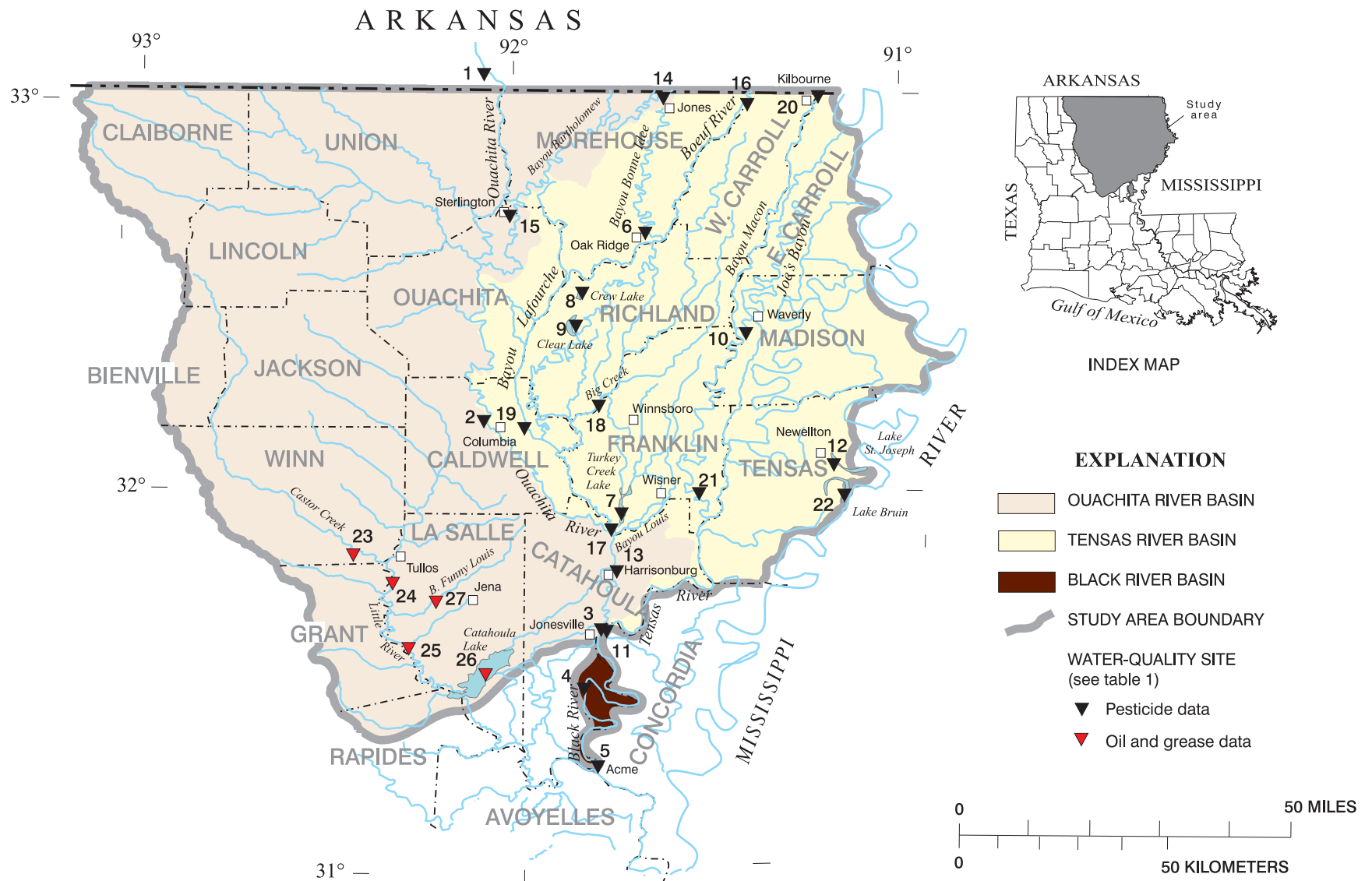
In Louisiana, the Ouachita, Tensas, and Black River Basins are located mainly in the northeast and extend from the Arkansas-Louisiana State line south to the confluence of the Black and Red Rivers (fig. 1). The study area is bounded on the east by the Mississippi River and on the west by the Red River. This area of Louisiana is characterized mainly by low topographic relief. The Ouachita, Tensas, and Black Rivers drain approximately 24,509 mi² in Louisiana (Sloss, 1971, p. 85). Four of the streams sampled flow from Arkansas into Louisiana: Ouachita River, Bayou Bartholomew, Boeuf River, and Bayou Macon. These and the other streams and lakes included in this report are listed in table 1. The designated uses for the stream reaches and lakes sampled during this period were primary and secondary contact recreation, propagation of fish and wildlife, drinking water, and outstanding natural resource waters (table 1) (U.S. Environmental Protection Agency, 2002). The area is sparsely populated, and the land is used mainly for agriculture. In 2000, surface-water use from the Ouachita and Tensas River Basins totaled approximately 294 Mgal/d, and was primarily for power generation and irrigation (Sargent, 2002, p. 110, 114).

Acknowledgments

This project was funded under an interagency agreement from USEPA Region 6. Arlene F. Gaines, Jessica L. Franks, and Philip Crocker of the USEPA and Charles R. Demas of USGS assisted in administering the interagency agreement to complete the project. Philip Crocker and Jessica L. Franks assisted in the sampling design and commented on draft versions of the report. Additionally, the author thanks Burl B. Goree of the USGS office in Ruston, Louisiana, for his efforts in ensuring the accurate and efficient collection of data.

DATA COLLECTION AND METHODS

Stream reaches and lakes listed as impaired for pesticides or oil and grease on the 1999 court-ordered 303(d) list for Louisiana were identified by the USEPA for sample collection (J.L. Franks and Philip Crocker, U.S. Environmental Protection Agency, written commun., 2003). Data-collection sites (fig. 1), usually located at the lower (downstream) end of the stream reach, were selected and sampled monthly by the USGS. One data-collection site, Ouachita River near Arkansas-Louisiana State line, was located in Arkansas (less than 2 mi north of Louisiana). The four identified stream reaches that flow from Arkansas into Louisiana were sampled at two locations, one near the Louisiana State line and one at the lower end of the reach.



Basin delineations from U.S. Geological Survey, 1977
 Base map from Official Map of Louisiana, Department of Transportation and Development, 1986

Figure 1. Location of study area and water-quality data-collection sites in the Ouachita, Tensas, and Black River Basins, northeastern Louisiana, 2001.

Table 1. Selected water-quality data-collection sites in the Ouachita, Tensas, and Black River Basins, northeastern Louisiana, 2001

[All sites are in Louisiana, except as noted. Designated uses: A, primary contact recreation; B, secondary contact recreation; C, propagation of fish and wildlife; D, drinking water; G, outstanding natural resource waters. Sample type: P, pesticides; OG, oil and grease. NA, not applicable]

Site no. (fig. 1)	Site name	Latitude	Longitude	Stream reach	River basin	Designated uses ¹	Sample type	Number of samples
1	Ouachita River near Arkansas-Louisiana State line, Arkansas	33°02'54"	92°06'42"	Arkansas State line to Columbia Lock and Dam	Ouachita	A, B, C, D	P	6
2	Ouachita River at Columbia Lock and Dam	32°10'00"	92°06'44"	Arkansas State line to Columbia Lock and Dam	Ouachita	A, B, C, D	P	6
3	Ouachita River at Jonesville	31°38'02"	91°48'42"	Columbia Lock and Dam to Jonesville	Ouachita	A, B, C	P	6
4	Black River at Jonesville Lock and Dam	31°28'59"	91°51'29"	Jonesville to Jonesville Lock and Dam	Black	A, B, C	P	6
5	Black River at Acme	31°17'11"	91°49'19"	Jonesville Lock and Dam to Red River	Black	A, B, C	P	6
6	Bayou Bonne Idee at Louisiana Highway 134 near Oak Ridge	32°38'37"	91°42'12"	Headwaters to Boeuf River	Ouachita	A, B, C	P	6
7	Turkey Creek Lake at Louisiana Highway 562 near Wisner	31°55'47"	91°45'50"	Headwaters to Big Creek	Ouachita	B, C	P	6
8	Crew Lake at Crew Lake	32°29'23"	91°51'45"	NA	Ouachita	A, B, C	P	6
9	Clear Lake near Rhymes	32°24'24"	91°52'45"	NA	Ouachita	A, B, C	P	6
10	Joe's Bayou near Waverly	32°23'21"	91°26'47"	Headwaters to Bayou Macon	Ouachita	A, B, C	P	6
11	Tensas River at Jonesville	31°38'00"	91°48'06"	Headwaters to Jonesville	Tensas	A, B, C	P	6
12	Lake St. Joseph near Newellton	32°03'14"	91°13'19"	NA	Tensas	A, B, C	P	6
13	Bayou Louis at Louisiana Highway 8 near Harrisonburg	31°46'57"	91°46'24"	Headwaters to Ouachita River	Ouachita	A, B, C	P	6
14	Bayou Bartholomew near Jones	32°59'25"	91°39'20"	Arkansas State line to Dead Bayou	Ouachita	A, B, C, G	P	6
15	Bayou Bartholomew at U.S. Highway 165 near Sterlington	32°41'11"	92°02'48"	Arkansas State line to Dead Bayou	Ouachita	A, B, C, G	P	5
16	Boeuf River near Arkansas-Louisiana State line	32°58'23"	91°26'32"	Arkansas State line to Ouachita River	Ouachita	A, B, C	P	6
17	Boeuf River near Fort Necessity	31°53'21"	91°47'19"	Arkansas State line to Ouachita River	Ouachita	A, B, C	P	6
18	Big Creek at Louisiana Highway 135 near Winnsboro	32°12'18"	91°49'12"	Headwaters to Boeuf River	Ouachita	A, B, C	P	6
19	Bayou Lafourche near Columbia	32°08'46"	92°01'48"	Near Oak Ridge to Boeuf River	Ouachita	A, B, C	P	6
20	Bayou Macon near Kilbourne	32°59'30"	91°15'44"	Arkansas State line to Tensas River	Tensas	A, B, C	P	6
21	Bayou Macon at Louisiana Highway 562 near Wisner	31°58'55"	91°33'55"	Arkansas State line to Tensas River	Tensas	A, B, C	P	6
22	Lake Bruin near Lake Bruin	31°58'42"	91°11'49"	NA	Tensas	A, B, C, D	P	6
23	Castor Creek near Tullos	31°49'37"	92°26'47"	Headwaters to Little River	Ouachita	A, B, C	OG	4
24	Little River near Rochelle	31°45'17"	92°20'42"	Castor Creek and Dugdemona River to Bear Creek	Ouachita	A, B, C, G	OG	4
25	Little River at Louisiana Highway 8 near Pollock	31°35'13"	92°18'19"	Bear Creek to Catahoula Lake	Ouachita	A, B, C, G	OG	4
26	Catahoula Lake near Dewey W. Wills Wildlife Management Area	31°31'15"	92°06'31"	NA	Ouachita	A, B, C	OG	4
27	Bayou Funny Louis at Louisiana Highway 500 near Jena	31°42'20"	92°14'05"	Bayou Funny Louis-headwaters to Little River	Ouachita	A, B, C	OG	4

¹ Source: U.S. Environmental Protection Agency (2002).

During April through September 2001, monthly water samples for pesticides were collected from sites 1-22 (fig. 1): 17 sites were on 11 streams and 5 sites were on 5 lakes (table 1). A total of 146 water-quality samples (including 13 duplicates and 2 field blanks) were collected and analyzed for pesticides. During April through July 2001, four monthly water samples for oil and grease were collected from sites 23-27 (fig. 1, table 1). These 5 sites were in the southwestern part of the Ouachita River Basin (fig. 1); 4 were on three streams, and 1 was on a lake. A total of 23 water-quality samples (including 3 duplicates) were collected and analyzed for oil and grease.

Sampling and analysis quality-control measures were followed as described in the quality-assurance project plan (Hoppers, 2001). All water-quality samples were collected in accordance with USGS methods described by Wilde and others (1999). USGS Parts-Per-Billion sampling protocol was utilized to decrease the possibility of contamination during sample collection (Horowitz and others, 1994).

Pesticide samples collected from streams were collected by depth integration from the centroid of flow. Pesticide samples collected from lakes were depth-integrated in the vicinity of the public-supply intake or at the geographic center of the lake. Pesticide samples were collected (basket-sampled) in 1-L amber, organic-free, glass bottles and chilled to 4 °C. After collection, samples were labeled with appropriate information (sample site, date, time, sample type, treatment, and unique identification number), individually wrapped in protective shipping material, and shipped overnight, chilled to approximately 4 °C, with chain-of-custody documentation to the USEPA Region 6 Laboratory in Houston, Texas, for analysis. All pesticide analyses were done by this laboratory. Oil and grease samples were collected (surface-sampled) in 1-L amber, organic-free, glass bottles and treated with sulfuric acid to a pH of less than 2.0 and chilled to 4 °C. Oil and grease samples were labeled similarly and shipped to the USEPA Region 6 Laboratory. All oil and grease analyses were done by the Texas Commission on Environmental Quality Laboratory in Houston.

Water-quality samples were analyzed for pesticides using USEPA methods 8081A (organochlorine pesticides), 8141A / 507 (nitrogen-phosphorus pesticides), and 8270C (carbamate pesticides) (Hoppers, 2001). Water-quality samples were analyzed for oil and grease using USEPA method 1664.

PESTICIDE AND OIL AND GREASE DATA

Samples from sites 1-22 (table 1) were analyzed for selected organochlorine pesticides (aldrin, alpha-chlordane, gamma-chlordane, 4,4'-DDT, 4,4'-DDD, 4,4'-DDE, dieldrin, endosulfan I, endrin, heptachlor, lindane, and toxaphene); nitrogen-phosphorous pesticides (atrazine, diazinon, methyl parathion, and molinate); and a carbamate pesticide (carbofuran). The 8 pesticides detected in samples, in decreasing frequency, were as follows: atrazine, molinate, methyl parathion, 4,4'-DDT, carbofuran, diazinon, toxaphene, and 4,4'-DDE. The maximum and minimum concentrations for detected pesticides are summarized in table 2. Concentrations and reporting limits for all analyzed pesticides are listed in table 3 (at the back of the report).

Organochlorine pesticides (insecticides) represented the majority (12 out of 17) of the pesticides analyzed during this study. Of the 12 organochlorine pesticides analyzed during this study, only 3 (4,4'-DDT, 4,4'-DDE, and toxaphene) were detected out of the 131 samples analyzed for pesticides. Of the organochlorine pesticides, 4,4'-DDT was detected most frequently (11 percent) and concentrations ranged from 1.22 to 4.70 ng/L (table 2). The 4,4'-DDT was detected at 7 of the 22 pesticide sample sites, and was detected as far north as Boeuf River near Arkansas-Louisiana State line (site 16), as far south as Tensas River at Jonesville (site 11), and as far east as Lake Bruin near Lake Bruin (site 22). The highest concentration of 4,4'-DDT was detected at Big Creek at Louisiana Highway 135 near Winnsboro (site 18); however, 4,4'-DDT was detected most frequently (in 3 out of 6 samples) at Joe's Bayou near Waverly (site 10) (table 3, at the back of the report).

A degradation product of 4,4'-DDT, 4,4'-DDE was detected in only one sample, from Lake St. Joseph near Newellton (site 12). Toxaphene was detected at 3 of the 22 pesticide data-collection sites and in 2.3 percent of the 131 samples analyzed for pesticides. Toxaphene was detected in the highest concentration (103 ng/L) at the northernmost site on the Boeuf River (Boeuf River near Arkansas-Louisiana State line, site 16), and was detected as far south as Boeuf River near Fort Necessity (site 17) (table 3, at the back of the report). Toxaphene also occurred in the highest concentration and widest range of the organochlorine pesticides (69.7 to 103 ng/L) (table 2).

Table 2. Summary of pesticide data collected from selected sites in the Ouachita, Tensas, and Black River Basins, northeastern Louisiana, April-September 2001
[Total number of sites sampled, 22; NA, not applicable]

Pesticide	Number of sites pesticide was detected	Frequency of detection for 131 samples (percent)	Concentration (nanograms per liter)	
			Maximum	Minimum
Organochlorine insecticides¹				
Aldrin	0	0	NA	NA
Alpha-chlordane	0	0	NA	NA
Gamma-chlordane	0	0	NA	NA
4,4'-DDT	7	11	4.70	1.22
4,4'-DDD	0	0	NA	NA
4,4'-DDE	1	0.8	10.1	10.1
Dieldrin	0	0	NA	NA
Endosulfan I	0	0	NA	NA
Endrin	0	0	NA	NA
Heptachlor	0	0	NA	NA
Lindane	0	0	NA	NA
Toxaphene	3	2.3	103	69.7
Nitrogen-phosphorus herbicides¹				
Atrazine	22	93	15,100	10.8
Molinate	13	21	11,600	10.0
Nitrogen-phosphorus insecticides¹				
Diazinon	6	5.3	35.8	10.2
Methyl parathion	12	14	309	10.1
Carbamate insecticide¹				
Carbofuran	8	9.2	946	30.7

¹ Pesticide classification is from the Pesticide Analysis (U.S. Environmental Protection Agency Region 6 Laboratory).

Of the three classes of pesticides presented in this report, nitrogen-phosphorus pesticides represented the most frequently detected and abundant pesticides. Of all the pesticides, atrazine and molinate (nitrogen-phosphorus herbicides) were the most frequently detected (in 93 and 21 percent of samples), had the highest and most wide-ranging concentrations (10.8 to 15,100 ng/L and 10.0 to 11,600 ng/L), and were most widely distributed throughout the study area (table 2). Atrazine was detected at all 22 pesticide data-collection sites.

Carbofuran, a carbamate insecticide, was detected in 8 of the 22 pesticide data-collection sites and in 9.2 percent of the 131 samples analyzed for pesticides. Concentrations of carbofuran ranged from 30.7 to 946 ng/L (table 2). Concentrations of carbofuran were detected in the study area as far north as Crew Lake at Crew Lake (site 8) in Richland Parish and as far south as Black River at Acme (site 5), the southernmost pesticide data-collection site. No carbofuran was detected at any of the four pesticide data-collection sites located near the Arkansas-Louisiana State line. Carbofuran was detected most frequently (in 3 of the 6 samples) and at the highest concentrations at Joe's Bayou near Waverly (site 10), which is a tributary to Bayou Macon in Madison Parish in the eastern part of the study area (table 3, at the back of the report).

The frequency of pesticide detections was highest at six sites: Boeuf River near Arkansas-Louisiana State line (site 16), Boeuf River near Fort Necessity (site 17), Big Creek at Louisiana Highway 135 near Winnsboro (site 18), Crew Lake at Crew Lake (site 8), Joe's Bayou near Waverly (site 10); and Bayou Macon at Louisiana Highway 562 near Wisner (site 21) (table 3, at the back of the report). All water-quality samples analyzed for oil and grease had concentrations less than the reporting limit of 5 mg/L (table 4, at the back of the report).

QUALITY ASSURANCE AND QUALITY CONTROL

Analyses of field blanks indicated no detectable concentrations for the pesticides analyzed, indicating that field data-collection techniques were sound and did not adversely affect the samples. Additional quality-control measures (surrogate and matrix spike analysis) were conducted by the USEPA laboratory to assess data quality and laboratory instrument performance.

The precision of laboratory data is measured by the reproducibility of a result. It is defined as the degree to which multiple analyses of a given sample agree with each other. Precision is determined through replicate analysis of a stable standard (Hoppers, 2001). Precision was measured by calculating the relative-percent difference (RPD) of replicate data. Of the 224 RPD data points produced by the USEPA laboratory in Houston, only 7 were outside acceptable limits (3.1 percent) (Diane Gregg, U.S. Environmental Protection Agency, written commun., 2002).

Data accuracy is a measure of the correctness. Data are considered most accurate when the reported value does not differ from the true value. Data accuracy is verified by analysis of matrix spikes, standards, and blank samples (Hoppers, 2001). Of the 727 surrogates that were spiked and reported from the 161 laboratory samples analyzed, 116 (15.9 percent) were identified as outside acceptable accuracy limits. Surrogates were outside acceptable limits due to problems related to insufficient spiking, exceeding advisory limits, and laboratory cleanup procedures (Diane Gregg, U.S. Environmental Protection Agency, written commun., 2002).

Of the 448 matrix spikes analyzed from 28 samples, recoveries from 93 matrix spikes were identified as outside acceptable accuracy limits (20.8 percent). Matrix-spike recoveries outside acceptable accuracy limits were due to insufficient spiking and exceeding advisory limits. Excluding recoveries for compounds that were inadequately spiked, all matrix-spike recoveries were greater than or equal to 50 percent (Diane Gregg, U.S. Environmental Protection Agency, written commun., 2002). Additionally, all holding time limits were met by the USEPA laboratory.

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Table 3. Concentrations and reporting limits of selected pesticides in water from selected sites in the Ouachita, Tensas, and Black River Basins, northeastern Louisiana, April-September 2001

[All sites are in Louisiana, except where noted. Data are from U.S. Environmental Protection Agency Region 6 Laboratory, Houston, Texas. Number in parentheses with the site name is the map number shown in figure 1. Concentration / reporting limit, in nanograms per liter; ND, not detected; --, no data]

Ouachita River near Arkansas-Louisiana State line, Arkansas (site 1)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
4-23-01	0932	ND / 10	ND / 4.1	ND / 4.1	ND / 1.0	ND / 6.2	ND / 10	ND / 10	ND / 10
5-14-01	1153	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
6-11-01	0918	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
7-16-01	0933	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
8- 8-01	1020	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-11-01	0915	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.1	ND / 10	ND / 62	34.1 / 10	ND / 10	ND / 10	ND / 10	ND / 31	
ND / 10	ND / 3.0	ND / 10	ND / 60	30.6 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	ND / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	ND / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	33.1 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	ND / 10	ND / 10	ND / 10	ND / 10	ND / 30	

Ouachita River at Columbia Lock and Dam (site 2)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
4-30-01	1458	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
5-15-01	1553	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
6-12-01	0922	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
7-17-01	1654	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
8-13-01	0935	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-19-01	0914	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.0	ND / 10	ND / 60	26.9 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	28.3 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	22.9 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	ND / 10	16.0 / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	ND / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	ND / 10	ND / 10	ND / 10	ND / 10	ND / 30	

Table 3. Concentrations and reporting limits of selected pesticides in water from selected sites in the Ouachita, Texas, and Black River Basins, northeastern Louisiana, April-September 2001—Continued

Ouachita River at Jonesville (site 3)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
5- 1-01	1529	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
5-15-01	1218	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
6-12-01	1345	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
7-11-01	1405	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
8-13-01	1246	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-19-01	1129	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.0	ND / 10	ND / 60	322 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	67.0 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	134 / 10	11.2 / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	104 / 10	ND / 25	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	72.0 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	38.8 / 10	ND / 10	ND / 10	ND / 10	ND / 30	

Black River at Jonesville Lock and Dam (site 4)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
5- 2-01	1416	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
5-15-01	1112	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
6-13-01	1300	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
7-17-01	1147	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
8-14-01	1244	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-20-01	1237	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.0	ND / 10	ND / 61	329 / 10	ND / 10	ND / 10	ND / 10	36.2 / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	89.4 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	174 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	140 / 10	15.7 / 10	10.2 / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	436 / 10	ND / 15	ND / 10	23.5 / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	64.6 / 10	ND / 10	ND / 10	ND / 10	ND / 30	

Table 3. Concentrations and reporting limits of selected pesticides in water from selected sites in the Ouachita, Tensas, and Black River Basins, northeastern Louisiana, April-September 2001—Continued

Black River at Acme (site 5)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
5- 2-01	1542	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
5-16-01	0941	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
6-13-01	1053	ND / 10	ND / 4.0	ND / 4.0	ND / 14	ND / 6.1	ND / 10	ND / 10	ND / 10
7-17-01	1016	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
8-14-01	1053	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-20-01	1054	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.0	ND / 10	ND / 60	298 / 10	ND / 10	ND / 10	ND / 10	30.7 / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	68.1 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	125 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	187 / 10	12.8 / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	400 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	157 / 10	ND / 15	ND / 10	ND / 10	ND / 30	

Bayou Bonne Idee at Louisiana Highway 134 near Oak Ridge (site 6)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
4-30-01	0953	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
5- 7-01	1052	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
6- 4-01	1022	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
7- 9-01	0959	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
8- 6-01	1111	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-24-01	0908	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.0	ND / 10	ND / 60	959 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	610 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	472 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	349 / 10	ND / 10	ND / 10	151 / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	229 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	347 / 10	ND / 10	ND / 10	ND / 10	ND / 30	

Table 3. Concentrations and reporting limits of selected pesticides in water from selected sites in the Ouachita, Tensas, and Black River Basins, northeastern Louisiana, April-September 2001—Continued

Turkey Creek Lake at Louisiana Highway 562 near Wisner (site 7)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
5- 1-01	1018	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
5- 8-01	1119	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
6- 5-01	1038	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
7-10-01	1138	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
8- 7-01	1358	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-10-01	1255	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.0	ND / 10	ND / 60	780 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	739 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	921 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	793 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	658 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	221 / 10	ND / 10	ND / 10	ND / 10	ND / 30	

Crew Lake at Crew Lake (site 8)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
4-24-01	1040	ND / 10	ND / 4.1	ND / 4.1	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
5- 7-01	1000	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
6- 4-01	0854	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
7- 9-01	0853	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
8- 6-01	0931	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-10-01	1448	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.1	ND / 10	ND / 61	139 / 10	ND / 10	ND / 10	ND / 10	ND / 31	
ND / 10	ND / 3.0	ND / 10	ND / 61	193 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	2,530 / 10	155 / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	2,000 / 10	1,150 / 10	ND / 10	22.9 / 10	37.0 / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	368 / 10	1,470 / 10	ND / 10	15.0 / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	64.8 / 10	18.2 / 10	ND / 10	ND / 10	ND / 30	

Table 3. Concentrations and reporting limits of selected pesticides in water from selected sites in the Ouachita, Tensas, and Black River Basins, northeastern Louisiana, April-September 2001—Continued

Clear Lake near Rhymes (site 9)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
4-24-01	1234	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
5-14-01	1410	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
6-11-01	1156	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
7-16-01	1148	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
8- 8-01	1246	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-18-01	1138	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.0	ND / 10	ND / 60	131 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	87.7 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	63.1 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	44.4 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	40.0 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	46.1 / 10	ND / 10	ND / 10	ND / 10	ND / 30	

Joe's Bayou near Waverly (site 10)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
4-30-01	1128	ND / 10	ND / 4.0	ND / 4.0	2.35 / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
5- 7-01	1150	ND / 10	ND / 4.0	ND / 4.0	1.45 / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
6-11-01	1354	ND / 10	ND / 4.0	ND / 4.0	2.2 / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
7- 9-01	--	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
8- 6-01	1223	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-24-01	1021	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.0	ND / 10	ND / 60	12,300 / 10	ND / 10	ND / 10	ND / 10	877 / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	206 / 10	ND / 10	ND / 10	ND / 10	946 / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	2,170 / 10	ND / 10	ND / 10	11.9 / 10	194 / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	1,300 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	817 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	347 / 10	ND / 10	ND / 10	ND / 10	ND / 30	

Table 3. Concentrations and reporting limits of selected pesticides in water from selected sites in the Ouachita, Tensas, and Black River Basins, northeastern Louisiana, April-September 2001—Continued

Tensas River at Jonesville (site 11)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
5- 1-01	1530	ND / 10	ND / 4.0	ND / 4.0	2.38 / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
5-15-01	1230	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
6-12-01	1401	ND / 10	ND / 4.0	ND / 4.0	1.7 / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
7-11-01	1415	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
8-13-01	1306	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-18-01	1138	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.0	ND / 10	ND / 61	305 / 10	ND / 10	ND / 10	ND / 10	439 / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	78.0 / 10	ND / 10	ND / 10	ND / 10	166 / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	2,250 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	960 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	1,320 / 10	ND / 10	ND / 10	16.6 / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	120 / 10	ND / 10	ND / 10	ND / 10	ND / 30	

Lake St. Joseph near Newellton (site 12)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
4-24-01	1524	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	10.1 / 10	ND / 10	ND / 10
5-15-01	0848	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
6-11-01	1506	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
7-16-01	1405	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
8- 8-01	1430	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-18-01	1333	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.0	ND / 10	ND / 60	483 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	564 / 10	ND / 10	13.0 / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	423 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	89.7 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	128 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	ND / 10	ND / 10	ND / 10	ND / 10	ND / 30	

Table 3. Concentrations and reporting limits of selected pesticides in water from selected sites in the Ouachita, Tensas, and Black River Basins, northeastern Louisiana, April-September 2001—Continued

Bayou Louis at Louisiana Highway 8 near Harrisonburg (site 13)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
5- 1-01	1409	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
5- 8-01	1310	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
6- 5-01	1312	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
7-10-01	1410	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
8- 7-01	1100	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-10-01	0940	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.0	ND / 10	ND / 60	652 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	1,100 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	3,400 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	1,730 / 10	14.5 / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	821 / 10	ND / 10	12.2 / 10	309 / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	408 / 10	ND / 10	ND / 10	ND / 10	ND / 30	

Bayou Bartholomew near Jones (site 14)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
4-23-01	1245	ND / 10	ND / 4.1	ND / 4.1	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
5- 7-01	1424	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
6- 4-01	1545	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
7- 9-01	--	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
8- 6-01	1525	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-24-01	1321	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.1	ND / 10	ND / 61	49.9 / 10	ND / 10	ND / 10	ND / 10	ND / 31	
ND / 10	ND / 3.0	ND / 10	ND / 60	50.5 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	221 / 10	22.1 / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	32.7 / 10	1,600 / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	33.1 / 10	59.3 / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	10.8 / 10	ND / 10	ND / 10	ND / 10	ND / 30	

Table 3. Concentrations and reporting limits of selected pesticides in water from selected sites in the Ouachita, Tensas, and Black River Basins, northeastern Louisiana, April-September 2001—Continued

Bayou Bartholomew at U.S. Highway 165 near Sterlington (site 15)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
4-30-01	1625	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
5- 7-01	1534	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
6- 5-01	1518	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
7-10-01	1638	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
8- 6-01	1706	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
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Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.0	ND / 10	ND / 60	154 / 10	ND / 10	10.5 / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	104 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	114 / 10	ND / 10	11.4 / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	105 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	71.6 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
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Boeuf River near Arkansas-Louisiana State line (site 16)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
4-23-01	1405	ND / 10	ND / 4.1	ND / 4.1	1.22 / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
5- 7-01	1351	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
6- 4-01	1444	ND / 10	ND / 4.0	ND / 4.0	4.4 / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
7- 9-01	1355	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
8- 6-01	1449	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-24-01	1244	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.1	ND / 10	ND / 61	536 / 10	18.2 / 10	ND / 10	ND / 10	ND / 31	
ND / 10	ND / 3.0	ND / 10	ND / 60	312 / 10	13.6 / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	103 / 60	668 / 10	3,840 / 10	13.9 / 10	16.9 / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	192 / 10	11,600 / 10	ND / 10	15.6 / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	28.6 / 10	209 / 10	ND / 10	24.9 / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	15.1 / 10	10.0 / 10	ND / 10	ND / 10	ND / 30	

Table 3. Concentrations and reporting limits of selected pesticides in water from selected sites in the Ouachita, Tensas, and Black River Basins, northeastern Louisiana, April-September 2001—Continued

Boeuf River near Fort Necessity (site 17)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
5- 1-01	1249	ND / 12	ND / 4.8	ND / 4.8	2.09 / 1.2	ND / 7.1	ND / 12	ND / 12	ND / 12
5-15-01	1503	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
6-12-01	1122	ND / 10	ND / 4.0	ND / 4.0	2.7 / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
7-17-01	1600	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
8-13-01	1043	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-19-01	1007	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 12	ND / 3.6	ND / 12	78.0 / 71	3,190 / 12	ND / 12	ND / 12	ND / 12	137 / 36	
ND / 10	ND / 3.0	ND / 10	ND / 60	5,300 / 10	ND / 10	35.8 / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	1,350 / 10	205 / 10	ND / 10	22.2 / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	1,920 / 10	575 / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	383 / 10	609 / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	147 / 10	ND / 10	ND / 10	ND / 10	ND / 30	

Big Creek at Louisiana Highway 135 near Winnsboro (site 18)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
4-30-01	1306	ND / 10	ND / 4.0	ND / 4.0	4.70 / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
5- 8-01	1018	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
6- 5-01	0924	ND / 10	ND / 4.0	ND / 4.0	1.77 / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
7-10-01	1045	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
8- 7-01	1503	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-10-01	1350	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.0	ND / 10	ND / 60	15,100 / 10	ND / 10	ND / 10	282 / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	2,810 / 10	ND / 10	ND / 10	10.1 / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	1,610 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	689 / 10	19.7 / 10	ND / 10	ND / 10	164 / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	124 / 10	18.0 / 10	ND / 10	38.8 / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	63.7 / 10	ND / 10	ND / 10	ND / 10	ND / 30	

Table 3. Concentrations and reporting limits of selected pesticides in water from selected sites in the Ouachita, Tensas, and Black River Basins, northeastern Louisiana, April-September 2001—Continued

Bayou Lafourche near Columbia (site 19)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
4-30-01	1401	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
5- 8-01	0919	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
6- 5-01	0813	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
7-10-01	0934	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
8- 7-01	0936	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-10-01	0804	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.0	ND / 10	ND / 61	98.4 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	66.9 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	95.9 / 10	ND / 10	ND / 10	10.5 / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	ND / 25	18.6 / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	ND / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	86.7 / 10	ND / 10	ND / 10	ND / 10	ND / 30	

Bayou Macon near Kilbourne (site 20)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
4-23-01	1450	ND / 10	ND / 4.1	ND / 4.1	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
5- 7-01	1322	ND / 12	ND / 4.8	ND / 4.8	ND / 1.2	ND / 7.2	ND / 12	ND / 12	ND / 12
6- 4-01	1352	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
7- 9-01	--	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
8- 6-01	1411	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-24-01	1208	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.1	ND / 10	ND / 61	2,200 / 10	ND / 10	ND / 10	11.7 / 10	ND / 31	
ND / 12	ND / 3.6	ND / 12	ND / 72	241 / 12	ND / 12	ND / 12	ND / 12	ND / 36	
ND / 10	ND / 3.0	ND / 10	ND / 60	963 / 10	33.6 / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	124 / 10	279 / 10	ND / 10	14.7 / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	101 / 10	65.3 / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	117 / 10	ND / 10	ND / 10	ND / 10	ND / 30	

Table 3. Concentrations and reporting limits of selected pesticides in water from selected sites in the Ouachita, Tensas, and Black River Basins, northeastern Louisiana, April-September 2001—Continued

Bayou Macon at Louisiana Highway 562 near Wisner (site 21)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
5- 1-01	1059	ND / 10	ND / 4.0	ND / 4.0	3.77 / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
5- 8-01	1159	ND / 10	ND / 4.0	ND / 4.0	2.2 / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
6- 5-01	1130	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
7-10-01	1305	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
8- 7-01	1213	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-10-01	1027	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.0	ND / 10	69.7 / 60	3,050 / 10	ND / 10	ND / 10	ND / 10	578 / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	2,690 / 10	ND / 10	ND / 10	ND / 10	49.0 / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	2,900 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	805 / 10	1,210 / 10	ND / 10	14.1 / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	148 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	84.9 / 10	ND / 10	ND / 10	ND / 10	ND / 30	

Lake Bruin near Lake Bruin (site 22)

Date	Time	Aldrin	Alpha-chlordane	Gamma-chlordane	4,4'-DDT	4,4'-DDD	4,4'-DDE	Dieldrin	Endosulfan I
4-24-01	1619	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
5-15-01	0942	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.0	ND / 10	ND / 10	ND / 10
6-11-01	1603	ND / 10	ND / 4.0	ND / 4.0	1.3 / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
7-16-01	1504	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
8- 8-01	1522	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
9-18-01	1419	ND / 10	ND / 4.0	ND / 4.0	ND / 1.0	ND / 6.1	ND / 10	ND / 10	ND / 10
Endrin	Heptachlor	Lindane	Toxaphene	Atrazine	Molinate	Diazinon	Methyl parathion	Carbofuran	
ND / 10	ND / 3.0	ND / 10	ND / 60	543 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 60	537 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	527 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	564 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	446 / 10	ND / 10	ND / 10	ND / 10	ND / 30	
ND / 10	ND / 3.0	ND / 10	ND / 61	562 / 10	ND / 10	ND / 10	ND / 10	ND / 30	

Table 4. Concentrations of oil and grease in water from selected sites in the Ouachita River Basin, northeastern Louisiana, April-July 2001

[All sites are in Louisiana. Site numbers are the map numbers shown in figure 1. mg/L, milligrams per liter; <, less than]

Site no. (fig. 1)	Site name	Date	Time	Oil and grease (mg/L)
23	Castor Creek near Tullos	5- 2-01	1032	<5
		5- 9-01	0947	<5
		6- 6-01	0920	<5
		7-11-01	0944	<5
24	Little River near Rochelle	5- 2-01	1122	<5
		5- 9-01	1030	<5
		6- 6-01	0955	<5
		7-11-01	1030	<5
25	Little River at Louisiana Highway 8 near Pollock	5- 2-01	1217	<5
		5- 9-01	1128	<5
		6- 6-01	1116	<5
		7-11-01	1149	<5
26	Catahoula Lake near Dewey W. Wills Wildlife Management Area	4-25-01	1156	<5
		5-16-01	1300	<5
		6-13-01	1521	<5
		7-17-01	1343	<5
27	Bayou Funny Louis at Louisiana Highway 500 near Jena	5- 2-01	1144	<5
		5- 9-01	1050	<5
		6- 6-01	1025	<5
		7-11-01	1101	<5