Water-Quality Conditions of Inflow, Outflow, and Impounded Water at Rathbun Reservoir, Iowa, Clinton and Pomona Lakes, Kansas, and Harlan County Reservoir, Nebraska, May Through August 1993

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CONVERSION FACTORS, ABBREVIATIONS, AND VERTICAL DATUM

Multiply	By	To obtain
inch (in.)	25.4	millimeter
foot (ft)	0.3048	meter
mile (mi)	1.609	kilometer
acre	4,047	square meter
acre	0.4047	square hectometer
acre-foot (acre-ft)	1,233	cubic meter
cubic foot per second (ft^3/s)	0.02832	cubic meter per second
quart (qt)	0.9464	liter
degree Fahrenheit (^oF)	([1])	degree Celsius (^oC)

[1] $^oC = (^oF-32)/1.8$.

Sea level: In this report, "sea level" refers to the National Geodetic Vertical Datum of 1929—a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

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By Andrew C. Ziegler, Patrick P. Rasmussen, Michael D. Carlson, *and* Dirk A. Hargadine

Abstract

During May through August 1993, water-quality samples were collected twice from selected sites in Rathbun Reservoir, Iowa, Clinton and Pomona Lakes, Kansas, and Harlan County Reservoir, Nebraska. Water samples were analyzed for specific conductance, pH, water temperature, turbidity, transparency, dissolved oxygen, chemical oxygen demand, fecal coliform bacteria, major ions, total suspended solids, nutrients (selected nitrogen and phosphorous species), alkalinity, selected trace metals, total organic carbon, selected herbicides, and chlorophyll-*a* and -*b*. These data are presented in this report.

Most concentrations of turbidity, chemical oxygen demand, major ions, total suspended solids, nutrients, alkalinity, selected trace metals, total organic carbon, and chlorophyll were largest from water samples collected in June from Rathbun Reservoir, Pomona Lake, and Harlan County Reservoir. Most concentrations of these constituents were largest in July in water samples collected from Clinton Lake.

Concentrations of fecal coliform bacteria in water samples collected in the reservoirs near swimming beaches ranged from less than 1 to 730 colonies per 100 milliliters of water. Concentrations were largest in samples from Harlan County Reservoir, and some of the concentrations exceeded the U.S. Environmental Protection Agency's full-body contact criteria of 200 colonies per 100 milliliters of water.

During May through August 1993, precipitation at all four reservoirs exceeded mean precipitation at nearby long-term precipitation gages; precipitation ranged from 7.76 inches above the long-term mean at Pomona Lake to 12.62 inches above the long-term mean at Rathbun Reservoir. Reservoir water-surface elevations exceeded flood-pool elevation at Rathbun Reservoir in August. The reservoir water-surface elevations exceeded the multipurpose-pool elevation by 4 feet in Clinton Lake, by 19 feet in Pomona Lake, and by 2 feet in Harlan County Reservoir in July.

Vertical profiles of specific conductance, pH, water temperature, and dissolved oxygen are presented for selected sites in the reservoirs. Thermal stratification of the water occurred at one site in Rathbun Reservoir in August, at two sites in Clinton Lake in May, at one site in Pomona Lake in June, and at one site in Harlan County Reservoir in June.

Total triazine herbicide concentrations in water samples from all four reservoirs ranged from 0.2 to 19 micrograms per liter and were largest in water samples from Rathbun Reservoir in June. Concentrations of atrazine exceeded the U.S. Environmental Protection Agency's Maximum Contaminant Level of 3.0 micrograms per liter for drinking water in at least one sample each from Rathbun Reservoir, Clinton Lake, and Pomona Lake. Concentrations of cyanazine exceeded the

U.S. Environmental Protection Agency's Health Advisory Level of 1.0 microgram per liter for drinking water in water samples from Rathbun Reservoir. The outflow from Rathbun Reservoir had an atrazine concentration of 2.9 micrograms per liter in August and exceeded the U.S. Environmental Protection Agency's Health Advisory Level for cyanazine.

INTRODUCTION

Increased concentrations of suspended solids, nutrients, certain trace metals, herbicides, and chlorophyll-*a* and -*b* can degrade reservoir water quality. The U.S. Army Corps of Engineers, Kansas City District, manages Rathbun Reservoir in Iowa, Clinton and Pomona Lakes in Kansas, and Harlan County Reservoir in Nebraska (fig. 1). These four reservoirs are used for flood control, water supply, and recreational activities. Degradation of water quality in these reservoirs can: (1) cause water to be unsuitable for irrigation, (2) pose potential public-health problems in treated drinking water, (3) inhibit growth, reproduction, and diversity of aquatic organisms, and (4) reduce the recreational use of the reservoirs.

The continued monitoring of these reservoirs can more accurately define water quality. Results of this study, conducted by the U.S. Geological Survey (USGS), will help define water-quality conditions in these reservoirs and will aid the U.S. Army Corps of Engineers in managing the water resources for maximum beneficial use. This study was funded by the Kansas City District, U.S. Army Corps of Engineers, under an interagency agreement.

Purpose and Scope

The purpose of this report is to describe temporal variations and stratification patterns of specific conductance, pH, water temperature, turbidity, transparency, dissolved oxygen, selected chemical constituents, fecal coliform bacteria, selected herbicides, and chlorophyll-*a* and -*b* in reservoirs used for public supply. This report presents the water-quality data collected from four Midwestern reservoirs during May through August 1993.

Figure 1. Location of Rathbun Reservoir, Iowa, Clinton and Pomona Lakes, Kansas, and Harlan County Reservoir, Nebraska.

Description of Study Area and Reservoirs

The general physiography, topography, land use, and precipitation for the four reservoirs are summarized in the following paragraphs. Mean monthly precipitation as determined at nearby National Weather Service gages for 1951–80 (National Oceanic and Atmospheric Administration, 1951–80), and monthly precipitation totals measured for 4 months prior to and during the study at U.S. Army Corps of Engineer Project offices at each reservoir are summarized in table 1. Physical characteristics of the reservoirs are presented in table 2.

Rathbun Reservoir is located on the Chariton River in south-central Iowa in the Southern Iowa Drift Plain physiographic province (Prior, 1991). Topography consists of gently rolling hills. Land use is mostly cropland with some grazing land (Anderson, 1967). Mean annual precipitation is about 34 in. in the Rathbun Reservoir drainage basin (U.S. Geological Survey, 1986, p. 231).

Clinton and Pomona Lakes are located in east-central Kansas in the Central Lowland physiographic province (Fenneman, 1946). Topography consists of gently rolling hills. Land use is cropland with some grazing land (Anderson, 1967). Mean annual precipitation is about 35 in. in the Clinton Lake and Pomona Lake drainage basins (U.S. Geological Survey, 1986, p. 237).

Harlan County Reservoir is located in south-central Nebraska in the Great Plains physiographic province (Fenneman, 1946). Topography consists of gently rolling hills. The reservoir receives inflow from Colorado, Kansas, and Nebraska. Land use is mostly cropland, with grazing land in the eastern part of the drainage basin and subhumid grassland and semiarid grazing land in the western part of the basin (Anderson, 1967). Mean annual precipitation in the drainage basin ranges from 12 to 24 in. (U.S. Geological Survey, 1986, p. 169, 317).

Table 1. Mean monthly precipitation at Centerville, Iowa, Lawrence and Lyndon, Kansas, and Naponee, Nebraska, for 1951–80 and monthly precipitation totals for 1993 at Rathbun Reservoir, Iowa, Clinton and Pomona Lakes, Kansas, and Harlan County Reservoir, Nebraska

[Precipitation given in inches, data for 1951–80 from National Oceanic and Atmospheric Administration (1951–80). --, no data]

Site no. (figs. 2–5)	Site name[1]	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Total
1	Centerville, Iowa (1951–80)	1.13	0.95	2.52	3.66	3.56	4.13	3.80	4.30	**24.05**
2	Rathbun Reservoir, Iowa (1993)	1.18	.92	2.60	3.67	5.70	4.24	14.28	4.19	**36.78**
3	Lawrence, Kansas (1951–80)	1.11	1.25	2.50	3.27	4.22	5.49	4.45	3.94	**26.23**
4	Clinton Lake, Kansas (1993)	1.96	1.30	2.58	6.94	6.73	5.40	14.82	1.45	**41.18**
5	Lyndon, Kansas (1951–80)	.84	1.00	2.41	2.98	4.47	5.29	4.05	4.03	**25.07**
6	Pomona Lake, Kansas (1993)	1.86	2.10	2.39	5.25	8.34	5.01	10.56	1.69	**37.02**
7	Naponee, Nebraska (1951–80)	.55	.74	1.51	1.96	3.37	4.13	3.26	3.16	**18.68**
8	Harlan County Reservoir, Nebraska (1993)	1.11	1.30	1.91	2.05	2.57	3.62	13.71	6.37	**32.64**

[1]Site 1—Average precipitation at Centerville, Iowa (National Oceanic and Atmospheric Administration, 1951–80).
Site 2—Precipitation during 1993 at Rathbun Reservoir, Iowa.
Site 3—Average precipitation at Lawrence, Kansas (National Oceanic and Atmospheric Administration, 1951–80).
Site 4—Precipitation during 1993 at Clinton Lake, Kansas.
Site 5—Average precipitation at Lyndon, Kansas (National Oceanic and Atmospheric Administration, 1951–80).
Site 6—Precipitation during 1993 at Pomona Lake, Kansas.
Site 7—Average precipitation at Naponee, Nebraska (National Oceanic and Atmospheric Administration, 1951–80).
Site 8—Precipitation during 1993 at Harlan County Reservoir, Nebraska.

Table 2. Physical characteristics of Rathbun Reservoir, Iowa, Clinton and Pomona Lakes, Kansas, and Harlan County Reservoir, Nebraska

[Based on the most recent hydrographic surveys (Garland Kersh, U.S. Army Corps of Engineers, written commun., 1993)]

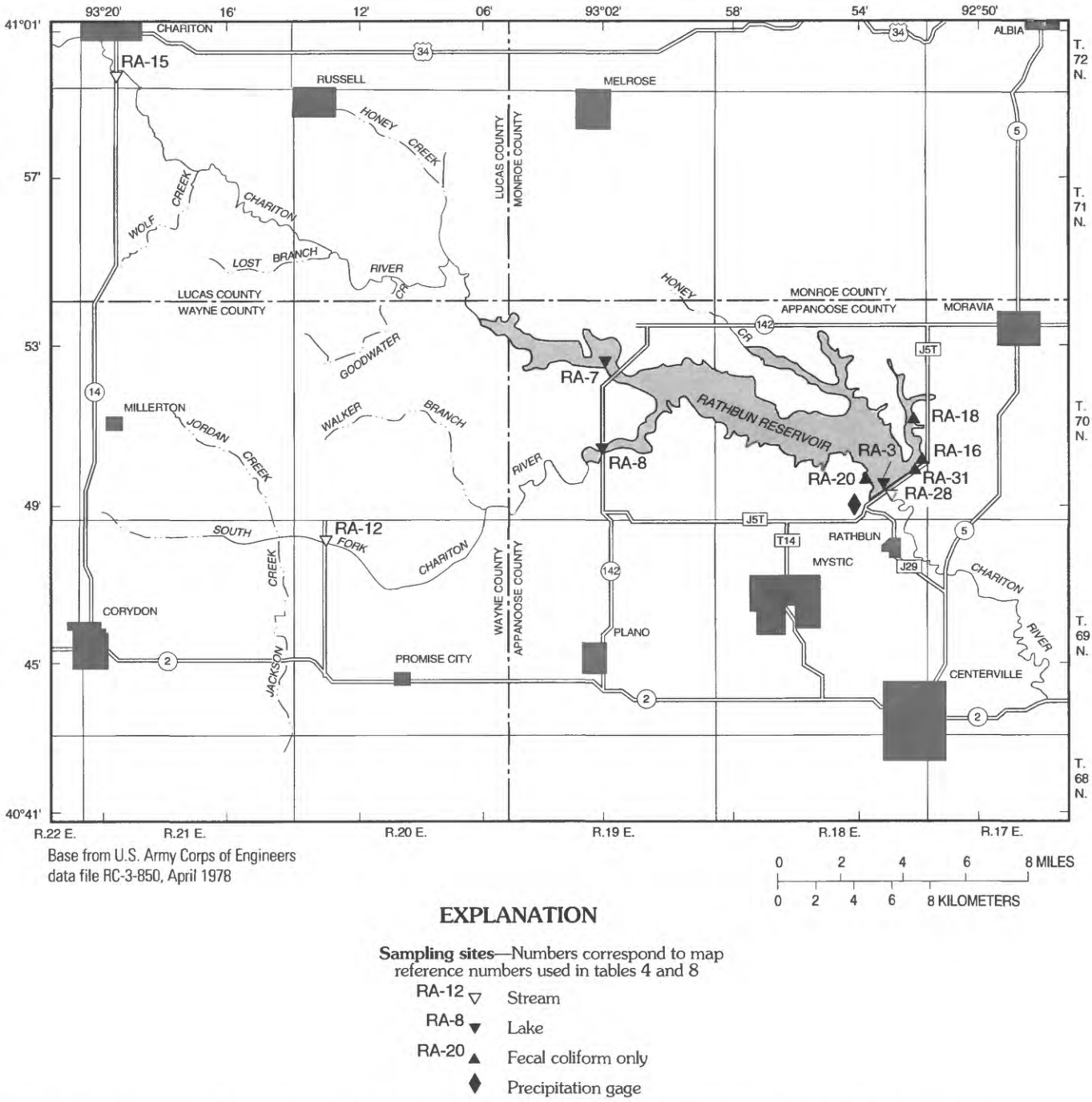
Physical characteristic	Rathbun Reservoir, Iowa	Clinton Lake, Kansas	Pomona Lake, Kansas	Harlan County Reservoir, Nebraska
Flood-control water-surface elevation (feet above sea level)	926.0	903.4	1,003.0	1,973.5
Multipurpose-pool water-surface elevation (feet above sea level)	904.0	875.5	974.0	1,946.0
Flood-storage capacity (thousands of acre-feet)	345.8	268.4	176.0	469.7
Multipurpose-pool current capacity (thousands of acre-feet)	199.8	129.2	64.4	315.1
Inactive current capacity (thousands of acre-feet)	16.1	28.5	21.2	143.4
Total flood-control capacity (thousands of acre-feet)	545.6	397.6	240.4	784.8
Flood-control-pool surface area (acres)	21,000	12,891	8,522	22,820
Multipurpose-pool surface area (acres)	11,000	7,006	3,871	13,262
Multipurpose-pool shoreline (miles)	155	85	52	75

SAMPLING AND ANALYTICAL METHODS

Sample collection, preservation, and onsite analyses were performed using USGS methods described by Ward and Harr (1990) and Wells and others (1990). Methods for inorganic, organic, and biological analyses are described in detail in Fishman and Friedman (1989), Wershaw and others (1987), and Britton and Greeson (1989), respectively. Methods for the analysis of triazine herbicides by enzyme-linked immunosorbent assay (ELISA) and gas chromatography/mass spectrometry (GC/MS) are described by Pomes and Thurman (1991) and Thurman and others (1990), respectively.

Sample Collection

Water-quality samples were collected in May or June 1993 and in July or August 1993. Samples were collected at seven to nine sites in each reservoir and at sites on the major inflow and outflow streams of each reservoir (figs. 2–5 and table 3). The sampling sites are long-term monitoring sites used by the U.S. Army Corps of Engineers. At inflow and outflow sites, samples were collected with a depth-integrating sampler or manually (dip sample) at the center of flow. Reservoir samples were collected at 0.1 m (meter) (0.33 ft) below the reservoir surface and at 1.0 m (3.3 ft) above the reservoir bottom. Inflow, outflow, and reservoir samples were analyzed for specific conductance, pH, water temperature, turbidity, transparency (secchi and 1-percent light-penetration depth), dissolved oxygen (DO), chemical oxygen demand (COD), fecal coliform bacteria, major ions, total suspended solids (TSS), nutrients (selected nitrogen and phosphorous species), alkalinity, selected trace metals, total organic carbon (TOC), selected herbicides, and chlorophyll-*a* and -*b*. At the sites specified for fecal coliform only (table 3), samples were collected from less than 0.2 m



Base from U.S. Army Corps of Engineers data file RC-3-850, April 1978

EXPLANATION

Sampling sites—Numbers correspond to map reference numbers used in tables 4 and 8

RA-12 ▽ Stream

RA-8 ▼ Lake

RA-20 ▲ Fecal coliform only

♦ Precipitation gage

Figure 2. Location of sampling sites at Rathbun Reservoir, Iowa (reservoir shown at multipurpose-pool elevation).

(0.66 ft) below the water surface. Measurements of specific conductance, pH, water temperature, light penetration, barometric pressure, and DO were made at the time of sampling. These properties and constituents were measured vertically from 0.1 m (0.33 ft) below the surface to a depth of 1.0 m (3.3 ft) above the bottom of the lake at 1- to 2-m (3.3–6.6 ft) intervals. Chlorophyll-*a* and -*b* samples were collected with a depth-integrating sampler from the photic zone (maximum depth equal to 1-percent light penetration).

Before each sampling, all equipment was cleaned with a nonphosphate detergent in warm water, rinsed with tap water, soaked in 5-percent hydrochloric acid solution for 30 minutes, rinsed with deionized water, and placed in new plastic bags. Personnel wore powderless polyvinyl chloride (PVC) or latex gloves during the collection of the samples.

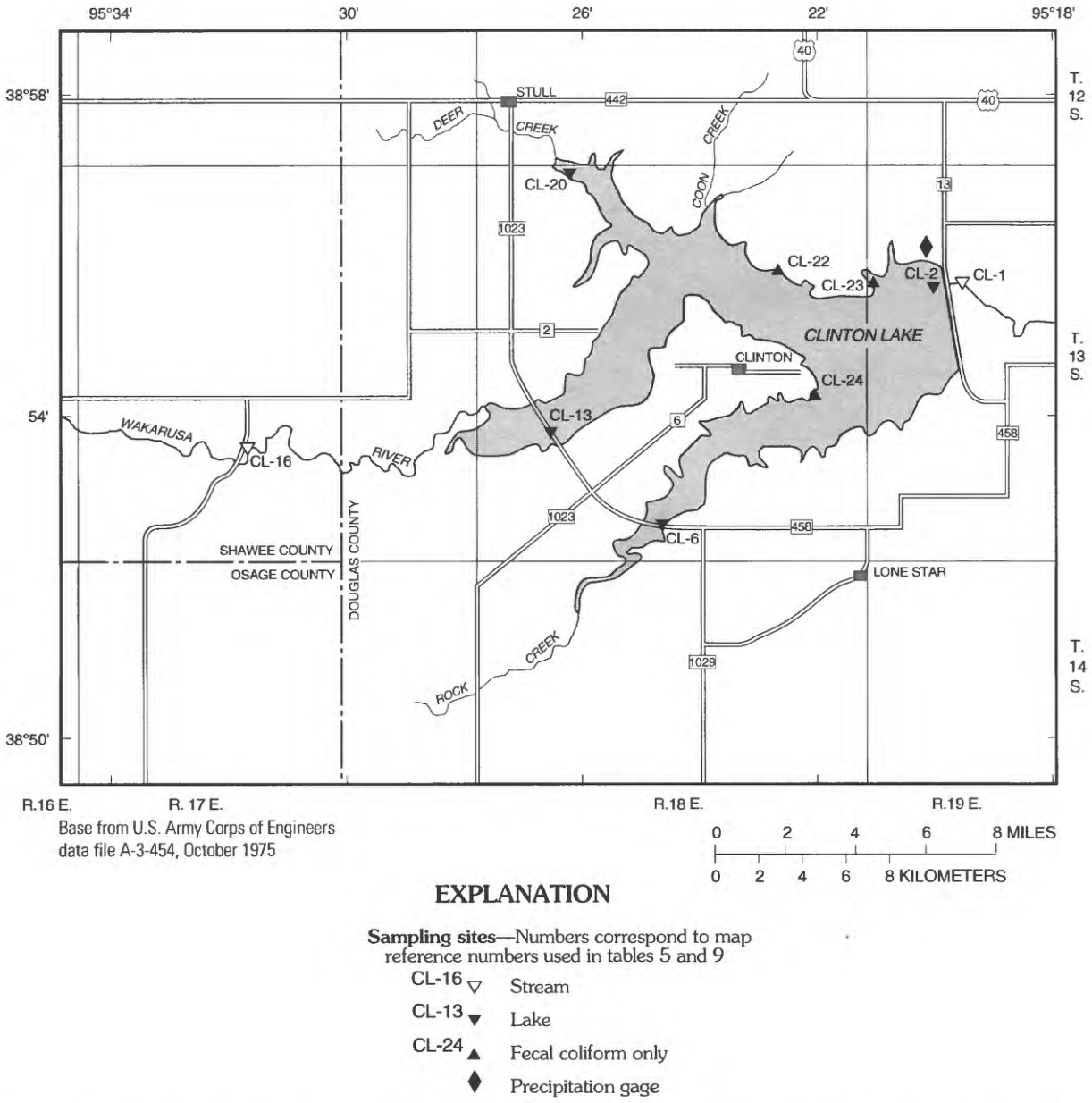


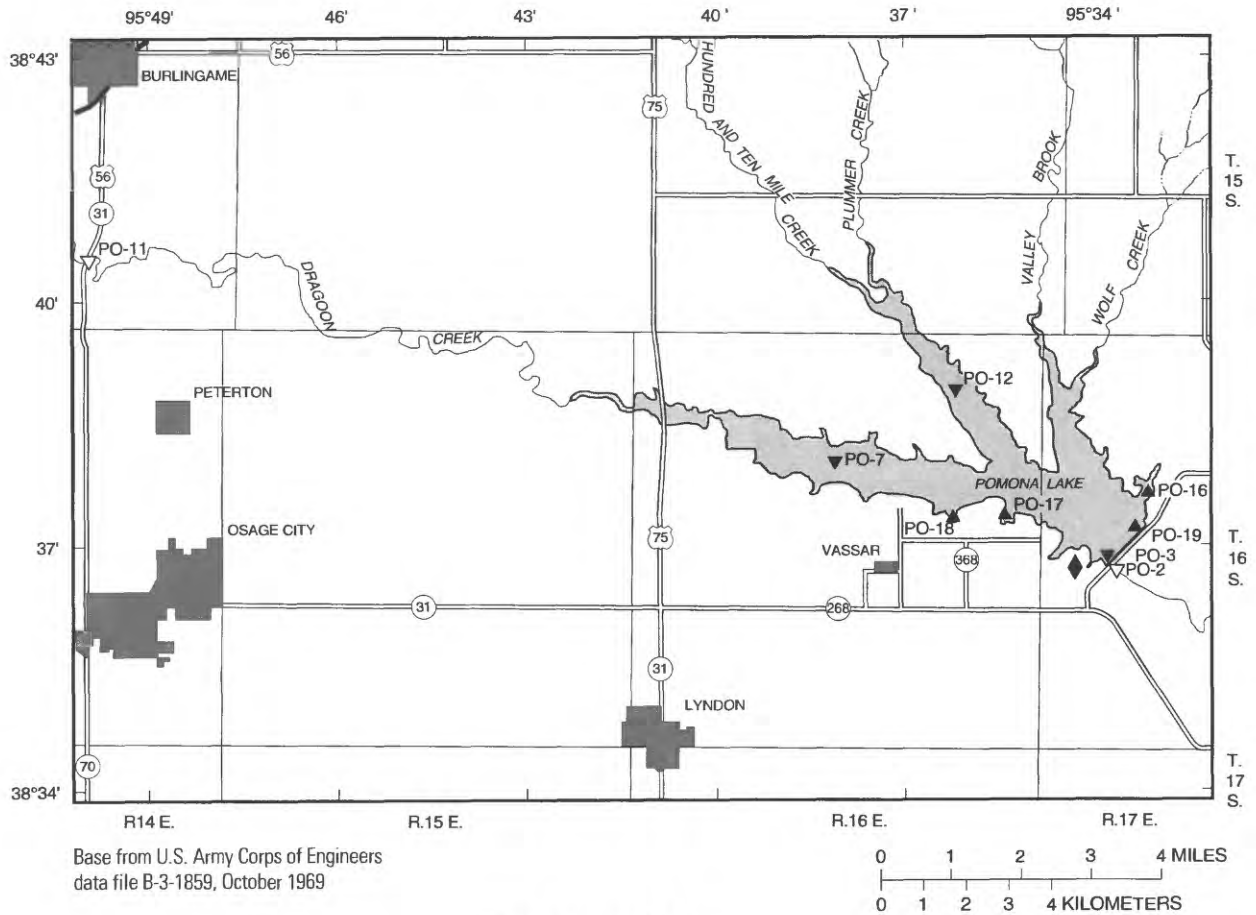
Figure 3. Location of sampling sites at Clinton Lake, Kansas (reservoir shown at multipurpose-pool elevation).

Inflow and Outflow Sampling

Water-quality samples were obtained using USGS sampling techniques (Ward and Harr, 1990; Wells and others, 1990). Specific conductance, pH, water temperature, and DO were measured on water samples at inflow and outflow sampling sites near the point of sample collection with a multiparameter probe. A depth-integrating sampler was submerged at the estimated center of the streamflow to collect a composite sample. Water from the sampler was emptied into a clean polyethylene churn splitter. This process was repeated until the churn splitter was nearly full [7 or 13 L (liters)]. The sample in the churn splitter was mixed, and representative subsamples were collected from the splitter.

During periods of low flow, a dip sample was collected by submerging a churn splitter or a clean 1-L jar into the center of flow with the opening facing toward the current. Using the 1-L jar, the process was repeated until the churn was filled.

Samples for alkalinity analysis were collected in a 500-mL (milliliters) bottle by submerging the bottle



EXPLANATION

Sampling sites—Numbers correspond to map reference numbers used in tables 6 and 10

PO-11 ▽ Stream

PO-12 ▼ Lake

PO-16 ▲ Fecal coliform only

♦ Precipitation gage

Figure 4. Location of sampling sites at Pomona Lake, Kansas (reservoir shown at multipurpose-pool elevation).

near the center of streamflow. Air space in the top of the bottle was minimized to limit the exchange of carbon dioxide from the sample water. Alkalinity samples were chilled and maintained at 4 °C until analysis onsite in a mobile water-quality laboratory within 6 hours of sample collection.

Samples for fecal coliform analysis were collected in a sterile, autoclaved, 1-L, wide-mouth polyethylene bottle at the center of streamflow. The bottle was inverted so that the bottle opening was facing the surface of the water. The bottle was lowered straight down until the bottle was completely submerged, then turned upright gradually in a radial motion while underwater. The bottle then was capped, chilled, and maintained at 4 °C until processed onsite in the mobile laboratory within 6 hours of collection. Air space was left in the bottle to allow thorough mixing before processing.

A clean 500-mL graduated cylinder was used to collect samples for herbicide analysis. Subsamples were collected from the churn splitter for analysis of additional chemical properties and constituents at the USGS laboratory in Arvada, Colo. Processing and analytical methods are described in later sections of this report.

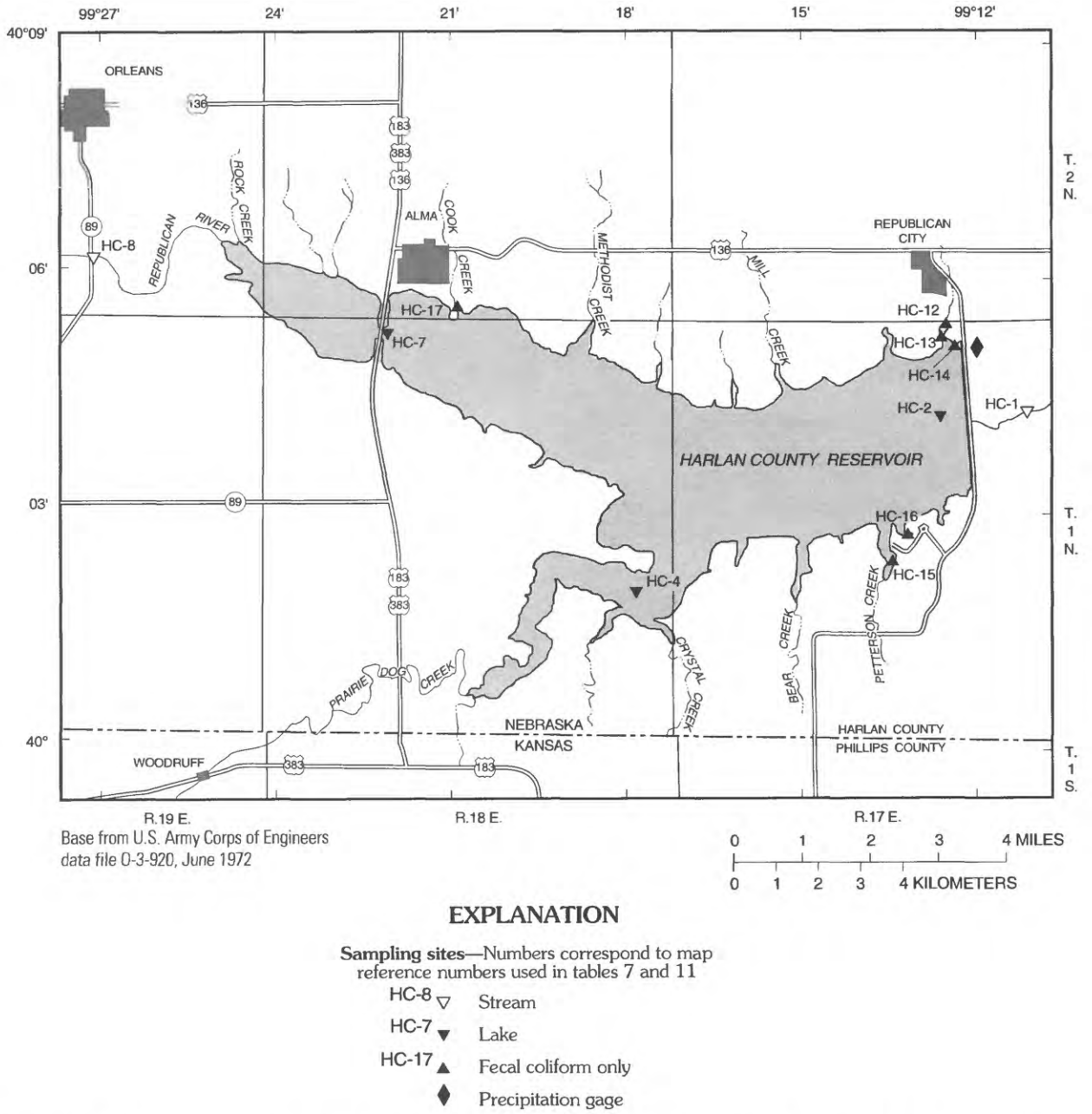


Figure 5. Location of sampling sites at Harlan County Reservoir, Nebraska (reservoir shown at multipurpose-pool elevation).

Reservoir Sampling

Water samples from the reservoirs were collected from a boat using a pre-cleaned churn splitter for the 0.1-m (0.33-ft) depth surface sample and a pre-cleaned Teflon Kemmerer[1] sampler to collect water from 1 m (3.3 ft) above the reservoir bottom. The Kemmerer sampler was lowered to the desired sampling depth with two stoppers open. A messenger (a cylindrical weight that slides down the rope) triggered and closed the sampler. The sampler then was retrieved, and the contents emptied into a clean churn splitter. This process was repeated until the churn splitter was nearly full. Water also was emptied from the Kemmerer sampler into a 500-mL polyethylene bottle for alkalinity analysis. The bottle was filled so that there was no air space.

[1]The use of brand names in this report is for identification purposes only and does not constitute endorsement by the U.S. Geological Survey.

Table 3. Sampling sites at Rathbun Reservoir, Iowa, Clinton and Pomona Lakes, Kansas, and Harlan County Reservoir, Nebraska

[*, Fecal coliform only; +, all constituents including fecal coliform]

Reservoir or lake	Site code		
	Reservoir	Inflow	Outflow
Rathbun (fig. 2)	RA–3, RA–7, RA–8, RA–16*, RA–18*, RA–20*, RA–31*	RA–12, RA–15+	RA–28
Clinton (fig. 3)	CL–2, CL–6, CL–13, CL–20, CL–22*, CL–23*, CL–24*	CL–16	CL–1
Pomona (fig. 4)	PO–3, PO–7, PO–12, PO–16*, PO–17*, PO–18*, PO–19*	PO–11	PO–2
Harlan County (fig. 5)	HC–2, HC–4, HC–7, HC–12*, HC–13*, HC–14*, HC–15*, HC–16*, HC–17*	HC–8	HC–1

Water samples for fecal coliform analysis were collected at specified sites on the reservoirs (table 3). These samples were collected at a depth of 0.1 m (0.3 ft) or less. Samples were collected as described in the section on "Inflow and Outflow Sampling."

Samples for herbicide analysis were collected in a 500-mL graduated cylinder at a depth of 0.1 m (0.33 ft). Samples for herbicide analysis from 1 m (3.3 ft) above the bottom of the reservoir were collected using the Teflon Kemmerer sampler and transferred to a graduated cylinder.

Water samples for chlorophyll-*a* and -*b* analysis were collected at reservoir sites (table 3). A sampler was constructed from a 4.5-m (15-ft) length of 1.25-in. inside-diameter PVC pipe, with a ball-check valve mounted in one end of the pipe. Samples were collected by holding the sampler in a vertical position so that the ball-check valve was on the bottom and then lowering the sampler until the bottom of the sampler reached the desired depth at the bottom of the photic zone (1-percent light-penetration depth). When the sampler was removed from the water, it was tipped so that the water in the sampler poured out the open end and into a clean churn splitter used exclusively for chlorophyll samples. This process was repeated until the churn splitter contained approximately 7 L. The chlorophyll samples were processed (this process is discussed in the sample processing and preservation section), the remaining water was discarded, and the churn was used for the collection of the water sample at the 0.1-m (0.33 ft) depth.

Subsamples were collected from the churn splitter during sample processing for analysis of additional chemical properties or constituents at the USGS laboratory in Arvada, Colo. The methods used for collection, processing, preservation, and analysis of subsamples are described in a later section of this report.

Onsite Sample Processing and Preservation for Laboratory

Water samples were processed and preserved in a mobile water-quality laboratory. PVC gloves were worn at all times during sample processing and preservation. Raw, unfiltered subsamples (total and total recoverable) were collected from the churn splitter, after mixing for 15 seconds, for later analysis at the USGS laboratory for turbidity, COD, alkalinity, TSS, major ions, nutrients (nitrogen and phosphorous species), selected trace metals, and TOC. All bottles were rinsed with sample water and then filled, except for COD, TOC, and herbicide bottles. COD, TOC, and herbicide bottles were sterilized because rinsing the bottles may contaminate the samples. After the bottles were filled, they were set aside to be preserved. The water remaining in the churn splitter was used for filtered samples.

A preservation chamber was used to reduce potential ambient air contamination from dust during the sample-preservation process. The preservation chamber was about 1.5 ft wide, 0.75 ft high, 1.5 ft deep, and lined with a clear plastic bag. The samples and preservation ampules were placed inside the chamber. The caps were removed from the bottles, and the preservatives were added to the samples in the following order: nitric acid, sulfuric acid, and mercuric chloride. The caps were replaced on the bottles, the samples were removed from the chamber, and placed in a cooler. The clear plastic bag and PVC gloves were discarded between preservatives and between sample sets.

Turbidity samples were collected from the churn splitter in a 250-mL polyethylene bottle and sent to the USGS laboratory in Arvada, Colo., for analysis. COD samples were collected in 125-mL baked- (at 450 °C) glass amber bottles, 1 mL of concentrated sulfuric acid was added, and the samples were chilled and main-

tained at 4 °C until they were submitted to the laboratory for analysis. Samples for total and total-recoverable metals (calcium, magnesium, sodium, iron, manganese, and zinc) were collected in a 250-mL nitric acid-rinsed polyethylene bottle and preserved with 1 mL of concentrated nitric acid. TSS samples were collected in a 500-mL polyethylene bottle and sent to the laboratory for analysis. Total nutrient samples (total ammonia plus organic nitrogen and total phosphorous) were collected in a 125-mL brown polyethylene bottle. The samples were preserved with 0.5 mL of mercuric chloride, added as a biocide, and then chilled and maintained at 4 °C until analysis at the laboratory. TOC samples were collected in a 125-mL baked-glass amber bottle and chilled and maintained at 4 °C until analysis at the USGS laboratory.

Samples analyzed for filtered (dissolved) constituents were filtered using a peristaltic pump as a pressure source and a reservoir-dedicated 0.25-in. diameter silicon hose to pump the sample water from the churn splitter through a disposable 0.45-µm (micrometer) capsule filter. The bottles were filled inside a clean processing chamber to reduce possible ambient air contamination. The processing chamber consisted of a 1.5 ft by 1.5 ft by 1.5 ft PVC frame and a clear plastic bag. A silicon hose was inserted through a hole at the top of the chamber, and the disposable capsule filter was connected to the end of the hose. A hole in the bottom of the chamber allowed excess water to escape. The filter was conditioned with 1 L of deionized water [specific conductance less than 1 µS/cm (microsiemen per centimeter at 25 °C)], followed by 200 mL of sample water. Sample bottles were rinsed and filled inside the chamber. Sample bottles for filtered metal analysis were filled first, followed by bottles used for anions and nutrients. When filtering was completed, the caps of the bottles were replaced. A new plastic bag and capsule filter were installed between each sample process. Silicon tubing, dedicated to each reservoir, was cleaned between site visits with detergent and diluted hydrochloric acid.

To determine concentrations of filtered (dissolved) anions (sulfate and chloride), nutrients (nitrite, nitrite plus nitrate, ammonia, and orthophosphate), and selected metals (iron, manganese, and zinc), samples were processed and preserved in the mobile water-quality laboratory and were sent to the USGS laboratory for analysis. Samples for analysis of metals were collected in acid-rinsed, 250-mL polyethylene bottles. These samples were preserved with 1 mL of concentrated nitric acid to adjust the pH to less than 2.0 standard units. Anion samples were collected in 250-mL polyethylene bottles. Dissolved nutrient samples were collected in 125-mL brown polyethylene bottle, preserved with 0.5 mL of mercuric chloride, and chilled and maintained at 4 °C until analyzed at the USGS laboratory. All samples were processed and preserved within 6 hours of sample collection and were sent to the USGS laboratory in Arvada, Colorado, within 5 days.

Herbicide samples filtered through a 0.7-µm glass-fiber filter using a peristaltic pump and a vacuum flask. The vacuum flask was rinsed with methanol prior to use. The filter and flask were rinsed with 250 mL of sample water, and the filtrate was discarded. After rinsing, about 250 mL of sample water were filtered, and two 125-mL baked-glass amber bottles were filled with filtrate and chilled and maintained at 4 °C until analyzed.

A known volume (100, 250, 500, or 1,000 mL) of water from the churn splitter was filtered through a 0.7-µm glass fiber filter for analysis of the chlorophyll-*a* and -*b* concentrations. The filters were removed with stainless-steel forceps, folded in half, placed in petri dishes, wrapped in aluminum foil, and frozen until analysis at the laboratory. A split sample was filtered at each site to ensure that there was a sufficient amount of chlorophyll for analysis.

Onsite Analysis

Physical and chemical properties determined at the time of or within 6 hours of sample collection were reservoir water-surface elevation, stream discharge, stream stage, specific conductance, pH, water temperature, transparency (secchi disk and 1-percent light-penetration depth), barometric pressure, DO, fecal coliform, and alkalinity (including bicarbonate and carbonate). These physical and chemical properties were determined using methods described by Ward and Harr (1990) and Wells and others (1990).

The USGS has reservoir-gaging stations at the dams of all four reservoirs that continuously record the elevation of the water surface. The water-surface elevation at the time of sample collection was noted.

Discharge at each stream sampling site, except for site RA–12 on the South Fork Chariton River in Iowa (fig. 2), was determined using data from nearby

USGS streamflow-gaging stations. At these gaging stations, data are collected to generate rating curves that establish a relation between the discharge and the stage of a stream. Before sample collection, the discharge of the stream at the sampling site was estimated from the gaging-station rating curve. Before sampling at site RA–12 where no USGS gaging station exists, the stream discharge was measured using methods described by Buchanan and Somers (1969).

Specific conductance, pH, water temperature, and DO were measured using a multiparameter analysis unit. The unit was calibrated using standard solutions with approximately the same property and constituent values as the sampled water. The specific conductance, pH, and DO were compensated for temperature and expressed in microsiemens per centimeter at 25 °C, standard units, and milligrams per liter, respectively. A thermistor measured water temperature to the nearest 0.5 °C. Barometric pressure was measured with a calibrated barometer.

Water transparency was determined using two different instruments—a secchi disk and a photometer. The secchi disk is a 20-cm (centimeter) (7.9-in.) diameter disk. The painted surface of the disk is divided into black and white quarters. The disk was lowered into the reservoir to a depth at which the disk disappeared and then raised until the disk reappeared. The mean depth of the point where the disk disappeared and appeared was recorded. The photometer consists of a sensor, cord, and meter. The sensor detects light and sends a signal to the meter, which displays the amount of light detected. First, the amount of light above the water surface was measured and recorded. One percent of this amount was calculated and recorded. The sensor then was lowered into the water until the meter reading was 1 percent of the reading above the water surface, and that depth was recorded.

To determine fecal coliform concentrations, sterilized filter holders and sterile 0.65-µm membranes were used to remove the fecal coliform bacteria from the water sample. A blank sample of sterile buffer water was filtered before filtering each sample. Predetermined sample volumes (1, 3, 10, 30, and 100 mL) were filtered through individual filters. After the 100-mL sample was filtered, the equipment was cleaned with sterile buffer water, and an end sample blank was processed. The filters from the sample blank and the sample volumes were placed in a petri dish on a surface of M-FC media agar. The agar-filled petri dishes were prepared within 72 hours of processing and were stored at 4 °C until they were used. The petri dishes with the agar and filter were incubated at 44.0 ± 0.5 °C for 22 to 24 hours. The fecal coliform bacteria colonies were counted and reported as total colonies per 100 mL of water. Colony counts outside of the range of 20 to 60 colonies per 100 mL were reported as nonideal counts.

Alkalinity measurements were made within 6 hours of sample collection using a portable pH meter, a titrator, and a magnetic stirrer. Increments of 0.16 normal sulfuric acid were added to 50 mL of unfiltered sample water until the pH reached a value of less than 4.0. The increments of acid and the corresponding pH were recorded. The alkalinity, bicarbonate, and carbonate concentrations were calculated using methods described by Wells and others (1990). The incremental titration endpoint usually was at a pH value of about 4.5. Each sample was analyzed at least twice, and values were required to be within 4 percent before the value was reported.

Laboratory Analysis

Samples were analyzed for concentrations of the remaining properties and constituents at the USGS laboratory (NWQL) in Arvada, Colorado (Wershaw and others, 1987; Britton and Greeson, 1989; Fishman and Friedman, 1989). Samples were analyzed for concentrations of triazine herbicides by ELISA and GC/MS at the USGS laboratory in Lawrence, Kansas (Thurman and others, 1990; Pomes and Thurman, 1991).

The turbidity of samples was determined using method I–3860–85 (Fishman and Friedman, 1989). This method is based on a comparison of the intensity of light scattered by a sample with intensity of light scattered by a standard reference suspension under the same defined conditions. Results are reported in nephelometric turbidity units (NTU).

COD concentrations were determined using method I–3561–85 (Fishman and Friedman, 1989). An acid-dichromate solution is used to oxidize organic and other oxidizable materials by digestion in the presence of silver sulfate. By measuring the absorbance of the chromium that is formed, the concentration of COD is determined spectrometrically.

Total-recoverable concentrations of calcium, magnesium, and sodium were determined using methods described by Fishman and Friedman (1989).

Total-recoverable calcium and magnesium were determined by methods I–3152–85 and I–3447–85, respectively. To mask interferences, lanthanum chloride was added in each method. Total-recoverable sodium was determined by method I–3735–85, which involves direct aspiration of the sample solution into an air-acetylene flame.

Sulfate and chloride concentrations were determined using method I–2057–85 (Fishman and Friedman, 1989). This method determines six anions sequentially by ion-exchange chromatography. Ions are separated on the basis of their affinity for the exchange sites on the host resin. Using an electrical-conductivity cell, separated anions were measured in the acid form.

Total suspended solids (TSS) were determined using method I–3765–85 (Fishman and Friedman, 1989). TSS are those solids that are retained on a glass-fiber filter. The insoluble residue was dried at 105 °C.

Samples were analyzed for concentrations of dissolved nitrite and dissolved nitrite plus dissolved nitrate, both as nitrogen, using methods I–2540–90 and I–2545–90. Nitrite ion under acidic conditions reacts with sulfanilamide to form a diazo compound. This compound then couples with N-1-naphthylethylenediamine dihydrochloride to form a red compound, the absorbance of which is measured colorimetrically. Nitrite plus nitrate was determined by the same method after the nitrate was reduced to nitrite by a copper-cadmium column.

Samples were analyzed for concentrations of ammonia using method I–2522–90. Ammonia in the sample reacts with sodium nitroprusside, sodium hypochlorite, and sodium salicylate in an alkaline medium to form an intensely colored compound. The concentration of ammonia present is directly proportional to the resulting color.

Concentrations of total ammonia plus organic nitrogen were determined using method I–4515–91 (Fishman, 1993). Organic nitrogen compounds are reduced to the ammonium ion by digestion with sulfuric acid in the presence of mercuric sulfate (a catalyst) and potassium sulfate. The ammonium ion produced, as well as the original ammonium ion present, is determined by reaction with sodium salicylate, sodium nitroprusside, and sodium hypochlorite in an alkaline medium. The concentration of ammonia plus organic nitrogen present is directly proportional to the resulting color.

Total phosphorous as phosphorous concentrations were determined using method I–4610–91 (Patton and Truit, 1992). Organic phosphorous compounds are reduced to orthophosphate by digestion with sulfuric acid in the presence of mercuric sulfate (a catalyst) and potassium sulfate. The orthophosphate produced, as well as the original orthophosphate present, is determined by reaction with sodium salicylate, sodium nitroprusside, and sodium hypochlorite in an alkaline medium. The concentration of phosphorous present is directly proportional to the resulting color.

Dissolved orthophosphate as phosphate concentrations were determined using method I–2601–90. An acidified ammonium molybdate reagent converts orthophosphate to phosphomolybdic. The phosphomolybdic is reduced with ascorbic acid in the presence of antimony, producing an intense blue color.

Total-recoverable concentrations of iron, manganese, and zinc were analyzed using methods I–3381–85, I–3454–85, and I–3900–85, respectively. Dissolved concentrations of iron, manganese, and zinc were analyzed at the NWQL using methods I–1381–85, I–1454–85, and I–1900–85, respectively. Concentrations of these constituents were determined by atomic absorption spectrometry, which involves direct aspiration of the sample solution into an air-acetylene flame. For manganese analysis, the sample is aspirated into the air-acetylene flame without preconcentration or pretreatment.

TOC concentrations were determined at the NWQL using method O–3100–83 (wet oxidation) (Wershaw and others, 1987). The acidified sample is purged to remove forms of inorganic carbon and oxidized with persulfate in an autoclave at 116 to 130 °C. Nondispersive infrared spectrometry measures the resultant carbon dioxide.

Total triazine herbicide concentrations in water samples were determined at the USGS laboratory in Lawrence, Kansas, by enzyme-linked immunosorbent assay (ELISA) (Pomes and Thurman, 1991). The method used by Thurman and others (1990) was repeated with minor differences. The microtiter-plate kits consist of 96 individual wells coated with polyclonal antibodies. Eighty microliters of sample blanks, atrazine standards, or water samples were placed in each well. Deionized water was used for the sample blanks, and atrazine standard concentrations were 0.1, 0.5, and 5.0 µg/L (micrograms per liter). Immediately, 80 µL (microliters) of enzyme conjugate

were added to each of the wells. The plates were incubated simultaneously at 35 °C and mixed on an orbital shaker for 1 hour. The plate wells were gently emptied, rinsed, and dried, without disturbing the bound media. Next, 160 µL of substrate-chromogen mixture were added to each well. The plate was incubated and shaken for an additional 30 minutes. This step produced a blue color in each well, with a shade proportional to the triazine concentration of the sample. A yellow color is produced with the addition of 40 µL of 2.5 normal sulfuric acid. Then the microtiter plate was inserted into a plate reader. The plate reader consisted of a spectrophotometer that measured the optical density of each well simultaneously. The optical density output from the plate reader was processed by a computer to calculate triazine concentrations. Concentrations were reported in micrograms per liter as atrazine. This method cross reacts with all of the triazine herbicides (Pomes and Thurman, 1991).

Filtered triazine and acetanilide herbicide concentrations were determined by gas chromatography/mass spectrometry (GC/MS) at the USGS laboratory in Lawrence, Kansas (Thurman and others, 1990). Samples were extracted onto cartridges and eluted with ethyl acetate. The solutions were evaporated to 100 µL and analyzed on a gas chromatograph and a mass-selective detector.

Chlorophyll-*a* and -*b* concentrations were determined at the NWQL using method B–6540–85 (Britton and Greeson, 1989). This method extracts chlorophyll from algal cells and separates them from each other and chlorophyll degradation products by thin-layer chromatography. Chlorophyll is eluted and measured using a spectrofluorometer.

Quality Assurance

A duplicate sample was collected at each reservoir for each sampling period. A sample blank and a set of reference water samples were analyzed for each of the two sampling periods. Duplicate split samples were subsamples from the churn splitter and were processed, preserved, and analyzed using the same methods as the actual samples. During the first sampling, deionized water was used for the sample blank; certified inorganic and organic blank water was used for the second sample blank. The samplers were filled with blank water, emptied into the churn splitter, and processed, preserved, and analyzed using the same methods for actual samples. Reference water samples were obtained from the USGS NWQL in Arvada, Colorado. Spike mixtures were added to organic blank water as a reference sample for herbicide analyses. These samples were furnished with the most probable value of the concentration for each constituent analyzed. Bottles for the selected constituents were filled with the reference water sample, processed, preserved, and analyzed using the same methods for actual samples. Results of these quality-assurance samples are presented in tables 4–7 at the end of this report.

SUMMARY OF WATER-QUALITY CONDITIONS

Results of analyses are summarized in the following paragraphs for each reservoir sampled. Discussion and presentation of the data in tables 4–7 at the end of this report are arranged in order by sites from upstream to downstream and by sample depth. Data for the vertical profiles of specific conductance, pH, water temperature, and DO are presented in tables 8–11 at the end of this report and for the sites in each of the reservoirs nearest the dam in figure 6.

Rathbun Reservoir, Iowa

Water samples from Rathbun Reservoir were collected from inflow, reservoir, and the outflow sites in early June and again in early August 1993 (table 4). Precipitation from May through August 1993 at Rathbun Reservoir was 12.62 in. more than the long-term mean precipitation during these same months at Centerville, Iowa (National Oceanic and Atmospheric Administration, 1951–80, table 1). The elevation of the reservoir water surface as measured at the dam was 9 ft above multipurpose-pool elevation (904 ft) at about 913 ft in June (table 4), and at the flood-control-pool elevation (926 ft) in August. Water at reservoir sampling site RA–3 was thermally stratified in August (fig. 6 and table 8).

Stage and flow conditions were above average at the Chariton River site (RA–15) (Southard and others, 1994) and the South Fork Chariton River site (RA–12) (Fischer and others, 1990) in June and August 1993 (table 4). Turbidity, COD, fecal coliform, TSS, total nitrogen, total-recoverable iron, total-recoverable manganese, and TOC concentrations for the two stream sites were largest in June. Fecal coli-

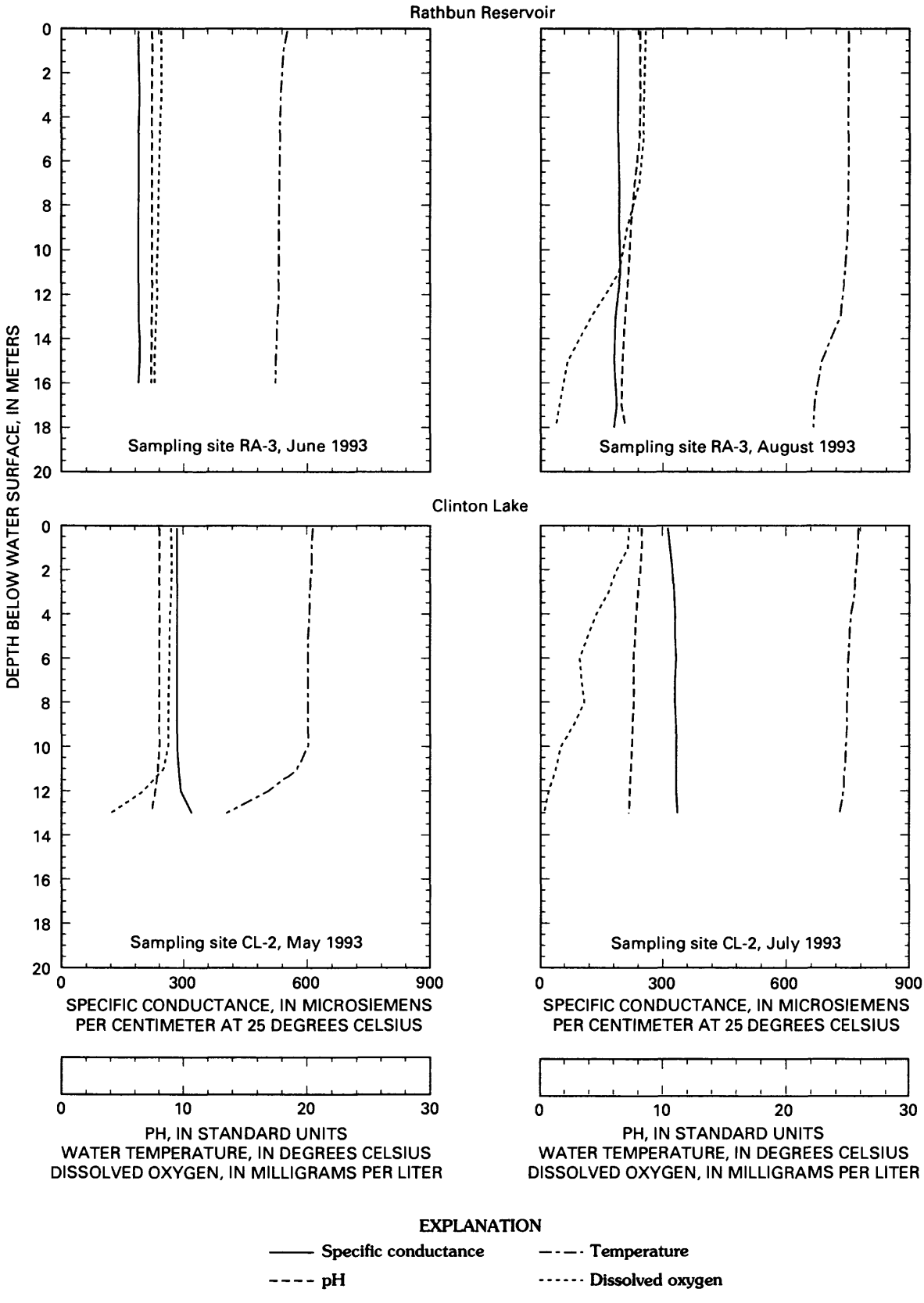


Figure 6. Vertical profiles of specific conductance, pH, water temperature, and dissolved oxygen at sampling sites RA–3 in Rathbun Reservoir, Iowa, CL–2 in Clinton Lake, Kansas, PO–3 in Pomona Lake, Kansas, and HC–2 in Harlan County Reservoir, Nebraska.

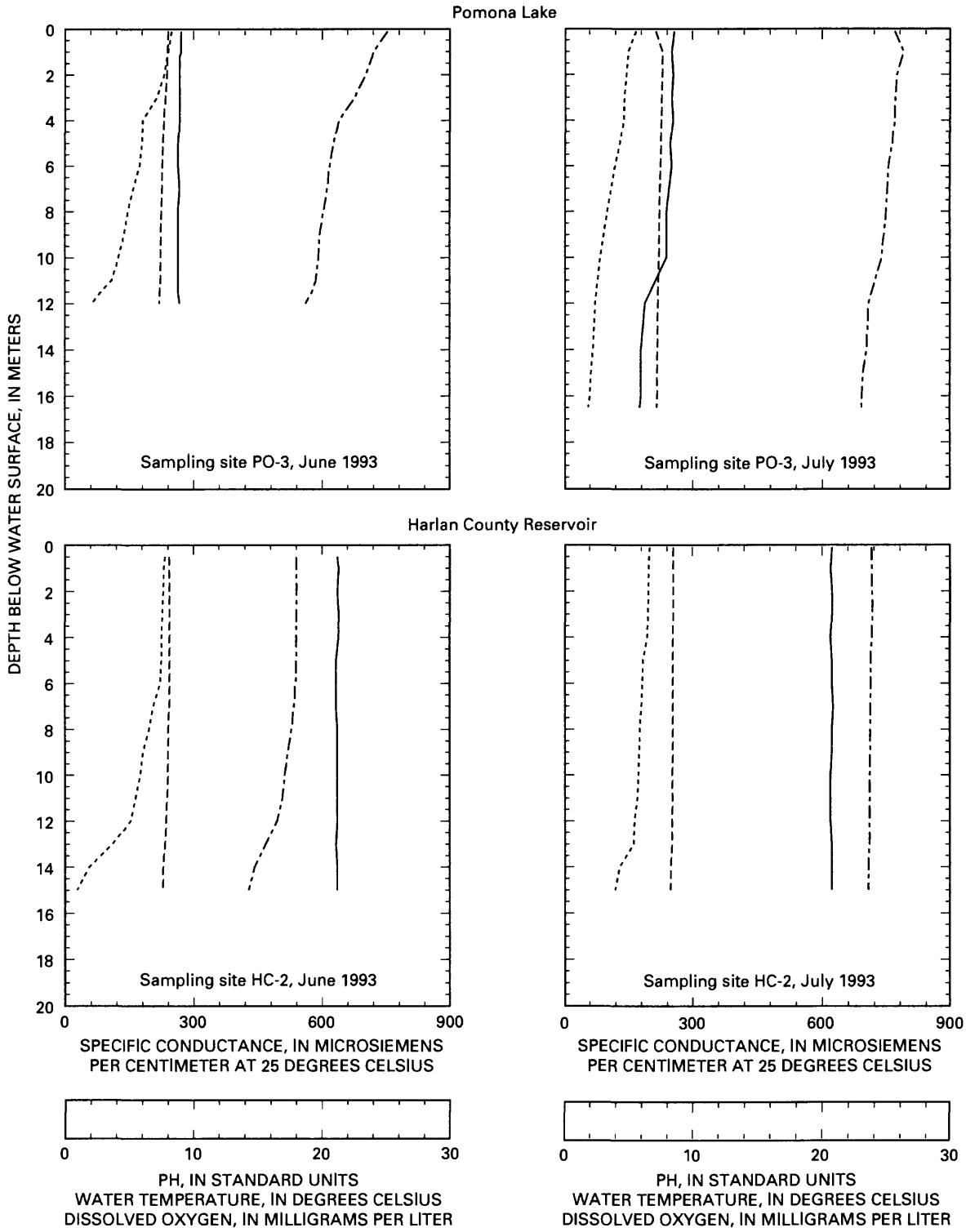


Figure 6. Vertical profiles of specific conductance, pH, water temperature, and dissolved oxygen at sampling sites RA–3 in Rathbun Reservoir, Iowa, CL–2 in Clinton Lake, Kansas, PO–3 in Pomona Lake, Kansas, and HC–2 in Harlan County Reservoir, Nebraska—Continued.

form concentrations ranged from 1 to 610 cols/100 mL (colonies per 100 milliliters) and were largest at the inflow site RA–15 in June. ELISA total triazine herbicide concentrations, reported as atrazine, also were largest in samples collected in June and exceeded the U.S. Environmental Protection Agency (EPA) Maximum Contaminant Level (MCL) of 3.0 µg/L for atrazine in drinking water (U.S. Environmental Protection Agency, 1993) in samples from sites RA–15 and RA–12. The maximum concentration was 19 µg/L in water from site RA–12. Atrazine, cyanazine, and metolachlor were detected by GC/MS analysis at concentrations of 1.1, 1.2, and 0.24 µg/L, respectively, in water from site RA–15 in August. Atrazine, cyanazine, and metolachlor were detected at concentrations of 0.67, 0.42, and 0.17 µg/L, respectively, in water from site RA–12 in August. The cyanazine concentration in the water sample from site RA–15 in August exceeded the EPA lifetime Health Advisory Level (HAL) of 1.0 µg/L (U.S. Environmental Protection Agency, 1993).

At reservoir sites RA–7, RA–8, and RA–3, turbidity, COD, TSS, total-recoverable iron, and TOC concentrations were largest in samples collected in June. The largest ELISA total triazine herbicide concentration, reported as atrazine, was 15 µg/L in water from site RA–8 in June. The smallest ELISA total triazine herbicide concentration, reported as atrazine, was 0.6 µg/L in water from reservoir sites RA–3 and RA–7 in June. Total triazine samples collected in June and August at sites RA–7 and RA–8 and at site RA–3 in August exceeded the EPA MCL of 3.0 µg/L for atrazine in drinking water. Samples analyzed for cyanazine concentrations by GC/MS in August exceeded the EPA HAL of 1.0 µg/L for cyanazine in water from reservoir sites RA–7, RA–8, and RA–3. Other herbicides detected in water samples were alachlor and metolachlor, but concentrations were less than EPA MCLs and HALs for these herbicides. The maximum chlorophyll-*a* concentration was 41 µg/L in water from reservoir site RA–3 in August. The minimum chlorophyll-*a* concentration was 1.8 µg/L in water from reservoir site RA–3 in June.

Fecal coliform samples were collected in Rathbun Reservoir near swimming beaches and marinas at sites RA–20, RA–18, RA–16, and RA–31. Fecal coliform concentrations in samples from these sites ranged from 1 to 200 cols/100 mL of water and were largest in June.

At the reservoir outflow site (RA–28), the flow was 11 ft^3/s in June and 1,200 ft^3/s in August. The largest turbidity and concentrations of TSS, total-recoverable iron, total-recoverable manganese, and TOC occurred in June. The outflow sample from Rathbun Reservoir had an atrazine concentration of 2.9 µg/L in August and also exceeded the EPA HAL of 1.0 µg/L for cyanazine. Alachlor (0.13 µg/L), atrazine (2.9 µg/L), cyanazine (3.7 µg/L), and metolachlor (0.47 µg/L) concentrations were detected by GC/MS analysis in samples collected from site RA–28 in August.

Clinton Lake, Kansas

Water samples from Clinton Lake were collected from inflow, reservoir, and outflow sites in late May and mid-July 1993 (table 5). Precipitation from May through August 1993 at Clinton Lake was 10.30 in. more than the long-term mean precipitation during these months at Lawrence, Kansas (National Oceanic and Atmospheric Administration, 1951–80, table 1). The elevation of the reservoir water surface as measured at the dam was 6.5 ft above multipurpose-pool elevation (875.5 ft) at about 882 ft in May and was 4.5 ft above multipurpose-pool elevation at 880 ft in July. Water at reservoir sites CL–13 and CL–2 was thermally stratified in May (fig. 6 and table 9).

Discharge at the Wakarusa River inflow site (CL–16) was estimated at 100 ft^3/s in May 1993 and measured at 350 ft^3/s in July 1993 (table 5). Turbidity, COD, TSS, total-phosphorous, total-recoverable iron, total-recoverable manganese, and TOC concentrations at this site were largest in July. The largest ELISA total triazine herbicide concentration at site CL–16, reported as atrazine, was 6.8 µg/L in July and exceeded the EPA MCL for drinking water of 3.0 µg/L for atrazine. In July, alachlor, atrazine, metolachlor, and propazine were detected by GC/MS analysis at concentrations of 0.68, 6.0, 0.57, and 0.06 µg/L, respectively. The atrazine concentration exceeded the EPA MCL of 3.0 µg/L.

At reservoir sampling sites CL–13, CL–20, CL–6, and CL–2, the largest COD concentration was 130 mg/L in water from reservoir site CL–20 in July. The largest total nitrogen concentration was 3.7 mg/L in water from reservoir site CL–20 in July. The largest concentration of total phosphorous was 0.74 mg/L in water from reservoir site CL–20 in July. The largest total manganese concentration was 680 µg/L in water

from reservoir site CL–6 in May. The largest concentration of TOC was 11 mg/L in water from reservoir site CL–6 in May and in water from reservoir site CL–13 in July. The largest ELISA total triazine herbicide concentration, reported as atrazine, was 6.1 µg/L in water from reservoir site CL–13 in July. None of the samples collected in May from the inflow, reservoir, and outflow sites exceeded the EPA MCL of 3.0 µg/L for atrazine in drinking water. Samples from Clinton reservoir sampling sites that were analyzed for atrazine concentrations by GC/MS in July exceeded the EPA MCL of 3.0 µg/L for atrazine in water from sites CL–13 and CL–6. Other herbicides detected in water samples were alachlor, metolachlor, propazine, and simazine, but concentrations were less than EPA MCLs and HALs for these herbicides in drinking water. The maximum chlorophyll-*a* concentration was 730 µg/L in water from reservoir site CL–20 in July. Algal blooms were observed at reservoir site CL–20 in July. The minimum chlorophyll-*a* concentration was 3.9 µg/L in water from reservoir site CL–2 in May.

Fecal coliform samples were collected in Clinton Lake near swimming beaches and marinas at sites CL–22, CL–23, and CL–24. Fecal coliform concentrations ranged from 1 to 110 cols/100 mL of water and were largest in July at site CL–22.

The outflow at site CL–1 was an estimated 2,500 ft^3/s in May 1993. The largest turbidity and concentrations of TSS, total-recoverable iron, and TOC at the outflow also occurred in May. The largest ELISA total triazine herbicide concentration, reported as atrazine, was 0.9 µg/L in July. Atrazine, deethylatrazine, and metolachlor were detected by GC/MS analysis in samples collected in July. None of the samples exceeded the EPA MCL for atrazine.

Pomona Lake, Kansas

Water samples from Pomona Lake were collected from inflow, reservoir, and outflow sites in mid-June and late July 1993 (table 6). Precipitation from May through August at Pomona Lake was 7.76 in. more than the long-term mean precipitation during these months at Lyndon, Kansas (National Oceanic and Atmospheric Administration, 1951–80, table 1). The elevation of the reservoir water surface as measured at the dam was 2 ft above multipurpose-pool elevation (974 ft) at about 976 ft in June and was 19 ft above multipurpose-pool elevation at 993 ft in July. Water at reservoir site PO–3 was thermally stratified in June (fig. 6 and table 10).

Streamflow was 18 ft^3/s in June and 85 ft^3/s in July at the Dragoon Creek inflow site (PO–11). Turbidity, TSS, total-nitrogen, and total-recoverable iron concentrations in water from this site were largest in July. ELISA total triazine herbicide concentrations, reported as atrazine, were largest in June (6.0 µg/L) and exceeded the EPA MCL of 3.0 µg/L for atrazine in drinking water. In July, alachlor, atrazine, and metolachlor were detected by GC/MS analysis at concentrations of 0.33, 1.6, and 2.6 µg/L, respectively.

In water from reservoir sites PO–7, PO–12, and PO–3, the largest turbidity value was 73 NTU from reservoir site PO–3 in July. The largest COD concentration was 37 mg/L in water from reservoir site PO–12 in July. The largest concentration of TSS was 359 mg/L in water from reservoir site PO–7 in June. The largest total-manganese concentration was 330 µg/L in water from reservoir site PO–7 at a depth of 2 m (6.6 ft) below the surface in June. The largest concentration of TOC was 8.6 mg/L at reservoir site PO–7 in June. ELISA total triazine herbicide concentrations, reported as atrazine, exceeded the EPA MCL of 3.0 µg/L for atrazine in June in water from reservoir sites PO–7 and PO–12 and in July in water from reservoir sites PO–7, PO–12, and PO–3. Samples analyzed for atrazine concentrations by GC/MS exceeded the EPA MCL of 3.0 µg/L for atrazine in water from reservoir site PO–7 in June and from reservoir site PO–12 in July. Other herbicides detected in water samples were alachlor, cyanazine, metolachlor, metribuzin, and prometryn, but concentrations were less than EPA MCLs and HALs for these herbicides. The maximum chlorophyll-*a* concentration was 35 µg/L in water from reservoir site PO–7 in June. The minimum chlorophyll-*a* concentration was 1.6 µg/L in water from reservoir site PO–3 in July.

Fecal coliform samples were collected in Pomona Lake near swimming beaches and marinas at sites PO–18, PO–17, PO–16, and PO–19. Fecal coliform concentrations ranged from 1 to 110 cols/100 mL of water and were largest in July in water from site PO–17.

Streamflow was 15 ft^3/s at outflow site PO–2 in July. The largest concentrations of TSS, total iron, and TOC at this site occurred in July. The ELISA total triazine herbicide concentration, reported as atrazine, was 2.8 µg/L in June and 2.7 µg/L July. These concentrations did not exceed the EPA MCL of 3.0 µg/L for atrazine in drinking water. In July, atrazine and metolachlor were detected by GC/MS

analysis at concentrations of 2.0 µg/L and 0.71 µg/L, respectively.

Harlan County Reservoir, Nebraska

Water samples from Harlan County Reservoir were collected from inflow, reservoir, and outflow sites in early June and late July 1993 (table 7). Precipitation from May through August at Harlan County Reservoir was 12.35 in. more than the long-term mean precipitation during these months at Naponee, Nebraska (National Oceanic and Atmospheric Administration, 1951–80, table 1). The elevation of the reservoir water surface as measured at the dam was 1 ft below multipurpose-pool elevation (1,946 ft) at about 1,945 ft in June and was 2 ft above multipurpose-pool elevation at 1,948 ft in July. Water at reservoir site HC–2 was thermally stratified in June (fig. 6 and table 11).

Streamflow at the Republican River inflow site (HC–8) was 158 ft^3/s in June and 290 ft^3/s in July. Turbidity, COD, TSS, total-nitrogen, total-recoverable iron, total-recoverable manganese, and TOC concentrations at this site were largest in June. The ELISA total triazine herbicide concentration, reported as atrazine, was 2.6 µg/L in June and 1.6 µg/L in July and did not exceed the EPA MCL of 3.0 µg/L for atrazine in drinking water. In July, atrazine, cyanazine, and metolachlor were detected by GC/MS analysis at concentrations of 1.5, 0.22, and 0.73 µg/L, respectively.

In water from reservoir sites HC–4, HC–2, and HC–7, the largest turbidity value (39 NTU) and TSS concentration (38 mg/L) were largest at site HC–7 in July. The largest ELISA total triazine herbicide concentration, reported as atrazine, was 3.1 µg/L in water from reservoir site HC–7 in June and exceeded the EPA MCL of 3.0 µg/L for atrazine in drinking water. None of the samples collected in July and analyzed by ELISA exceeded the EPA MCL for atrazine. None of the samples analyzed for atrazine concentrations by GC/MS in June or July exceeded the EPA MCL of 3.0 µg/L for drinking water. Other herbicides detected by GC/MS analysis in water samples were alachlor, cyanazine, and metolachlor, but concentrations were less than EPA MCLs and HALs for these herbicides. The maximum chlorophyll-*a* concentration was 22 µg/L in water from reservoir site HC–7 in July. The minimum chlorophyll-*a* concentration was 1.2 µg/L in water from reservoir site HC–2 in June.

Fecal coliform samples were collected in Harlan County Reservoir near swimming beaches and marinas at sites HC–17, HC–15, HC–16, HC–12, HC–13, and HC–14. Fecal coliform concentrations ranged from 36 to 730 cols/100 mL of water and were largest in July in water from site HC–17.

Streamflow was 1.2 ft^3/s in June and 2.5 ft^3/s in July at outflow site HC–1. The largest concentrations of TSS, total-recoverable iron, total-recoverable manganese, and TOC in water from this site occurred in June. ELISA total triazine herbicide concentrations, reported as atrazine, were 1.1 µg/L in June and July and did not exceed the EPA MCL of 3.0 µg/L for atrazine in drinking water. In July, atrazine and metolachlor were detected by GC/MS analysis at concentrations of 0.75 and 0.08 µg/L, respectively.

QUALITY-ASSURANCE SAMPLES

Results of the duplicate samples are presented in tables 4–7 at the end of this report. A few constituent concentrations are different between the sample and the sample duplicate. For example, the TSS concentration was less than 1.0 mg/L for a duplicate sample collected at reservoir site CL–2 in May, and the actual sample had a concentration of 5.0 mg/L (table 5). This difference can be caused by collecting an improper subsample from the churn splitter or analytical error.

Blank samples for reservoir site PO–7 were analyzed at the completion of sampling at Pomona Lake in June and August. The source of the blank water in June was deionized water. This sample had detectable concentrations of filtered ammonia, total phosphorous, and filtered zinc (table 6). These detections could be caused by the deionized water not having a specific conductance of less than 1.0 microsiemens per centimeter. Other possible causes are improper cleaning of the equipment, contamination of preservatives used in the samples, and contamination at the laboratory. The source of the blank water for the sample collected and analyzed in August was certified inorganic and organic blank water. This blank water contained detectable concentrations of ammonia and total-recoverable iron.

Standard reference water samples were collected and analyzed during sampling of Clinton and Pomona Lakes to check laboratory analytical accuracy. The most probable values (MPV) for the standard water samples and the analyses are presented in tables 5 and 6.

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Table 4. Reservoir elevations and water-quality data for water samples collected from Rathbun Reservoir, Iowa, June and August 1993

[meters used in this table may be converted to feet by multiplying by 3.281; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; NTU, nephelometric turbidity units; dup, duplicate sample; %, percent; mm, millimeters; Hg, mercury; mg/L, milligrams per liter; µm, micrometer; mf, membrane filtration; cols, colonies; mL, milliliters; wh, whole; it, incremental titration; µg/L, micrograms per liter; ELISA, enzyme-linked immunosorbent assay; five digit numbers in parentheses are U.S. Geological Survey WATSTORE parameters codes; --, no data or not applicable; K, nonideal count; GC/MS, gas chromatography/mass spectrometry analysis; <, less than]

Downstream order and map reference number (fig. 2)	U.S. Geological Survey identification number	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Reservoir elevation above sea level[1] (feet) (72020)	Flow rate, instantaneous (ft^3/s) (00061)	Gage height above an arbitrary datum (feet) (00065)	Specific conductance (µS/cm) (00095)	Field pH (units) (00400)	Temperature, air (°C) (00020)	Temperature, water (°C) (00010)	Turbidity (NTU) (00076)
RA–15	410100093183015	--	06-08-93	1710	--	--	--	349	7.5	23.0	20.5	28
		--	08-04-93	0915	--	--	--	321	7.4	--	20.0	18
RA–12	404448093090012	--	06-10-93	0845	--	150	4.50	313	7.7	20.0	19.0	55
		--	08-05-93	0915	--	--	--	460	7.2	18.0	19.0	5.1
RA–7	405336092571807	0.1	06-09-93	1420	912.90	--	--	206	7.7	--	19.0	35
RA–7 dup		.1		1425	912.90	--	--	206	7.7	--	19.0	38
RA–7		.1	08-04-93	1210	926.00	--	--	157	7.3	23.5	24.5	17
RA–7 dup		.1		1211	926.00	--	--	--	--	--	--	--
		.1		1215	926.00	--	--	157	7.3	23.5	24.5	18
		.1		1216	926.00	--	--	--	--	--	--	--
RA–7		1.0	06-09-93	1350	912.90	--	--	206	7.7	--	19.0	--
RA–7 dup		1.0		1355	912.90	--	--	206	7.7	--	19.0	--
RA–7		1.0	08-04-93	1140	926.00	--	--	154	7.3	23.5	24.5	--
RA–7 dup		1.0		1145	926.00	--	--	154	7.3	23.5	24.5	--
RA–7		8.0	06-09-93	1430	912.90	--	--	209	7.6	--	18.5	38
		10	08-04-93	1135	926.00	--	--	161	6.5	23.5	23.5	17
RA–8	404800092531208	.1	06-10-93	1340	912.95	--	--	155	7.0	--	21.5	130
		.1	08-05-93	1200	925.90	--	--	174	6.9	18.0	24.0	14
		.3	06-10-93	1305	912.95	--	--	155	7.0	--	21.5	--
		1.3	08-05-93	1130	925.90	--	--	--	--	--	--	--
		6.0	06-10-93	1350	912.95	--	--	203	7.0	--	19.5	150
		8.5	08-05-93	1135	925.90	--	--	167	6.0	18.0	22.0	16

Table 4. Reservoir elevations and water-quality data for water samples collected from Rathbun Reservoir, Iowa, June and August 1993—Continued

Downstream order and map reference number (fig. 2)	U.S. Geological Survey identification number	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Reservoir elevation above sea level[1] (feet) (72020)	Flow rate, instantaneous (ft^3/s) (00061)	Gage height above an arbitrary datum (feet) (00065)	Specific conductance (µS/cm) (00095)	Field pH (units) (00400)	Temperature, air (°C) (00020)	Temperature, water (°C) (00010)	Turbidity (NTU) (00076)
RA–20	404949092540920	0.1	06-09-93	1055	912.90	--	--	224	7.6	--	17.5	--
		.1	08-03-93	0925	926.30	--	--	212	7.9	23.0	25.0	--
RA–18	405118092523418	.1	06-09-93	0950	912.90	--	--	183	7.5	--	19.5	--
		.1	08-03-93	1010	926.30	--	--	217	8.0	24.0	25.0	--
RA–16	405019092520216	.1	06-09-93	0910	912.90	--	--	199	7.5	--	17.5	--
		.1	08-03-93	0950	926.30	--	--	212	8.1	22.5	25.0	--
RA–31	404952092524231	.1	06-09-93	0920	912.90	--	--	202	7.6	--	17.5	--
		.1	08-03-93	0945	926.30	--	--	214	8.1	21.5	25.0	--
RA–3	404800092531203	.1	06-10-93	1005	912.95	--	--	190	7.4	--	18.5	17
		.1	08-03-93	0855	926.30	--	--	190	8.1	22.5	25.0	5.0
		1.0	08-03-93	0830	926.30	--	--	--	--	--	--	--
		1.6	06-10-93	0930	912.95	--	--	190	7.5	--	18.0	--
		16	06-10-93	1030	912.95	--	--	190	7.4	--	17.5	22
		18	08-03-93	0840	926.30	--	--	181	7.0	22.5	22.5	14
RA–28	404800092531228	--	06-08-93	1520	--	11	3.93	188	6.9	26.5	18.0	45
		--	08-03-93	1215	--	1,200	12.65	199	7.7	21.0	24.5	10
RA–28 dup		--		1216	--	1,200	12.65	--	--	--	--	--

Table 4. Reservoir elevations and water-quality data for water samples collected from Rathbun Reservoir, Iowa, June and August 1993—Continued

Downstream order and map reference number (fig. 2)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Transparency (secchi disk) (meters) (00078)	Light-penetration depth to 1% of surface light (meters) (85328)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	Oxygen, dissolved (% saturation) (00301)	Oxygen demand, chemical (high level) (mg/L) (00340)	Coliform, fecal, 0.7 µm-mf (cols/100 mL) (31625)	Calcium, total recoverable (mg/L as Ca) (00916)	Magnesium, total recoverable (mg/L as Mg) (00927)	Sodium, total recoverable (mg/L as Na) (00929)
RA–15	--	06-08-93	1710	--	--	728	6.2	73	40	610	45	11	12
	--	08-04-93	0915	--	--	744	5.4	61	32	460	34	8.9	10
RA–12	--	06-10-93	0845	--	--	737	7.4	83	100	--	41	9.1	7.9
	--	08-05-93	0915	--	--	743	8.1	90	20	--	52	13.	13
RA–7	0.1	06-09-93	1420	--	--	737	7.8	86	33	--	20	6.2	4.1
RA–7 dup	.1		1425	--	--	737	7.8	86	36	--	23	5.3	4.6
RA–7	.1	08-04-93	1210	--	--	744	5.3	66	21	--	17	4.0	2.8
RA–7 dup	.1		1211	--	--	--	--	--	--	--	--	--	--
	.1		1215	--	--	744	5.3	65	21	--	17	4.0	2.8
	.1		1216	--	--	--	--	--	--	--	--	--	--
RA–7	1.0	06-09-93	1350	0.21	1.0	737	7.8	86	--	--	--	--	--
RA–7 dup	1.0		1355	.21	1.0	737	7.8	86	--	--	--	--	--
RA–7	1.0	08-04-93	1140	.37	1.0	744	5.1	63	--	--	--	--	--
RA–7 dup	1.0		1145	.37	1.0	744	5.1	63	--	--	--	--	--
RA–7	8.0	06-09-93	1135	--	--	737	7.3	80	51	--	27	6.7	4.8
	10	08-04-93	1135	--	--	744	3.0	36	24	--	18	4.2	4.0
RA–8	.1	06-10-93	1340	--	--	737	4.5	53	35	--	22	5.1	3.8
	.1	08-05-93	1200	--	--	743	5.0	60	23	--	20	4.4	3.2
	.3	06-10-93	1305	.20	.28	737	4.5	53	--	--	--	--	--
	1.3	08-05-93	1130	.61	1.3	--	--	--	--	--	--	--	--
	6.0	06-10-93	1350	--	--	737	4.4	50	35	--	24	5.5	4.4
	8.5	08-05-93	1135	--	--	743	.3	3	33	--	20	4.4	2.9
RA–20	.1	06-09-93	1055	--	--	737	--	--	--	62	--	--	--
	.1	08-03-93	0925	--	--	739	8.1	101	--	K5	--	--	--

Table 4. Reservoir elevations and water-quality data for water samples collected from Rathbun Reservoir, Iowa, June and August 1993—Continued

Downstream order and map reference number (fig. 2)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Transparency (secchi disk) (meters) (00078)	Light-penetration depth to 1% of surface light (meters) (85328)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	Oxygen, dissolved (% saturation) (00301)	Oxygen demand, chemical (high level) (mg/L) (00340)	Coliform, fecal, 0.7 µm-mf (cols/100 mL) (31625)	Calcium, total recoverable (mg/L as Ca) (00916)	Magnesium, total recoverable (mg/L as Mg) (00927)	Sodium, total recoverable (mg/L as Na) (00929)
RA–18	0.1	06-09-93	0950	--	--	737	7.3	82	--	K200	--	--	--
	.1	08-03-93	1010	--	--	739	7.9	99	--	K2	--	--	--
RA–16	.1	06-09-93	0910	--	--	737	7.7	84	--	190	--	--	--
	.1	08-03-93	0950	--	--	739	8.6	108	--	K1	--	--	--
RA–31	.1	06-09-93	0920	--	--	737	7.7	83	--	51	--	--	--
	.1	08-03-93	0945	--	--	739	8.7	109	--	K2	--	--	--
RA–3	.1	06-10-93	1005	--	--	738	8.2	90	29	--	21	4.9	4.5
	.1	08-03-93	0855	--	--	739	8.6	108	28	--	21	4.8	4.1
	1.0	08-03-93	0830	0.65	1.0	--	--	--	--	--	--	--	--
	1.6	06-10-93	0930	.49	1.6	738	8.2	90	--	--	--	--	--
	16	06-10-93	1030	--	--	738	7.7	83	16	--	21	4.9	4.8
	18	08-03-93	0840	--	--	739	1.2	14	19	--	21	5.1	4.2
RA–28	--	06-08-93	1520	--	--	728	7.2	80	29	--	25	5.5	4.0
	--	08-03-93	1215	--	--	739	9.6	118	19	--	21	4.9	4.1
RA–28 dup	--	08-03-93	1216	--	--	--	--	--	--	--	--	--	--

Table 4. Reservoir elevations and water-quality data for water samples collected from Rathbun Reservoir, Iowa, June and August 1993—Continued

Down-stream order and map reference number (fig. 2)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Bicar-bonate, water wh it field (mg/L as HCO_3) (00450)	Carbo-nate, water wh it field (mg/L as CO_3) (00447)	Alkalinity, water wh it field (mg/L as $CaCO_3$) (00416)	Sulfate, filtered 0.45 µm (mg/L as SO_4) (00945)	Chloride, filtered 0.45 µm (mg/L as Cl) (00940)	Total suspended solids, residue, at 105 °C (mg/L) (00530)	Nitrogen, nitrate, filtered 0.45 µm (mg/L as N) (00618)	Nitrogen, nitrite, filtered 0.45 µm (mg/L as N) (00613)	Nitrogen, nitrite plus nitrate, filtered 0.45 µm (mg/L as N) (00631)
RA–15	--	06-08-93	1710	173	0	141	26	11	63	0.56	0.02	0.58
	--	08-04-93	0915	149	0	122	20	10	43	.33	.01	.34
RA–12	--	06-10-93	0845	140	0	115	28	9.9	755	1.8	.08	1.9
	--	08-05-93	0915	228	0	187	37	6.8	12	--	<.01	<.05
RA–7	0.1	06-09-93	1420	92	0	75	16	4.7	24	--	<.01	.62
RA–7 dup	.1		1425	92	0	75	16	4.8	21	--	<.01	.62
RA–7	.1	08-04-93	1210	74	0	60	8.0	2.9	3	.66	.01	.67
RA–7 dup	.1		1211	--	--	--	--	--	--	--	--	--
	.1		1215	73	0	60	8.2	2.9	2	.66	.01	.67
	.1		1216	--	--	--	--	--	--	--	--	--
RA–7	1.0	06-09-93	1350	--	--	--	--	--	--	--	--	--
RA–7 dup	1.0	06-09-93	1355	--	--	--	--	--	--	--	--	--
RA–7	1.0	08-04-93	1140	--	--	--	--	--	--	--	--	--
RA–7 dup	1.0		1145	--	--	--	--	--	--	--	--	--
RA–7	8.0	06-09-93	1135	112	0	90	16	4.6	52	--	<.01	.61
RA–7	10	08-04-93	1135	76	0	62	8.6	3.0	2	.62	.01	.63
RA–8	.1	06-10-93	1340	71	0	58	13	3.7	55	1.4	.04	1.4
	.1	08-05-93	1200	83	0	68	9.7	3.0	1	.41	.01	.42
	.3	06-10-93	1305	--	--	--	--	--	--	--	--	--
	1.3	06-10-93	1130	90	0	74	17	3.9	414	1.0	.05	1.1
	6.0	08-05-93	1350	83	0	68	8.4	2.9	15	--	<.01	.13
RA–20	.1	06-09-93	1055	--	--	--	--	--	--	--	--	--
	.1	08-03-93	0925	--	--	--	--	--	--	--	--	--

Table 4. Reservoir elevations and water-quality data for water samples collected from Rathbun Reservoir, Iowa, June and August 1993—Continued

Downstream order and map reference number (fig. 2)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Bicarbonate, water wh it field (mg/L as HCO_3) (00450)	Carbonate, water wh it field (mg/L as CO_3) (00447)	Alkalinity, water wh it field (mg/L as $CaCO_3$) (00416)	Sulfate, filtered 0.45 µm (mg/L as SO_4) (00945)	Chloride, filtered 0.45 µm (mg/L as Cl) (00940)	Total suspended solids, residue, at 105 °C (mg/L) (00530)	Nitrogen, nitrate, filtered 0.45 µm (mg/L as N) (00618)	Nitrogen, nitrite, filtered 0.45 µm (mg/L as N) (00613)	Nitrogen, nitrite plus nitrate, filtered 0.45 µm (mg/L as N) (00631)
RA–18	0.1	06-09-93	0950	--	--	--	--	--	--	--	--	--
	.1	08-03-93	1010	--	--	--	--	--	--	--	--	--
RA–16	.1	06-09-93	0910	--	--	--	--	--	--	--	--	--
	.1	08-03-93	0950	--	--	--	--	--	--	--	--	--
RA–31	.1	06-09-93	0920	--	--	--	--	--	--	--	--	--
	.1	08-03-93	0945	--	--	--	--	--	--	--	--	--
RA–3	.1	06-10-93	1005	88	0	72	18	4.8	4	--	<0.01	0.64
	.1	08-03-93	0855	86	0	70	15	4.1	2	--	<.01	.56
	1.0	08-03-93	0830	--	--	--	--	--	--	--	--	--
	1.6	06-10-93	0930	--	--	--	--	--	--	--	--	--
	16	06-10-93	1030	87	0	72	18	4.8	16	--	<.01	.61
	18	08-03-93	0840	85	0	70	15	4.2	3	--	<.01	.72
RA–28	--	06-08-93	1520	91	0	75	18	5.1	22	0.64	.01	.65
	--	08-03-93	1215	84	0	69	14	4.0	1	--	<.01	.62
RA–28 dup	--	08-03-93	1216	--	--	--	--	--	--	--	--	--

Table 4. Reservoir elevations and water-quality data for water samples collected from Rathbun Reservoir, Iowa, June and August 1993—Continued

Down-stream order and map reference number (fig. 2)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Nitrogen, ammonia, filtered 0.45 µm (mg/L as N) (00608)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Phos-phorus, total (mg/L as P) (00665)	Phos-phorus, ortho, filtered 0.45 µm (mg/L as P) (00671)	Iron, total recoverable (µg/L as Fe) (01045)	Iron, filtered 0.45 µm (µg/L as Fe) (01046)	Man-ganese, total recover-able (µg/L as Mn) (01055)	Man-ganese, filtered 0.45 µm (µg/L as Mn) (01056)	Zinc, total recover-able (µg/L as Zn) (01092)
RA–15	--	06-08-93	1710	0.04	0.6	0.10	0.06	1,900	39	220	72	50
	--	08-04-93	0915	.06	.6	.12	.06	1,500	60	200	120	10
RA–12	--	06-10-93	0845	.13	.7	.11	.07	4,600	67	310	19	20
	--	08-05-93	0915	.03	.5	.09	.05	730	28	260	170	30
RA–7	0.1	06-09-93	1420	.03	.5	.08	.04	1,500	6	70	3	<10
RA–7 dup	.1	06-09-93	1425	.03	.5	.09	.04	1,600	50	80	4	<10
RA–7	.1	08-04-93	1210	.03	.6	.14	.10	890	25	30	2	<10
RA–7 dup	.1		1211	--	--	--	--	--	--	--	--	--
	.1		1215	.03	.6	.14	.10	890	34	30	3	<10
	.1		1216	--	--	--	--	--	--	--	--	--
RA–7	1.0	06-09-93	1350	--	--	--	--	--	--	--	--	--
RA–7 dup	1.0		1355	--	--	--	--	--	--	--	--	--
RA–7	1.0	08-04-93	1140	--	--	--	--	--	--	--	--	--
RA–7 dup	1.0		1145	--	--	--	--	--	--	--	--	--
RA–7	8.0	06-09-93	1430	.03	.5	.08	.04	1,800	12	110	7	20
RA–7	10	08-04-93	1135	.03	.6	.13	.09	990	34	80	15	10
RA–8	.1	06-10-93	1340	.21	.9	.13	.05	4,500	46	170	7	30
	.1	08-05-93	1200	.06	.7	.14	.09	620	72	40	5	10
	.3	06-10-93	1305	--	--	--	--	--	--	--	--	--
	1.3	08-05-93	1130	--	--	--	--	--	--	--	--	--
	6.0	06-10-93	1350	.18	.8	.12	.05	4,500	45	190	5	20
	8.5	08-05-93	1135	.19	.9	.21	.12	1,300	70	350	330	20
RA–20	.1	06-09-93	1055	--	--	--	--	--	--	--	--	--
	.1	08-03-93	0925	--	--	--	--	--	--	--	--	--

Table 4. Reservoir elevations and water-quality data for water samples collected from Rathbun Reservoir, Iowa, June and August 1993—Continued

Downstream order and map reference number (fig. 2)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Nitrogen, ammonia, filtered 0.45 µm (mg/L as N) (00608)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Phosphorus, total (mg/L as P) (00665)	Phosphorus, ortho, filtered 0.45 µm (mg/L as P) (00671)	Iron, total recoverable (µg/L as Fe) (01045)	Iron, filtered 0.45 µm (µg/L as Fe) (01046)	Manganese, total recoverable (µg/L as Mn) (01055)	Manganese, filtered 0.45 µm (µg/L as Mn) (01056)	Zinc, total recoverable (µg/L as Zn) (01092)
RA–18	0.1	06-09-93	0950	--	--	--	--	--	--	--	--	--
	.1	08-03-93	1010	--	--	--	--	--	--	--	--	--
RA–16	.1	06-09-93	0910	--	--	--	--	--	--	--	--	--
	.1	08-03-93	0950	--	--	--	--	--	--	--	--	--
RA–31	.1	06-09-93	0920	--	--	--	--	--	--	--	--	--
	.1	08-03-93	0945	--	--	--	--	--	--	--	--	--
RA–3	.1	06-10-93	1005	0.02	0.5	0.10	0.02	690	32	30	4	10
	.1	08-03-93	0855	.02	.5	.07	<.01	440	53	10	1	<10
	1.0	08-03-93	0830	--	--	--	--	--	--	--	--	--
	1.6	06-10-93	0930	--	--	--	--	--	--	--	--	--
	16	06-10-93	1030	.02	.4	.04	.02	910	46	70	2	<10
	18	08-03-93	0840	.03	.5	.05	.02	650	30	110	24	<10
RA–28	--	06-08-93	1520	.03	.5	.10	.03	1,900	20	230	1	20
	--	08-03-93	1215	.02	.5	.05	.01	540	19	60	12	<10
RA–28 dup	--	08-03-93	1216	--	--	--	--	--	--	--	--	--

Table 4. Reservoir elevations and water-quality data for water samples collected from Rathbun Reservoir, Iowa, June and August 1993—Continued

Downstream order and map reference number (fig. 2)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Zinc, filtered 0.45 µm (µg/L as Zn) (01090)	Carbon, organic, total (mg/L as C) (00680)	Triazine, screen (ELISA) water, filtered, recoverable, as atrazine (µg/L) (34756)	Alachlor (GC/MS), water, filtered, recoverable, (µg/L) (46342)	Ametryn (GC/MS), water, filtered, recoverable, (µg/L) (38401)	Atrazine (GC/MS), water, filtered, recoverable (µg/L) (39632)	Cyanazine (GC/MS), water, filtered, recoverable (µg/L) (04041)	Deethylatrazine (GC/MS), water, filtered, recoverable (µg/L) (04040)	Deisopropylatrazine (GC/MS), water, filtered, recoverable (µg/L) (04038)
RA–15	--	06-08-93	1710	6	11	12	--	--	--	--	--	--
	--	08-04-93	0915	16	9.3	1.3	<0.05	<0.05	1.1	1.2	0.51	0.53
RA–12	--	06-10-93	0845	<3	29	19	--	--	--	--	--	--
	--	08-05-93	0915	23	6.3	.8	<.05	<.05	.67	.42	.23	.24
RA–7	0.1	06-09-93	1420	<3	8.7	.6	<.05	<.05	.49	.59	.17	.11
RA–7 dup	.1		1425	<3	8.9	.7	<.05	<.05	.59	.73	.22	.14
RA–7	.1	08-04-93	1210	7	6.2	5.0	.14	<.05	3.8	4.6	1.1	1.1
RA–7 dup	.1		1211	--	--	4.8	.13	<.05	4.1	3.9	1.2	1.2
	.1		1215	<3	8.1	4.4	.12	<.05	4.0	3.8	1.2	1.1
	.1		1216	--	--	--	.14	<.05	4.7	4.9	1.4	1.7
RA–7	1.0	06-09-93	1350	--	--	--	--	--	--	--	--	--
RA–7 dup	1.0	06-09-93	1355	--	--	--	--	--	--	--	--	--
RA–7	1.0	08-04-93	1140	--	--	--	--	--	--	--	--	--
RA–7 dup	1.0		1145	--	--	--	--	--	--	--	--	--
RA–7	8.0	06-09-93	1430	<3	9.3	.8	<.05	<.05	.55	.60	.21	.14
	10	08-04-93	1135	<3	7.5	4.9	.12	<.05	3.5	4.7	1.1	1.1
RA–8	.1	06-10-93	1340	9	14	15	--	--	--	--	--	--
	.1	08-05-93	1200	<3	7.0	3.6	.11	<.05	2.6	3.0	.79	.79
	.3	06-10-93	1305	--	--	--	--	--	--	--	--	--
	1.3	08-05-93	1130	--	--	--	--	--	--	--	--	--
	6.0	06-10-93	1350	8	13	9.4	--	--	--	--	--	--
	8.5	08-05-93	1135	7	8.1	2.7	.08	<.05	2.0	2.2	.71	.73

Table 4. Reservoir elevations and water-quality data for water samples collected from Rathbun Reservoir, Iowa, June and August 1993—Continued

Downstream order and map reference number (fig. 2)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Zinc, filtered 0.45 µm (µg/L as Zn) (01090)	Carbon, organic, total (mg/L as C) (00680)	Triazine, screen (ELISA) water, filtered, recoverable, as atrazine (µg/L) (34756)	Alachlor (GC/MS), water, filtered, recoverable, (µg/L) (46342)	Ametryn (GC/MS), water, filtered, recoverable, (µg/L) (38401)	Atrazine (GC/MS), water, filtered, recoverable (µg/L) (39632)	Cyanazine (GC/MS), water, filtered, recoverable (µg/L) (04041)	Deethylatrazine (GC/MS), water, filtered, recoverable (µg/L) (04040)	Deisopropylatrazine (GC/MS), water, filtered, recoverable (µg/L) (04038)
RA–20	0.1	06-09-93	1055	--	--	--	--	--	--	--	--	--
	.1	08-03-93	0925	--	--	--	--	--	--	--	--	--
RA–18	.1	06-09-93	0950	--	--	--	--	--	--	--	--	--
	.1	08-03-93	1010	--	--	--	--	--	--	--	--	--
RA–16	.1	06-09-93	0910	--	--	--	--	--	--	--	--	--
	.1	08-03-93	0950	--	--	--	--	--	--	--	--	--
RA–31	.1	06-09-93	0920	--	--	--	--	--	--	--	--	--
	.1	08-03-93	0945	--	--	--	--	--	--	--	--	--
RA–3	.1	06-10-93	1005	7	6.9	0.6	--	--	--	--	--	--
	.1	08-03-93	0855	3	7.2	3.6	0.05	<0.05	1.4	1.2	0.34	0.44
	1.0	08-03-93	0830	--	--	--	--	--	--	--	--	--
	1.6	06-10-93	0930	--	--	--	--	--	--	--	--	--
	16	06-10-93	1030	<3	6.9	0.6	--	--	--	--	--	--
	18	08-03-93	0840	<3	6.1	3.5	.09	<.05	2.2	2.2	.55	.57
RA–28	--	06-08-93	1520	6	8.3	.7	--	--	--	--	--	--
	--	08-03-93	1215	5	6.4	3.8	.13	<.05	2.9	3.7	.70	.60
RA–28 dup	--	08-03-93	1216	--	--	--	.13	<.05	2.7	3.5	.67	.65

Table 4. Reservoir elevations and water-quality data for water samples collected from Rathbun Reservoir, Iowa, June and August 1993—Continued

Downstream order and map reference number (fig. 2)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Metolachlor (GC/MS), water, filtered, recoverable (µg/L) (39415)	Metribuzin (GC/MS), water, filtered, recoverable (µg/L) (82630)	Prometon (GC/MS), water, filtered, recoverable (µg/L) (04037)	Prometryn (GC/MS), water, filtered, recoverable (µg/L) (04036)	Propazine (GC/MS), water filtered, recoverable (µg/L) (38535)	Simazine (GC/MS), water, filtered, recoverable (µg/L) (04035)	Chlorophyll-*a* (µg/L) (70953)	Chlorophyll-*b* (µg/L) (70954)
RA–15	--	06-08-93	1710	--	--	--	--	--	--	--	--
	--	08-04-93	0915	0.24	<0.05	<0.05	<0.05	<0.05	<0.05	--	--
RA–12	--	06-10-93	0845	--	--	--	--	--	--	--	--
	--	08-05-93	0915	.17	<.05	<.05	<.05	<.05	<.05	--	--
RA–7	0.1	06-09-93	1420	<.05	<.05	<.05	<.05	<.05	<.05	--	--
RA–7 dup	.1		1425	<.05	<.05	<.05	<.05	<.05	<.05	--	--
RA–7	.1	08-04-93	1210	.71	<.05	<.05	<.05	<.05	<.05	--	--
RA–7 dup	.1		1211	.64	<.05	<.05	<.05	<.05	<.05	--	--
	.1		1215	.62	<.05	<.05	<.05	<.05	<.05	--	--
	.1		1216	.80	<.05	<.05	<.05	<.05	<.05	--	--
RA–7	1.0	06-09-93	1350	--	--	--	--	--	--	2.8	0.1
RA–7 dup	1.0		1355	--	--	--	--	--	--	2.9	.2
RA–7	1.0	08-04-93	1140	--	--	--	--	--	--	4.3	.2
RA–7 dup	1.0		1145	--	--	--	--	--	--	3.8	.1
RA–7	8.0	06-09-93	1430	<.05	<.05	<.05	<.05	<.05	<.05	--	--
	10	08-04-93	1135	.73	<.05	<.05	<.05	<.05	<.05	--	--
RA–8	.1	06-10-93	1340	--	--	--	--	--	--	--	--
	.1	08-05-93	1200	.45	<.05	<.05	<.05	<.05	<.05	--	--
	.3	06-10-93	1305	--	--	--	--	--	--	8.4	.9
	1.3	08-05-93	1130	--	--	--	--	--	--	3.1	.2
	6.0	06-10-93	1350	--	--	--	--	--	--	--	--
	8.5	08-05-93	1135	.37	<.05	<.05	<.05	<.05	<.05	--	--

Table 4. Reservoir elevations and water-quality data for water samples collected from Rathbun Reservoir, Iowa, June and August 1993—Continued

Downstream order and map reference number (fig. 2)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Metolachlor (GC/MS), water, filtered, recoverable (µg/L) (39415)	Metribuzin (GC/MS), water, filtered, recoverable (µg/L) (82630)	Prometon (GC/MS), water, filtered, recoverable (µg/L) (04037)	Prometryn (GC/MS), water, filtered, recoverable (µg/L) (04036)	Propazine (GC/MS), water filtered, recoverable (µg/L) (38535)	Simazine (GC/MS), water, filtered, recoverable (µg/L) (04035)	Chlorophyll-*a* (µg/L) (70953)	Chlorophyll-*b* (µg/L) (70954)
RA–20	0.1	06-09-93	1055	--	--	--	--	--	--	--	--
	.1	08-03-93	0925	--	--	--	--	--	--	--	--
RA–18	.1	06-09-93	0950	--	--	--	--	--	--	--	--
	.1	08-03-93	1010	--	--	--	--	--	--	--	--
RA–16	.1	06-09-93	0910	--	--	--	--	--	--	--	--
	.1	08-03-93	0950	--	--	--	--	--	--	--	--
RA–31	.1	06-09-93	0920	--	--	--	--	--	--	--	--
	.1	08-03-93	0945	--	--	--	--	--	--	--	--
RA–3	.1	06-10-93	1005	--	--	--	--	--	--	--	--
	.1	08-03-93	0855	0.14	<0.05	<0.05	<0.05	<0.05	<0.05	--	--
	1.0	08-03-93	0830	--	--	--	--	--	--	41	0.7
	1.6	06-10-93	0930	--	--	--	--	--	--	1.8	<.1
	16	06-10-93	1030	--	--	--	--	--	--	--	--
	18	08-03-93	0840	.27	<.05	<.05	<.05	<.05	<.05	--	--
RA–28	--	06-08-93	1520	--	--	--	--	--	--	--	--
	--	08-03-93	1215	.47	<.05	<.05	<.05	<.05	<.05	--	--
RA–28 dup	--	08-03-93	1216	.42	<.05	<.05	<.05	<.05	<.05	--	--

[1]Reservoir water-surface elevation as measured at dam.

Table 5. Reservoir elevations and water-quality data for water samples collected from Clinton Lake, Kansas, May and July 1993

[meters used in this table may be converted to feet by multiplying by 3.281; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; NTU, nephelometric turbidity units; dup, duplicate sample; ref, reference sample; MPV, most probable value; e, estimated; %, percent; mm, millimeters; Hg, mercury; mg/L, milligrams per liter; µm, micrometer; mf, membrane filtration; cols, colonies; mL, milliliters; wh, whole; it, incremental titration; µg/L, micrograms per liter; ELISA, enzyme-linked immunosorbent assay; five digit numbers in parentheses are U.S. Geological Survey WATSTORE parameters codes; --, no data or not applicable; K, nonideal count; GC/MS, gas chromatography/mass spectrometry analysis; <, less than]

Downstream order and map reference number (fig. 3)	U.S. Geological Survey identification number	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Reservoir elevation above sea level[1] (feet) (72020)	Flow rate, instantaneous (ft^3/s) (00061)	Gage height above an arbitrary datum (feet) (00065)	Specific conductance (µS/cm) (00095)	Field pH (units) (00400)	Temperature, air (°C) (00020)	Temperature, water (°C) (00010)	Turbidity (NTU) (00076)
CL–16	385342095313616	--	05-25-93	1130	883.22	100e	--	460	8.0	21.0	18.5	17
		--	07-12-93	1200	879.61	350	--	326	7.3	27.0	24.0	55
CL–13	385354095265413	0.1	05-28-93	1430	881.68	--	--	388	7.9	--	24.5	27
		.1	07-15-93	1215	880.06	--	--	328	8.1	--	27.5	18
		.8	07-15-93	1155	880.06	--	--	--	--	--	--	--
		1.3	05-28-93	1435	881.68	--	--	--	--	--	--	--
		5.5	07-15-93	1240	880.06	--	--	370	7.5	--	24.5	51
		6.5	05-28-93	1530	881.68	--	--	438	7.2	--	16.0	15
CL–20	385718095251220	.1	05-27-93	1200	882.25	--	--	326	7.7	--	20.0	31
		.1	07-14-93	1220	879.79	--	--	335	8.1	--	26.0	32
		.2	07-14-93	1215	879.79	--	--	--	--	--	--	--
		.8	05-27-93	1145	882.25	--	--	326	7.7	--	20.0	--
		2.5	07-14-93	1225	879.79	--	--	500	7.5	--	23.0	23
		3.0	05-27-93	1230	882.22	--	--	450	7.4	--	17.5	30
CL–6	385254095244206	.1	05-28-93	1000	881.78	--	--	350	7.5	--	21.0	15
		.1	07-13-93	1020	879.68	--	--	280	7.7	--	25.5	34
		.6	07-13-93	1030	879.68	--	--	--	--	--	--	--
		.9	05-28-93	1005	881.78	--	--	--	--	--	--	--
		4.0	07-13-93	1015	879.68	--	--	230	7.5	--	23.5	53
		5.3	05-28-93	1100	881.77	--	--	436	7.2	--	16.0	14
CL–22	385608095224322	.1	05-26-93	1315	882.72	--	--	278	8.0	--	20.5	--
		.1	07-13-93	1145	879.68	--	--	360	8.9	--	26.5	--

Table 5. Reservoir elevations and water-quality data for water samples collected from Clinton Lake, Kansas, May and July 1993—Continued

Downstream order and map reference number (fig. 3)	U.S. Geological Survey identification number	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Reservoir elevation above sea level[1] (feet) (72020)	Flow rate, instantaneous (ft^3/s) (00061)	Gage height above an arbitrary datum (feet) (00065)	Specific conductance (µS/cm) (00095)	Field pH (units) (00400)	Temperature, air (°C) (00020)	Temperature, water (°C) (00010)	Turbidity (NTU) (00076)
CL–24	385424095215924	0.1	05-26-93	1300	882.72	--	--	281	7.9	--	20.0	--
		.1	07-13-93	1220	879.68	--	--	366	8.6	--	25.5	--
CL–23	385556095210723	.1	05-26-93	1345	882.72	--	--	284	7.8	--	18.5	--
		.1	07-13-93	1205	879.68	--	--	333	9.2	--	27.0	--
CL–2	385542095195402	.1	05-26-93	1530	882.66	--	--	285	8.0	--	20.5	10
CL–2 dup		.1		1545	882.66	--	--	285	8.0	--	20.5	8.5
CL–2		.1	07-14-93	1015	879.78	--	--	313	8.2	--	26.0	1.9
CL–2 dup		.1		1020	879.78	--	--	313	8.2	--	26.0	1.8
CL–2		2.7	05-26-93	1445	882.66	--	--	285	8.0	--	20.5	--
CL–2 dup		2.7		1510	882.66	--	--	285	8.0	--	20.5	--
CL–2		3.2	07-14-93	0930	879.78	--	--	--	--	--	--	--
CL–2 dup		3.2		0935	879.78	--	--	--	--	--	--	--
CL–2		13	07-14-93	1045	879.78	--	--	336	7.2	--	24.5	5.9
		13.5	05-26-93	1600	882.66	--	--	320	7.3	--	13.5	18
CL–1	385548095192701	--	05-27-93	1125	882.27	2,500e	--	288	8.2	27.5	20.0	17
		--	07-13-93	1010	879.67	--	--	302	8.1	29.0	26.0	5.0
CL–2 ref	385542095195402	--	05-26-93	1700	--	--	--	--	--	--	--	--
MPV	--	--	--	--	--	--	--	--	--	--	--	--
CL–2 ref	385542095195402	--	07-30-93	1400	--	--	--	--	--	--	--	--
MPV	--	--	--	--	--	--	--	--	--	--	--	--
CL–2 ref	385542095195402	--	07-30-93	1400	--	--	--	--	--	--	--	--
MPV	--	--	--	--	--	--	--	--	--	--	--	--

Table 5. Reservoir elevations and water-quality data for water samples collected from Clinton Lake, Kansas, May and July 1993—Continued

Downstream order and map reference number (fig. 3)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Transparency (secchi disk) (meters) (00078)	Light-penetration depth to 1% of surface light (meters) (85328)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	Oxygen, dissolved (% saturation) (00301)	Oxygen, demand, chemical (high level) (mg/L) (00340)	Coliform, fecal, 0.7 mm-mf (cols/100 mL) (31625)	Calcium, total recoverable (mg/L as Ca) (00916)	Magnesium, total recoverable (mg/L as Mg) (00927)	Sodium, total recoverable (mg/L as Na) (00929)	Bicarbonate, water, wh it field (mg/L as HCO_3) (00450)	Carbonate, water, wh it field (mg/L as CO_3) (00447)
CL–16	--	05-25-93	1130	--	--	748	9.5	104	29	--	62	13	12	236	0
	--	07-12-93	1200	--	--	735	6.9	85	30	--	41	8.4	7.4	126	0
CL–13	0.1	05-28-93	1430	--	--	745	8.6	106	28	--	48	7.3	6.1	194	0
	.1	07-15-93	1215	--	--	739	4.9	64	31	--	41	7.9	7.0	159	0
	.8	07-15-93	1155	0.25	0.75	739	--	--	--	--	--	--	--	--	--
	1.3	05-28-93	1435	--	1.3	745	--	--	--	--	--	--	--	--	--
	5.5	07-15-93	1240	--	--	739	4.8	59	29	--	48	8.8	8.0	189	0
	6.5	05-28-93	1530	--	--	745	2.0	21	18	--	57	11	9.1	211	0
CL–20	.1	05-27-93	1200	--	--	745	7.7	87	30	--	44	7.8	6.6	160	0
	.1	07-14-93	1220	--	--	739	6.0	77	110	--	42	7.1	5.9	157	0
	.2	07-14-93	1215	.18	.25	--	--	--	--	--	--	--	--	--	--
	.8	05-27-93	1145	.24	.8	745	7.7	86	--	--	--	--	--	--	--
	2.5	07-14-93	1225	--	--	749	3.5	42	130	--	62	9.2	6.7	248	0
	3.0	05-27-93	1230	--	--	745	2.9	32	33	--	48	8.3	6.9	176	0
CL–6	.1	05-28-93	1000	--	--	745	6.6	76	35	--	51	9.4	8.3	189	0
	.1	07-13-93	1020	--	--	737	3.6	45	31	--	38	5.4	4.4	149	0
	.6	07-13-93	1030	.22	.6	--	--	--	--	--	--	--	--	--	--
	.9	05-28-93	1005	.35	.9	--	--	--	--	--	--	--	--	--	--
	4.0	07-13-93	1015	--	--	737	.5	6	36	--	34	4.7	3.6	123	0
	5.3	05-28-93	1100	--	--	745	.28	3	56	--	59	8.8	6.5	223	0
CL–22	.1	05-26-93	1315	--	--	745	8.8	100	--	K1	--	--	--	--	--
	.1	07-13-93	1145	--	--	737	8.8	114	--	110	--	--	--	--	--
CL–24	.1	05-26-93	1300	--	--	745	8.6	98	--	64	--	--	--	--	--
	.1	07-13-93	1220	--	--	737	6.6	84	--	K15	--	--	--	--	--

Table 5. Reservoir elevations and water-quality data for water samples collected from Clinton Lake, Kansas, May and July 1993—Continued

Downstream order and map reference number (fig. 3)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Transparency (secchi disk) (meters) (00078)	Light-penetration depth to 1% of surface light (meters) (85328)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissoived (mg/L) (00300)	Oxygen, dissolved (% saturation) (00301)	Oxygen, demand, chemical (high level) (mg/L) (00340)	Coliform, fecal, 0.7 mm-mf (cols/ 100 mL) (31625)	Calcium, total recoverable (mg/L as Ca) (00916)	Magnesium, total recoverable (mg/L as Mg) (00927)	Sodium, total recoverable (mg/L as Na) (00929)	Bicarbonate, water, wh it fieid (mg/L as HCO_3) (00450)	Carbonate, water, wh it field (mg/L as CO_3) (00447)
CL–23	0.1	05-26-93	1345	--	--	745	8.1	88	--	K4	--	--	--	--	--
	.1	07-13-93	1205	--	--	737	11.5	150	--	K10	--	--	--	--	--
CL–2	.1	05-26-93	1530	--	--	745	9.0	102	23	--	40	7.5	7.2	144	0
CL–2 dup	.1		1545	--	--	745	9.0	102	26	--	41	7.3	6.7	146	0
CL–2	.1	07-14-93	1015	--	--	739	7.2	92	23	--	37	7.3	6.3	144	0
CL–2 dup	.1		1020	--	--	739	7.2	92	15	--	37	7.1	6.4	147	0
CL–2	2.7	05-26-93	1445	0.8	2.7	745	9.0	102	--	--	--	--	--	--	--
CL–2 dup	2.7		1510	.8	2.7	745	9.0	102	--	--	--	--	--	--	--
CL–2	3.2	07-14-93	0930	1.1	3.2	--	--	--	--	--	--	--	--	--	--
CL–2 dup	3.2	07-14-93	0935	1.1	3.2	--	--	--	--	--	--	--	--	--	--
CL–2	13	07-14-93	1045	--	--	739	.2	3	18	--	39	7.4	6.3	157	0
CL–2	13.5	05-26-93	1600	--	--	745	3.2	31	19	--	43	8.0	8.0	161	0
CL–1	--	05-27-93	1125	--	--	742	8.8	100	16	--	41	7.7	7.0	146	0
	--	07-13-93	1010	--	--	735	9.2	118	22	--	40	7.7	7.7	157	0
CL–2 ref	--	05-26-93	1700	--	--	--	--	--	--	--	58	14	60	--	--
MPV	--			--	--	--	--	--	--	--	64.7	14	66	--	--
CL–2 ref	--	07-30-93	1400	--	--	--	--	--	--	--	140	57	170	--	--
MPV	--			--	--	--	--	--	--	--	154	58	166	--	--
CL–2 ref	--	07-30-93	1400	--	--	--	--	--	--	--	--	--	--	--	--
MPV	--			--	--	--	--	--	--	--	--	--	--	--	--

Table 5. Reservoir elevations and water-quality data for water samples collected from Clinton Lake, Kansas, May and July 1993—Continued

Down-stream order and map reference number (fig. 3)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Alkalinity, water, wh it field (mg/L as $CaCO_3$) (00416)	Sulfate, filtered 0.45 µm (mg/L as SO_4) (00945)	Chloride, filtered 0.45 µm (mg/L as Cl) (00940)	Total sus-pended solids, residue, at 105 °C (mg/L) (00530)	Nitrogen, nitrate, filtered 0.45 µm (mg/L as N) (00618)	Nitrogen, nitrite, filtered 0.45 µm (mg/L as N) (00613)	Nitrogen, nitrite plus nitrate, filtered 0.45 µm (mg/L as N) (00631)	Nitrogen, ammonia, filtered 0.45 µm (mg/L as N) (00608)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Phos-phorus, total (mg/L as P) (00665)	Phos-phorus, ortho, filtered 0.45 µm (mg/L as P) (00671)
CL–16	--	05-25-93	1130	193	55	8.7	43	0.76	0.01	0.77	0.03	0.5	0.08	0.03
	--	07-12-93	1200	104	28	5.0	421	1.4	.03	1.4	.05	.9	.22	.06
CL–13	0.1	05-28-93	1430	159	21	3.8	64	.10	.02	.12	.03	1.0	.20	.02
	.1	07-15-93	1215	130	26	5.3	44	.69	.05	.74	.03	.7	.16	.04
	.8	07-15-93	1155	--	--	--	--	--	--	--	--	--	--	--
	1.3	05-28-93	1435	--	--	--	--	--	--	--	--	--	--	--
	5.5	07-15-93	1240	155	28	4.8	385	1.1	.03	1.1	.05	.8	.18	.05
	6.5	05-28-93	1530	173	38	6.0	25	.45	.03	.48	.16	.6	.07	.03
CL–20	.1	05-27-93	1200	131	27	4.6	370	.31	.04	.35	.03	1.0	.14	.02
	.1	07-14-93	1220	128	21	4.1	383	.47	.02	.49	.02	3.2	.74	.01
	.2	07-14-93	1215	--	--	--	--	--	--	--	--	--	--	--
	.8	05-27-93	1145	--	--	--	--	--	--	--	--	--	--	--
	2.5	07-14-93	1225	203	26	4.2	53	.96	.04	1.0	.04	.4	.09	.02
	3.0	05-27-93	1230	144	28	4.8	403	.44	.04	.48	.03	1.0	.16	.01
CL–6	.1	05-28-93	1000	155	33	5.5	27	.11	.02	.13	.03	.9	.13	.02
	.1	07-13-93	1020	122	13	2.6	62	.92	.04	.96	.12	.6	.13	.04
	.6	07-13-93	1030	--	--	--	--	--	--	--	--	--	--	--
	.9	05-28-93	1005	--	--	--	--	--	--	--	--	--	--	--
	4.0	07-13-93	1015	101	12	2.7	359	.92	.05	.97	.21	1.0	.18	.03
	5.3	05-28-93	1100	182	24	3.8	36	.22	.04	.26	.19	.8	.11	.01
CL–22	.1	05-26-93	1315	--	--	--	--	--	--	--	--	--	--	--
	.1	07-13-93	1145	--	--	--	--	--	--	--	--	--	--	--
CL–24	.1	05-26-93	1300	--	--	--	--	--	--	--	--	--	--	--
	.1	07-13-93	1220	--	--	--	--	--	--	--	--	--	--	--

Table 5. Reservoir elevations and water-quality data for water samples collected from Clinton Lake, Kansas, May and July 1993—Continued

Downstream order and map reference number (fig. 3)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Alkalinity, water, wh it fieid (mg/L as $CaCO_3$) (00416)	Sulfate, filtered 0.45 μm (mg/L as SO_4) (00945)	Chloride, filtered 0.45 μm (mg/L as Cl) (00940)	Total suspended solids, residue, at 105 °C (mg/L) (00530)	Nitrogen, nitrate, filtered 0.45 μm (mg/L as N) (00618)	Nitrogen, nitrite, filtered 0.45 μm (mg/L as N) (00613)	Nitrogen, nitrite plus nitrate, filtered 0.45 μm (mg/L as N) (00631)	Nitrogen, ammonia, filtered 0.45 μm (mg/L as N) (00608)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Phosphorus, total (mg/L as P) (00665)	Phosphorus, ortho, filtered 0.45 μm (mg/L as P) (00671)
CL–23	0.1	05-26-93	1345	--	--	--	--	--	--	--	--	--	--	--
	.1	07-13-93	1205	--	--	--	--	--	--	--	--	--	--	--
CL–2	.1	05-26-93	1530	118	29	5.1	5.0	0.55	0.03	0.58	0.09	0.6	0.06	0.03
CL–2 dup	.1		1545	120	29	5.1	<1.0	.56	.03	.59	.09	.6	.07	.03
CL–2	.1	07-14-93	1015	118	26	4.6	4.0	--	<.01	.19	.02	.4	.04	<.01
CL–2 dup	.1		1020	121	27	4.6	1.0	--	<.01	.19	.02	.4	.04	<.01
CL–2	2.7	05-26-93	1445	--	--	--	--	--	--	--	--	--	--	--
CL–2 dup	2.7		1510	--	--	--	--	--	--	--	--	--	--	--
CL–2	3.2	07-14-93	0930	--	--	--	--	--	--	--	--	--	--	--
CL–2 dup	3.2		0935	--	--	--	--	--	--	--	--	--	--	--
CL–2	13	07-14-93	1045	129	27	4.6	7.0	--	<.01	.22	.04	.4	.05	<.01
	13.5	05-26-93	1600	132	32	5.6	23	.59	.05	.64	.16	.6	.07	.03
CL–1	--	05-27-93	1125	120	29	5.2	24	.56	.04	.60	.10	<.2	<.01	.03
	--	07-13-93	1010	129	27	6.4	16	--	<.01	.26	.02	.4	.06	<.01
CL–2 ref	--	05-26-93	1700	--	130	56	--	.13	.05	.18	.13	<.2	.22	.21
MPV	--	--	--	--	126	55	--	--	--	.18	.11	.25	.22	.21
CL–2 ref	--	07-30-93	1400	--	610	81	--	.59	.26	.85	.88	1.2	1.3	1.1
MPV	--	--	--	--	621	83	--	--	--	.86	.88	1.1	1.19	1.07
CL–2 ref	--	07-30-93	1400	--	--	--	--	--	--	--	--	--	--	--
MPV	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 5. Reservoir elevations and water-quality data for water samples collected from Clinton Lake, Kansas, May and July 1993—Continued

Downstream order and map reference number (fig. 3)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Iron, total recoverable (µg/L as Fe) (01045)	Iron, filtered 0.45 µm (µg/L as Fe) (01046)	Manganese, total recoverable (µg/L as Mn) (01055)	Manganese, filtered 0.45 µm (µg/L as Mn) (01056)	Zinc, total recoverable (µg/L as Zn) (01092)	Zinc, filtered 0.45 µm (µg/L as Zn) (01090)	Triazine, screen (ELISA) water, filtered, recoverable, as atrazine (µg/L) (34756)	Alachlor (GC/MS), water, filtered, recoverable, (µg/L) (46342)	Ametryn (GC/MS), water, filtered, recoverable, (µg/L) (38401)	Atrazine (GC/MS), water, filtered, recoverable (µg/L) (39632)	Cyanazine (GC/MS), water, filtered, recoverable (µg/L) (04041)
CL–16	--	05-25-93	1130	1,200	10	100	20	10	<10	0.2	--	--	--	--
	--	07-12-93	1200	3,900	19	200	1.0	30	4.0	6.8	0.68	<0.05	6.0	<0.05
CL–13	0.1	05-28-93	1430	1,600	28	430	110	20	3.0	1.2	--	--	--	--
	.1	07-15-93	1215	1,400	10	300	80	<10	<10	6.1	.43	<.05	5.3	<.05
	.8	07-15-93	1155	--	--	--	--	--	--	--	--	--	--	--
	1.3	05-28-93	1435	--	--	--	--	--	--	--	--	--	--	--
	5.5	07-15-93	1240	2,600	24	180	6.0	<10	<3.0	4.9	.43	<.05	4.2	<.05
	6.5	05-28-93	1530	890	20	380	310	10	3.0	.7	--	--	--	--
CL–20	.1	05-27-93	1200	2,200	33	280	140	20	4.0	.4	--	--	--	--
	.1	07-14-93	1220	2,600	4.0	400	120	<10	<3.0	3.7	.10	<.05	2.3	<.05
	.2	07-14-93	1215	--	--	--	--	--	--	--	--	--	--	--
	.8	05-27-93	1145	--	--	--	--	--	--	--	--	--	--	--
	2.5	07-14-93	1225	1,700	7.0	240	96	<10	3.0	3.2	.08	<.05	2.9	<.05
	3.0	05-27-93	1230	2,500	50	370	230	20	6.0	.4	--	--	--	--
CL–6	.1	05-28-93	1000	800	16	430	220	10	4.0	.9	--	--	--	--
	.1	07-13-93	1020	2,100	73	200	59	<10	11	4.1	<.05	<.05	9.4	<.05
	.6	07-13-93	1030	--	--	--	--	--	--	--	--	--	--	--
	.9	05-28-93	1005	--	--	--	--	--	--	--	--	--	--	--
	4.0	07-13-93	1015	2,700	67	220	56	20	6.0		<.05	<.05	4.2	<.05
	5.3	05-28-93	1100	1,000	9.0	680	590	10	<3.0	.8	--	--	--	--
CL–22	.1	05-26-93	1315	--	--	--	--	--	--	4.5	--	--	--	--
	.1	07-13-93	1145	--	--	--	--	--	--	--	--	--	--	--
CL–24	.1	05-26-93	1300	--	--	--	--	--	--	--	--	--	--	--
	.1	07-13-93	1220	--	--	--	--	--	--	--	--	--	--	--

Table 5. Reservoir elevations and water-quality data for water samples collected from Clinton Lake, Kansas, May and July 1993—Continued

Downstream order and map reference number (fig. 3)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Iron, total recoverable (µg/L as Fe) (01045)	Iron, filtered 0.45 µm (µg/L as Fe) (01046)	Manganese, total recoverable (µg/L as Mn) (01055)	Manganese, filtered 0.45 µm (µg/L as Mn) (01056)	Zinc, total recoverable (µg/L as Zn) (01092)	Zinc, filtered 0.45 µm (µg/L as Zn) (01090)	Triazine, screen (ELISA) water, filtered, recoverable, as atrazine (µg/L) (34756)	Alachlor (GC/MS), water, filtered, recoverable, (µg/L) (46342)	Ametryn (GC/MS), water, filtered, recoverable, (µg/L) (38401)	Atrazine (GC/MS), water, filtered, recoverable (µg/L) (39632)	Cyanazine (GC/MS), water, filtered, recoverable (µg/L) (04041)
CL–23	0.1	05-26-93	1345	--	--	--	--	--	--	--	--	--	--	--
	.1	07-13-93	1205	--	--	--	--	--	--	--	--	--	--	--
CL–2	.1	05-26-93	1530	410	30	20	<10	10	<10	0.5	<0.05	<0.05	0.62	<0.05
CL–2 dup	.1		1545	420	40	20	<10	10	<10	.5	<.05	<.05	.60	<.05
CL–2	.1	07-14-93	1015	120	16	40	<1.0	<10	<3.0	.9	.05	<.05	.91	<.05
CL–2 dup	.1	07-14-93	1020	130	11	40	<1.0	<10	<3.0	.9	.05	<.05	.93	.05
CL–2	2.7	05-26-93	1445	--	--	--	--	--	--	--	--	--	--	--
CL–2 dup	2.7		1510	--	--	--	--	--	--	--	--	--	--	--
CL–2	3.2	07-14-93	0930	--	--	--	--	--	--	--	--	--	--	--
CL–2 dup	3.2		0935	--	--	--	--	--	--	--	--	--	--	--
CL–2	13	07-14-93	1045	440	9.0	270	88	<10	<3.0	.5	<.05	<.05	.80	<.05
CL–2	13.5	05-26-93	1600	860	40	140	70	10	<10	.4	<.05	<.05	.55	<.05
CL–1	--	05-27-93	1125	1,200	30	70	<10	20	<10	.9	--	--	--	--
	--	07-13-93	1010	510	14	180	50	<10	9.0	--	<.05	<.05	.87	<.05
CL–2 ref	--	05-26-93	1700	<10	172	120	20	20	30	--	--	--	--	--
MVP	--	--	--	--	140	--	28.5	--	18	--	--	--	--	--
CL–2 ref	--	07-30-93	1400	20	130	<10	30	<10	20	--	--	--	--	--
MVP	--	--	--	--	140	--	28.5	--	18	--	--	--	--	--
CL–2 ref	--	07-30-93	1400	--	--	--	--	--	--	--	<.05	.9	1.1	<.05
MVP	--	--	--	--	--	--	--	--	--	--	<.05	.7	.7	<.05

Table 5. Reservoir elevations and water-quality data for water samples collected from Clinton Lake, Kansas, May and July 1993—Continued

Downstream order and map reference number (fig. 3)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Deethylatrazine (GC/MS), water, filtered, recoverable (µg/L) (04040)	Deisopropylatrazine (GC/MS), water, filtered, recoverable (µg/L) (04038)	Metolachlor (GC/MS), water, filtered, recoverable (µg/L) (39415)	Metribuzin (GC/MS), water, filtered, recoverable (µg/L) (82630)	Prometon (GC/MS), water, filtered, recoverable (µg/L) (04037)	Prometryn (GC/MS), water, filtered, recoverable (µg/L) (04036)	Propazine (GC/MS), water, filtered, recoverable (µg/L) (38535)	Simazine (GC/MS), water, filtered, recoverable (µg/L) (04035)	Chlorophyll-*a* (µg/L) (70953)	Chlorophyll-*b* (µg/L) (70954)
CL–16	--	05-25-93	1130	--	--	--	--	--	--	--	--	--	--
	--	07-12-93	1200	1.0	0.48	0.57	<0.05	<0.05	<0.05	0.06	<0.05	--	--
CL–13	0.1	05-28-93	1430	--	--	--	--	--	--	--	--	--	--
	.1	07-15-93	1215	.67	<.05	1.3	<.05	<.05	<.05	<.05	<.05	--	--
	.8	07-15-93	1155	--	--	--	--	--	--	--	--	64	11
	1.3	05-28-93	1433	--	--	--	--	--	--	--	--	24	2.8
	5.5	07-15-93	1240	.78	.36	.95	<.05	<.05	<.05	<.05	<.05	--	--
	6.5	05-28-93	1530	--	--	--	--	--	--	--	--	--	--
CL–20	.1	05-27-93	1200	--	--	--	--	--	--	--	--	--	--
	.1	07-14-93	1220	.42	.20	1.0	<.05	<.05	<.05	<.05	<.05	--	--
	.2	07-14-93	1215	--	--	--	--	--	--	--	--	730	20
	.8	05-27-93	1145	--	--	--	--	--	--	--	--	34	2.8
	2.5	07-14-93	1225	.45	.17	1.6	<.05	<.05	<.05	<.05	<.05	--	--
	3.0	05-27-93	1230	--	--	--	--	--	--	--	--	--	--
CL–6	.1	05-28-93	1000	--	--	--	--	--	--	--	--	--	--
	.1	07-13-93	1020	2.6	1.0	2.6	<.05	<.05	<.05	.05	.13	--	--
	.6	07-13-93	1030	--	--	--	--	--	--	--	--	6.6	.5
	.9	05-28-93	1005	--	--	--	--	--	--	--	--	14	1.7
	4.0	07-13-93	1015	.94	.41	1.8	<.05	<.05	<.05	<.05	.06	--	--
	5.3	05-28-93	1100	--	--	--	--	--	--	--	--	--	--
CL–22	.1	05-26-93	1315	--	--	--	--	--	--	--	--	--	--
	.1	07-13-93	1145	--	--	--	--	--	--	--	--	--	--
CL–24	.1	05-26-93	1300	--	--	--	--	--	--	--	--	--	--
	.1	07-13-93	1220	--	--	--	--	--	--	--	--	--	--

Table 5. Reservoir elevations and water-quality data for water samples collected from Clinton Lake, Kansas, May and July 1993—Continued

Downstream order and map reference number (fig. 3)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Deethylatrazine (GC/MS), water, filtered, recoverable (µg/L) (04040)	Deisopropylatrazine (GC/MS), water, filtered, recoverable (µg/L) (04038)	Metolachlor (GC/MS), water, filtered, recoverable (µg/L) (39415)	Metribuzin (GC/MS), water, filtered, recoverable (µg/L) (82630)	Prometon (GC/MS), water, filtered, recoverable (µg/L) (04037)	Prometryn (GC/MS), water, filtered, recoverable (µg/L) (04036)	Propazine (GC/MS), water, filtered, recoverable (µg/L) (38535)	Simazine (GC/MS), water, filtered, recoverable (µg/L) (04035)	Chlorophyll-*a* (µg/L) (70953)	Chlorophyll-*b* (µg/L) (70954)
CL–23	0.1	05-26-93	1345	--	--	--	--	--	--	--	--	--	--
	.1	07-13-93	1205	--	--	--	--	--	--	--	--	--	--
CL–2	.1	05-26-93	1530	0.13	0.06	0.17	<0.05	<0.05	<0.05	<0.05	<0.05	--	--
CL–2 dup	.1		1545	.13	.05	.18	<.05	<.05	<.05	<.05	<.05	--	--
CL–2	.1	07-14-93	1015	.13	<.05	.26	<.05	<.05	<.05	<.05	<.05	--	--
CL–2 dup	.1		1020	.13	<.05	.26	<.05	<.05	<.05	<.05	<.05	--	--
CL–2	2.7	05-26-93	1445	--	--	--	--	--	--	--	--	3.9	<0.1
CL-2 dup	2.7		1510	--	--	--	--	--	--	--	--	4.2	.1
CL–2	3.2	07-14-93	0930	--	--	--	--	--	--	--	--	6.6	.5
CL–2 dup	3.2		0935	--	--	--	--	--	--	--	--	6.9	.5
CL–2	13	07-14-93	1045	.13	<.05	.20	<.05	<.05	<.05	<.05	<.05	--	--
CL–2	13.5	05-26-93	1600	.14	.05	.10	<.05	<.05	<.05	<.05	<.05	--	--
CL–1	--	05-27-93	1125	--	--	--	--	--	--	--	--	--	--
	--	07-13-93	1010	.12	<.05	.22	<.05	<.05	<.05	<.05	<.05	--	--
CL–2 ref	--	05-26-93	1700	--	--	--	--	--	--	--	--	--	--
MPV	--	--	--	--	--	--	--	--	--	--	--	--	--
CL–2 ref	--	07-30-93	1400	--	--	--	--	--	--	--	--	--	--
MPV	--	--	--	--	--	--	--	--	--	--	--	--	--
CL–2 ref	--	07-30-93	1400	<.05	<.05	<.05	<.05	.95	.99	.97	.87	--	--
MPV	--	--	--	<.05	<.05	<.05	<.05	.8	.7	.6	.8	--	--

[1]Reservoir water-surface elevation as measured at dam.

Table 6. Reservoir elevations and water-quality data for water samples collected from Pomona Lake, Kansas, June and July 1993

[meters used in this table may be converted to feet by multiplying by 3.281; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; NTU, nephelometric turbidity units; dup, duplicate sample; ref, reference sample; MPV, most probable value; %, percent; mm, millimeters; Hg, mercury; mg/L, milligrams per liter; µm, micrometer; mf, membrane filtration; cols, colonies; mL, milliliters; wh, whole; it, incremental titration; µg/L, micrograms per liter; ELISA, enzyme-linked immunosorbent assay; five digit numbers in parentheses are U.S. Geological Survey WATSTORE parameters codes; --, no data or not applicable; K, nonideal count; GC/MS, gas chromatography/mass spectrometry analysis; <, less than]

Downstream order and map reference number (fig. 4)	U.S. Geological Survey identification number	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Reservoir elevation above sea level[1] (feet) (72020)	Flow rate, instantaneous (ft^3/s) (00061)	Gage height above an arbitrary datum (feet) (00065)	Specific conductance (µS/cm) (00095)	Field pH (units) (00400)	Temperature, air (°C) (00020)	Temperature, water (°C) (00010)	Turbidity (NTU) (00076)
PO–11	384239095501311	--	06-16-93	1405	--	18	1.50	600	8.1	32.0	25.5	6.0
		--	07-26-93	1320	--	85	2.00	360	7.6	30.5	25.5	14
PO–7	384002095381707	0.1	06-16-93	1115	976.12	--	--	391	8.0	--	26.5	37
PO–7 dup		.1		1130	976.12	--	--	391	8.0	--	26.5	38
PO–7		.1	07-28-93	1220	992.64	--	--	261	7.5	--	28.5	23
PO–7 dup		.1		1225	992.64	--	--	261	7.5	--	28.5	26
PO–7		.7	06-16-93	1100	976.12	--	--	--	--	--	26.5	--
PO–7 dup		.7		1105	976.12	--	--	--	--	--	--	--
PO–7		1.1	07-28-93	1120	992.64	--	--	--	--	--	--	--
PO–7 dup		1.1		1125	992.64	--	--	--	--	--	--	--
PO–7		2.0	06-16-93	1145	976.12	--	--	382	8.0	--	26.0	43
		6.0	07-28-93	1200	992.64	--	--	207	7.2	--	25.0	34
PO–12	384052095360812	.1	06-15-93	1130	976.30	--	--	283	8.0	--	26.0	32
		.1	07-28-93	1625	992.64	--	--	288	8.3	--	29.5	67
PO–12 dup		.1		1626	992.64	--	--	--	--	--	--	--
PO–12		1.0	06-15-93	1115	976.30	--	--	282	8.0	--	25.5	--
		1.6	07-28-93	1605	992.64	--	--	--	--	--	--	--
		5.0	06-15-93	1145	976.30	--	--	272	7.5	--	21.5	47
		12.5	07-28-93	1615	992.64	--	--	200	7.2	--	23.5	11

Table 6. Reservoir elevations and water-quality data for water samples collected from Pomona Lake, Kansas, June and July 1993—Continued

Downstream order and map reference number (fig. 4)	U.S. Geological Survey identification number	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Reservoir elevation above sea level[1] (feet) (72020)	Flow rate, instantaneous (ft^3/s) (00061)	Gage height above an arbitrary datum (feet) (00065)	Specific conductance (µS/cm) (00095)	Field pH (units) (00400)	Temperature, air (°C) (00020)	Temperature, water (°C) (00010)	Turbidity (NTU) (00076)
PO–18	383927095362018	0.1	06-15-93	1045	976.30	--	--	312	8.1	--	25.0	--
		.1	07-27-93	1220	992.62	--	--	247	7.3	33.0	27.5	--
PO–17	383924095353417	.1	06-15-93	1030	976.30	--	--	305	8.1	--	25.5	--
		.1	07-29-93	1225	992.64	--	--	250	7.6	33.0	27.0	--
PO–3	383935095343003	.1	06-15-93	1315	976.30	--	--	269	8.0	--	25.0	27
		.1	07-27-93	1455	992.62	--	--	256	7.0	--	25.5	27
		1.2	06-15-93	1240	976.30	--	--	268	8.0	--	24.0	--
		1.2	07-27-93	1415	992.62	--	--	--	--	--	--	--
		11.5	06-15-93	1330	976.30	--	--	267	7.4	--	19.0	72
		16.5	07-27-93	1445	992.62	--	--	174	7.1	--	23.0	73
PO–16	383939095330816	.1	06-15-93	1015	976.30	--	--	299	8.2	--	24.0	--
		.1	07-27-93	1245	992.62	--	--	299	7.7	--	26.5	--
PO–19	383929095331219	.1	06-15-93	1005	976.30	--	--	300	8.0	--	24.0	--
		.1	07-27-93	1300	992.62	--	--	290	7.6	32.0	27.0	--
PO–2	383851095335002	--	06-17-93	1135	--	--	3.25	315	7.5	--	20.5	55
		--	07-29-93	1130	--	15	--	191	7.3	24.0	23.0	71
PO–7 blank	384002095381707	--	06-17-93	0800	--	--	--	--	--	--	--	--
PO–7 ref		--	06-16-93	1300	--	--	--	--	--	--	--	--
MPV	--	--	--	--	--	--	--	--	--	--	--	--
PO–7 ref	384002095381707	--	07-30-93	1405	--	--	--	--	--	--	--	--
MPV	--	--	--	--	--	--	--	--	--	--	--	--
PO–7 blank		--	08-02-93	0945	--	--	--	--	--	--	--	--

Table 6. Reservoir elevations and water-quality data for water samples collected from Pomona Lake, Kansas, June and July 1993—Continued

Downstream order and map reference number (fig. 4)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Transparency (secchi disk) (meters) (00078)	Light-penetration depth to 1% of surface light (meters) (85328)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	Oxygen, dissolved (% saturation) (00301)	Oxygen demand, chemical (high level) (mg/L) (00340)	Coliform, fecal, 0.7 µm-mf (cols/100 mL) (31625)	Calcium, total recoverable (mg/L as Ca) (00916)	Magnesium, total recoverable (mg/L as Mg) (00927)	Sodium, total recoverable (mg/L as Na) (00929)	Bicarbonate, water, wh it field (mg/L as HCO_3) (00450)	Carbonate, water, wh it field (mg/L as CO_3) (00447)
PO–11	--	06-16-93	1405	--	--	737	11	135	25	--	77	16	16	293	0
		07-26-93	1320	--	--	736	7.0	88	23	--	89	16	12	323	0
PO–7	0.1	06-16-93	1115	--	--	737	7.9	102	28	--	47	9.8	10	186	0
PO–7 dup	.1		1130	--	--	737	7.9	102	27	--	46	9.8	9.8	176	0
PO–7	.1	07-28-93	1200	--	--	738	6.1	81	27	--	32	6.1	5.2	122	0
PO–7 dup	.1		1225	--	--	738	6.1	81	26	--	31	6.0	6.0	119	0
PO–7	.7	06-16-93	1100	0.18	0.7	737	--	--	--	--	--	--	--	--	--
PO–7 dup	.7		1105	.18	.7	737	--	--	--	--	--	--	--	--	--
PO–7	1.1	07-28-93	1120	.30	1.1	--	--	--	--	--	--	--	--	--	--
PO–7 dup	1.1		1125	.30	1.1	--	--	--	--	--	--	--	--	--	--
PO–7	2.0	06-16-93	1145	--	--	737	7.6	97	30	--	46	9.7	9.3	185	0
	6.0	07-28-93	1200	--	--	738	1.9	23	30	--	29	5.5	5.0	111	0
PO–12	.1	06-15-93	1130	--	--	742	7.5	95	22	--	38	7.5	7.5	141	0
	.1	07-28-93	1625	--	--	738	7.4	101	30	--	34	6.7	6.3	129	2.0
PO–12 dup	.1		1626	--	--	--	--	--	--	--	--	--	--	--	--
PO–12	1.0	06-15-93	1115	.27	1.0	742	7.2	91	--	--	--	--	--	--	--
	1.6	07-28-93	1605	.40	1.6	740	--	--	--	--	--	--	--	--	--
	5.0	06-15-93	1145	--	--	742	4.2	49	23	--	35	7.4	8.6	133	0
	12.5	07-28-93	1645	--	--	738	.9	11	37	--	25	4.6	12	90	0
PO–18	.1	06-15-93	1045	--	--	742	7.9	98	--	K5	--	--	--	--	--
	.1	07-27-93	1220	--	--	735	5.6	73	--	34	--	--	--	--	--

Table 6. Reservoir elevations and water-quality data for water samples collected from Pomona Lake, Kansas, June and July 1993—Continued

Downstream order and map reference number (fig. 4)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Transparency (secchi disk) (meters) (00078)	Light-penetration depth to 1% of surface light (meters) (85328)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	Oxygen, dissolved (% saturation) (00301)	Oxygen demand, chemical (high level) (mg/L) (00340)	Coliform, fecal, 0.7 µm-mf (cols/100 mL) (31625)	Calcium, total recoverable (mg/L as Ca) (00916)	Magnesium, total recoverable (mg/L as Mg) (00927)	Sodium, total recoverable (mg/L as Na) (00929)	Bicarbonate, water, wh it field (mg/L as HCO_3) (00450)	Carbonate, water, wh it field (mg/L as CO_3) (00447)
PO–17	0.1	06-15-93	1030	--	--	742	8.0	100	--	K1	--	--	--	--	--
	.1	07-29-93	1225	--	--	743	5.0	65	--	110	--	--	--	--	--
PO–3	.1	06-15-93	1315	--	--	742	8.3	103	19	--	35	7.2	6.8	136	0
	.1	07-27-93	1455	--	--	735	5.5	70	27	--	31	5.9	3.7	121	0
	1.2	06-15-93	1240	0.34	1.2	742	7.9	97	--	--	--	--	--	--	--
	1.2	07-27-93	1415	.34	1.2	--	--	--	--	--	--	--	--	--	--
	11.5	06-15-93	1330	--	--	742	2.8	31	24	--	36	7.5	7.4	136	0
	16.5	07-27-93	1445	--	--	735	1.8	22	34	--	25	4.3	3.9	85	0
PO–16	.1	06-15-93	1015	--	--	742	8.3	102	--	K18	--	--	--	--	--
	.1	07-27-93	1245	--	--	735	5.5	71	--	K17	--	--	--	--	--
PO–19	.1	06-15-93	1005	--	--	742	7.5	92	--	K5	--	--	--	--	--
	.1	07-27-93	1300	--	--	738	5.6	72	--	K15	--	--	--	--	--
PO–2	--	06-17-93	1135	--	--	736	5.6	65	26	--	39	7.5	7.7	138	0
	--	07-29-93	1130	--	--	743	6.4	77	34	--	24	4.7	5.7	88	0
PO–7 blank	--	06-17-93	0800	--	--	--	--	--	--	--	<.1	<.1	<.1	--	--
PO–7 ref	--	06-16-93	1300	--	--	--	--	--	--	--	17	5.0	25	--	--
MPV	--	--	--	--	--	--	--	--	--	--	19.3	5.3	25.5	--	--
PO–7 ref	--	07-30-93	1405	--	--	--	--	--	--	--	140	57	160	--	--
MPV	--	--	--	--	--	--	--	--	--	--	154	58.4	166	--	--
PO–7 blank	--	08-02-93	0945	--	--	--	--	--	--	--	<.1	<.1	<.1	--	--

Table 6. Reservoir elevations and water-quality data for water samples collected from Pomona Lake, Kansas, June and July 1993—Continued

Downstream order and map reference number (fig. 4)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Alkalinity, water, wh it field (mg/L as $CaCO_3$) (00416)	Sulfate, filtered 0.45 µm (mg/L as SO_4) (00945)	Chloride, filtered 0.45 µm (mg/L as Cl) (00940)	Total suspended solids, residue, total at 105 °C (mg/L) (00530)	Nitrogen, nitrate, filtered 0.45 µm (mg/L as N) (00618)	Nitrogen, nitrite, filtered 0.45 µm (mg/L as N) (00613)	Nitrogen, nitrite plus nitrate, filtered 0.45 µm (mg/L as N) (00631)	Nitrogen, ammonia, filtered 0.45 µm (mg/L as N) (00608)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Phosphorus, total (mg/L as P) (00665)	Phosphorus, ortho, filtered 0.45 µm (mg/L as P) (00671)
PO–11	--	06-16-93	1405	240	59	8.8	15	0.60	0.02	0.62	0.03	0.9	0.16	0.01
	--	07-26-93	1320	265	46	6.6	34	1.5	.03	1.5	.08	.5	.10	.04
PO–7	0.1	06-16-93	1115	152	36	5.4	359	.43	.01	.44	.02	.6	.17	.01
PO–7 dup	.1	06-16-93	1130	144	36	5.4	47	.43	.01	.44	.02	.7	.17	.01
PO–7	.1	07-28-93	1220	100	20	2.9	15	.66	.02	.68	.04	.5	.12	.06
PO–7 dup	.1		1225	98	20	2.9	19	.64	.02	.66	.02	.6	.12	.05
PO–7	.7	06-16-93	1100	--	--	--	--	--	--	--	--	--	--	--
PO–7 dup	.7		1105	--	--	--	--	--	--	--	--	--	--	--
PO–7	.1	07-28-93	1120	--	--	--	--	--	--	--	--	--	--	--
PO–7 dup	.1		1125	--	--	--	--	--	--	--	--	--	--	--
PO–7	2.0	06-16-93	1145	152	36	5.5	351	.43	.01	.44	.02	.9	.19	.01
	6.0	07-28-93	1200	91	17	2.5	20	.53	.04	.57	.05	.6	.16	.06
PO–12	.1	06-15-93	1130	116	32	4.3	12	.73	.02	.75	.02	.5	.16	.04
	.1	07-28-93	1625	109	13	2.0	40	.54	.04	.58	.03	.6	.08	.06
PO–12 dup	.1		1626	--	--	--	--	--	--	--	--	--	--	--
PO–12	1.0	06-15-93	1115	--	--	--	--	--	--	--	--	--	--	--
	1.6	07-28-93	1605	--	--	--	--	--	--	--	--	--	--	--
	5.0	06-15-93	1145	109	28	4.1	29	--	<.01	.77	.02	.5	.17	.05
	12.5	07-28-93	1615	74	14	2.1	12	.53	.04	.57	.03	.7	.20	.06
PO–18	.1	06-15-93	1045	--	--	--	--	--	--	--	--	--	--	--
	.1	07-27-93	1220	--	--	--	--	--	--	--	--	--	--	--

Table 6. Reservoir elevations and water-quality data for water samples collected from Pomona Lake, Kansas, June and July 1993—Continued

Downstream order and map reference number (fig. 4)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Alkalinity, water, wh it field (mg/L as $CaCO_3$) (00416)	Sulfate, filtered 0.45 µm (mg/L as SO_4) (00945)	Chloride, filtered 0.45 µm (mg/L as Cl) (00940)	Total suspended solids, residue, total at 105 °C (mg/L) (00530)	Nitrogen, nitrate, filtered 0.45 µm (mg/L as N) (00618)	Nitrogen, nitrite, filtered 0.45 µm (mg/L as N) (00613)	Nitrogen, nitrite plus nitrate, filtered 0.45 µm (mg/L as N) (00631)	Nitrogen, ammonia, filtered 0.45 µm (mg/L as N) (00608)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Phosphorus, total (mg/L as P) (00665)	Phosphorus, ortho, filtered 0.45 µm (mg/L as P) (00671)
PO–17	0.1	06-15-93	1030	--	--	--	--	--	--	--	--	--	--	--
	.1	07-29-93	1225	--	--	--	--	--	--	--	--	--	--	--
PO–3	.1	06-15-93	1315	112	28	4.1	5.0	--	<0.01	0.72	0.02	0.5	0.15	0.05
	.1	07-27-93	1455	99	20	2.9	17	0.69	.01	.70	.03	.5	.11	.05
	1.2	06-15-93	1240	--	--	--	--	--	--	--	--	--	--	--
	1.2	07-27-93	1415	--	--	--	--	--	--	--	--	--	--	--
	11.5	06-15-93	1330	112	28	3.9	54	--	<.01	.71	.04	.5	.19	.05
	16.5	07-27-93	1445	70	13	1.8	34	.49	.03	.52	.03	.6	.17	.06
PO–16	.1	06-15-93	1015	--	--	--	--	--	--	--	--	--	--	--
	.1	07-27-93	1245	--	--	--	--	--	--	--	--	--	--	--
PO–19	.1	06-15-93	1005	--	--	--	--	--	--	--	--	--	--	--
	.1	07-27-93	1300	--	--	--	--	--	--	--	--	--	--	--
PO–2	--	06-17-93	1135	113	29	4.4	22	--	<.01	.71	.04	.5	.22	.05
	--	07-29-93	1130	72	12	2.5	47	--	<.01	.52	<.01	.7	.20	.06
PO–7 blank	--	06-17-93	0800	--	<.1	<.1	--	--	<.01	<.05	.01	<.2	.09	<.01
PO–7 ref	--	06-16-93	1300	--	9.4	57	--	.62	.25	.87	.89	1.0	1.0	1.1
MPV	--	--	--	--	9.6	56.1	--	--	--	.876	.857	1.10	1.19	1.07
PO–7 ref	--	07-30-93	1405	--	620	81	--	.59	.26	.85	.89	1.1	1.3	1.1
MPV	--	--	--	--	621	82.8	--	--	--	.876	.857	1.10	1.19	1.07
PO–7 blank	--	08-02-93	0945	--	<.1	<.1	--	--	<.01	<.05	.03	<.2	<.01	<.01

Table 6. Reservoir elevations and water-quality data for water samples collected from Pomona Lake, Kansas, June and July 1993—Continued

Downstream order and map reference number (fig. 4)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Iron, total recoverable (µg/L as Fe) (01045)	Iron, filtered 0.45 µm (µg/L as Fe) (01046)	Manganese, total recoverable (µg/L as Mn) (01055)	Manganese, filtered 0.45 µm (µg/L as Mn) (01056)	Zinc, total recoverable (µg/L as Zn) (01092)	Zinc, filtered 0.45 µm (µg/L as Zn) (01090)	Triazine, screen (ELISA) water, filtered, recoverable, as atrazine (µg/L) (34756)	Alachlor (GC/MS), water, filtered, recoverable, (µg/L) (46342)	Ametryn (GC/MS), water, filtered, recoverable, (µg/L) (38401)	Atrazine (GC/MS), water, filtered, recoverable (µg/L) (39632)	Cyanazine (GC/MS), water, filtered, recoverable (µg/L) (04041)
PO–11	--	06-16-93	1405	510	7	140	4	10	<3.0	6.0	--	--	--	--
	--	07-26-93	1320	930	4	140	81	<10	<3.0	1.9	0.33	<0.05	1.6	<0.05
PO–7	0.1	06-16-93	1115	1,900	9	320	69	<10	4.0	2.4	.06	<.05	2.5	<.05
PO–7 dup	.1		1130	1,800	9	320	71	20	<3.0	3.0	.08	<.05	2.8	<.05
PO–7	.1	07-28-93	1220	1,100	22	40	5	<10	<3.0	3.5	.07	<.05	2.7	<.05
PO–7 dup	.1		1225	950	31	40	5	<10	4.0	3.9	.07	<.05	2.8	<.05
PO–7	.7	06-16-93	1100	--	--	--	--	--	--	--	--	--	--	--
PO–7 dup	.7		1105	--	--	--	--	--	--	--	--	--	--	--
PO–7	1.1	07-28-93	1120	--	--	--	--	--	--	--	--	--	--	--
PO–7 dup	1.1		1125	--	--	--	--	--	--	--	--	--	--	--
PO–7	2.0	06-16-93	1145	2,000	10	330	64	20	11	2.6	.10	<.05	3.3	<.05
	6.0	07-28-93	1200	1,400	29	80	20	<10	<3.0	2.6	.05	<.05	2.6	<.05
PO–12	.1	06-15-93	1115	1,300	15	110	33	10	<3.0	4.8	--	--	--	--
	.1	07-28-93	1605	460	21	40	36	<10	<3.0	4.1	.09	<.05	3.3	<.05
PO–12 dup	.1		1625	--	--	--	--	--	--	--	.09	<.05	3.3	<.05
PO–12	1.0	06-15-93	1115	--	--	--	--	--	--	--	--	--	--	--
	1.6	07-28-93	1605	--	--	--	--	--	--	--	--	--	--	--
	5.0	06-15-93	1145	1,900	21	180	71	50	<3.0	3.5	--	--	--	--
	12.5	07-28-93	1615	2,800	12	170	37	10	<3.0	3.1	.06	<.05	2.6	<.05
PO–18	.1	06-15-93	1045	--	--	--	--	--	--	--	--	--	--	--
	.1	07-27-93	1220	--	--	--	--	--	--		--	--	--	--

Table 6. Reservoir elevations and water-quality data for water samples collected from Pomona Lake, Kansas, June and July 1993—Continued

Downstream order and map reference number (fig. 4)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Iron, total recoverable (µg/L as Fe) (01045)	Iron, filtered 0.45 µm (µg/L as Fe) (01046)	Manganese, total recoverable (µg/L as Mn) (01055)	Manganese, filtered 0.45 µm (µg/L as Mn) (01056)	Zinc, total recoverable (µg/L as Zn) (01092)	Zinc, filtered 0.45 µm (µg/L as Zn) (01090)	Triazine, screen (ELISA) water, filtered, recoverable, as atrazine (µg/L) (34756)	Alachlor (GC/MS), water, filtered, recoverable, (µg/L) (46342)	Ametryn (GC/MS), water, filtered, recoverable, (µg/L) (38401)	Atrazine (GC/MS), water, filtered, recoverable (µg/L) (39632)	Cyanazine (GC/MS), water, filtered, recoverable (µg/L) (04041)
PO–17	0.1	06-15-93	1030	--	--	--	--	--	--	--	--	--	--	--
	.1	07-29-93	1225	--	--	--	--	--	--	--	--	--	--	--
PO–3	.1	06-15-93	1315	1,000	23	40	3.0	10	3.0	2.9	--	--	--	--
	.1	07-27-93	1455	1,200	25	40	3.0	<10	<3.0	3.8	0.07	<0.05	2.7	<0.05
	1.2	06-15-93	1240	--	--	--	--	--	--	--	--	--	--	--
	1.2	07-27-93	1415	--	--	--	--	--	--	--	--	--	--	--
	11.5	06-15-93	1330	2,700	24	290	120	20	<3.0	2.6	--	--	--	--
	16.5	07-27-93	1445	3,000	38	150	25	10	7.0	3.1	<.05	<.05	2.1	.06
PO–16	.1	06-15-93	1015	--	--	--	--	--	--	--	--	--	--	--
	.1	07-27-93	1245	--	--	--	--	--	--	--	--	--	--	--
PO–19	.1	06-15-93	1005	--	--	--	--	--	--	--	--	--	--	--
	.1	07-27-93	1300	--	--	--	--	--	--	--	--	--	--	--
PO–2	--	06-17-93	1135	2,100	10	200	50	10	<10	2.8	--	--	--	--
	--	07-29-93	1130	3,100	16	180	20	10	<3.0	2.7	<.05	<.05	2.0	<.05
PO–7 blank	--	06-17-93	0800	<10	<10	<10	<10	<10	10	--	--	--	--	--
PO–7 ref	--	06-16-93	1300	<10	40	<10	40	10	30	--	--	--	--	--
MPV	--	--	--	--	46	--	35	--	25	--	--	--	--	--
PO–7 ref	--	07-30-93	1405	<10	130	<10	30	<10	20	--	<.05	1.2	1.5	<.05
MPV	--	--	--	--	140	--	28.5	--	18	<.1	<.05	.7	.7	<.05
PO–7 blank	--	08-02-93	0945	10	<10	<10	<10	<10	<10	--	<.05	<.05	<.05	<.05

Table 6. Reservoir elevations and water-quality data for water samples collected from Pomona Lake, Kansas, June and July 1993—Continued

Downstream order and map reference number (fig. 4)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Deethylatrazine (GC/MS), water, filtered, recoverable (µg/L) (04040)	Deisopropylatrazine (GC/MS), water, filtered, recoverable (µg/L) (04038)	Metolachlor (GC/MS), water, filtered, recoverable (µg/L) (39415)	Metribuzin (GC/MS), water, filtered, recoverable (µg/L) (82630)	Prometon (GC/MS), water, filtered, recoverable (µg/L) (04037)	Prometryn (GC/MS), water, filtered, recoverable (µg/L) (04036)	Propazine (GC/MS), water, filtered, recoverable (µg/L) (38535)	Simazine, water (GC/MS), filtered, recoverable (µg/L) (04035)	Chlorophyll-*a* (µg/L) (70953)	Chlorophyll-*b* (µg/L) (70954)
PO–11	--	06-16-93	1405	--	--	--	--	--	--	--	--	--	--
	--	07-26-93	1320	0.17	0.05	2.6	<0.05	<0.05	<0.05	<0.05	<0.05	--	--
PO–7	0.1	06-16-93	1115	.17	.05	.54	<.05	<.05	<.05	<.05	<.05	--	--
PO–7 dup	.1		1130	.20	.08	.63	<.05	<.05	<.05	<.05	<.05	--	--
PO–7	.1	07-28-93	1220	.44	.24	.88	<.05	<.05	<.05	<.05	<.05	--	--
PO–7 dup	.1	07-28-93	1225	.45	.20	.94	<.05	<.05	<.05	<.05	<.05	--	--
PO–7	.7	06-16-93	1100	--	--	--	--	--	--	--	--	22	1.2
PO–7 dup	.7		1105	--	--	--	--	--	--	--	--	35	2.2
PO–7	1.1	07-28-93	1120	--	--	--	--	--	--	--	--	7.6	.3
PO–7 dup	1.1		1125	--	--	--	--	--	--	--	--	7.4	.3
PO–7	2.0	06-16-93	1145	.24	.10	.71	<.05	<.05	.05	<.05	<.05	--	--
	6.0	07-28-93	1200	.46	.21	.91	<.05	<.05	<.05	<.05	<.05	--	--
PO–12	.1	06-15-93	1130	--	--	--	--	--	--	--	--	--	--
	.1	07-28-93	1625	.49	.24	1.1	<.05	<.05	<.05	<.05	<.05	--	--
PO–12 dup	.1		1626	.48	.20	1.1	<.05	<.05	<.05	<.05	<.05	--	--
PO–12	1.0	06-15-93	1115	--	--	--	--	--	--	--	--	11	.6
	1.6	07-28-93	1605	--	--	--	--	--	--	--	--	13	.7
	5.0	06-15-93	1145	--	--	--	--	--	--	--	--	--	--
	12.5	07-28-93	1615	.56	.22	1.1	<.05	<.05	<.05	<.05	<.05	--	--
PO–18	.1	06-15-93	1045	--	--	--	--	--	--	--	--	--	--
	.1	07-27-93	1220	--	--	--	--	--	--	--	--	--	--

Table 6. Reservoir elevations and water-quality data for water samples collected from Pomona Lake, Kansas, June and July 1993—Continued

Downstream order and map reference number (fig. 4)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Deethylatrazine (GC/MS), water, filtered, recoverable (µg/L) (04040)	Deisopropylatrazine (GC/MS), water, filtered, recoverable (µg/L) (04038)	Metolachlor (GC/MS), water, filtered, recoverable (µg/L) (39415)	Metribuzin (GC/MS), water, filtered, recoverable (µg/L) (82630)	Prometon (GC/MS), water, filtered, recoverable (µg/L) (04037)	Prometryn (GC/MS), water, filtered, recoverable (µg/L) (04036)	Propazine (GC/MS), water, filtered, recoverable (µg/L) (38535)	Simazine, water (GC/MS), filtered, recoverable (µg/L) (04035)	Chlorophyll-*a* (µg/L) (70953)	Chlorophyll-*b* (µg/L) (70954)
PO–17	0.1	06-15-93	1030	--	--	--	--	--	--	--	--	--	--
	.1	07-29-93	1225	--	--	--	--	--	--	--	--	--	--
PO–3	.1	06-15-93	1315	--	--	--	--	--	--	--	--	--	--
	.1	07-27-93	1455	0.43	0.19	0.9	<0.05	<0.05	<0.05	<0.05	<0.05	--	--
	1.2	06-15-93	1240	--	--	--	--	--	--	--	--	6.3	0.5
	1.2	07-27-93	1415	--	--	--	--	--	--	--	--	1.6	<.1
	11.5	06-15-93	1330	--	--	--	--	--	--	--	--	--	--
	16.5	07-27-93	1445	.41	.2	.73	.05	<.05	<.05	<.05	<.05	--	--
PO–16	.1	06-15-93	1015	--	--	--	--	--	--	--	--	--	--
	.1	07-27-93	1245	--	--	--	--	--	--	--	--	--	--
PO–19	.1	06-15-93	1005	--	--	--	--	--	--	--	--	--	--
	.1	07-27-93	1300	--	--	--	--	--	--	--	--	--	--
PO–2	--	06-17-93	1135	--	--	--	--	--	--	--	--	--	--
	--	07-29-93	1130	.41	.18	.71	<.05	<.05	<.05	<.05	<.05	--	--
PO–7 blank	--	06-17-93	0800	--	--	--	--	--	--	--	--	--	--
PO–7 ref	--	06-16-93	1300	--	--	--	--	--	--	--	--	--	--
MPV	--	--	--	--	--	--	--	--	--	--	--	--	--
PO–7 ref	--	07-30-93	1405	<.05	<.05	<.05	<.05	1.3	1.3	1.3	1.2	--	--
MPV	--	--	--	<.05	<.05	<.05	<.05	.8	.7	.6	.8	--	--
PO–7 blank	--	08-02-93	0945	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	--

[1]Reservoir water-surface elevation as measured at dam.

Table 7. Reservoir elevations and water-quality data for water samples collected from Harlan County Reservoir, Nebraska, June and July 1993

[meters used in this table may be converted to feet by multiplying by 3.281; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; NTU, nephelometric turbidity units; dup, duplicate sample; %, percent; x, sample exceeded holding time; mm, millimeters; Hg, mercury; mg/L, milligrams per liter; µm, micrometer; mf, membrane filtration; cols, colonies; mL, milliliters; wh, whole; it, incremental titration; µg/L, micrograms per liter; ELISA, enzyme-linked immunosorbent assay; five digit numbers in parentheses are U.S. Geological Survey WATSTORE parameters codes; --, no data or not applicable; K, nonideal count; GC/MS, gas chromatography/mass spectrometry analysis; <, less than]

Down-stream order and map reference number (fig. 5)	U.S. Geological Survey identification number	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Reser-voir eleva-tion above sea level[1] (feet) (72020)	Flow rate, instan-taneous (ft^3/s) (00061)	Gage height above an arbitrary datum (feet) (00065)	Specific conduct-ance (µS/cm) (00095)	Field pH (units) (00400)	Temp-erature, air (°C) (00020)	Temp-erature, water (°C) (00010)	Turbidity (NTU) (00076)
HC–8	400601099270608	--	06-02-93	1150	--	158	2.65	--	8.2	16.0	20.0	84
		--	07-22-93	1000	--	290	--	611	8.0	--	22.5	35
HC–7	400513099222107	0.1	06-02-93	1200	1945.3	--	--	792	8.1	--	20.5	25
HC–7 dup		.1		1205	1945.3	--	--	792	8.1	--	20.5	27
HC–7		.1	07-20-93	1220	1948.2	--	--	511	7.7	24.0	25.0	38
HC–7 dup		.1		1221	1948.2	--	--	--	--	--	--	--
HC–7 dup		.1		1225	1948.2	--	--	511	7.7	24.0	25.0	39
HC–7		.6	07-20-93	1150	1948.2	--	--	--	--	--	--	--
HC–7 dup		.6		1155	1948.2	--	--	--	--	--	--	--
HC–7		.8	06-02-93	1236	1945.3	--	--	--	--	--	--	--
HC–7 dup		.8		1241	1945.3	--	--	--	--	--	--	--
HC–7		2.0	07-20-93	1300	1948.2	--	--	490	7.6	24.0	24.5	37
		2.5	06-02-93	1230	1945.3	--	--	789	8.2	--	20.5	28
HC–17	400527099210317	.1	06-02-93	1830	1945.3	--	--	844	7.6	--	20.5	--
		.1	07-20-93	1055	1948.2	--	--	442	7.7	24.0	26.0	--
HC–4	400153099180804	.1	06-03-93	1310	1945.3	--	--	632	8.2	--	18.0	7.9
		.1	07-21-93	1045	1948.3	--	--	612	8.4	22.5	25.0	13
		1.6	06-03-93	1300	1945.3	--	--	--	--	--	--	--
		1.6	07-21-93	1025	1948.3	--	--	--	--	22.5	--	--

Table 7. Reservoir elevations and water-quality data for water samples collected from Harlan County Reservoir, Nebraska, June and July 1993—Continued

Downstream order and map reference number (fig. 5)	U.S. Geological Survey identification number	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Reservoir elevation above sea level[1] (feet) (72020)	Flow rate, instantaneous (ft^3/s) (00061)	Gage height above an arbitrary datum (feet) (00065)	Specific conductance (µS/cm) (00095)	Field pH (units) (00400)	Temperature, air (°C) (00020)	Temperature, water (°C) (00010)	Turbidity (NTU) (00076)
HC–4	400153099180804	4.0	06-03-93	1315	1945.3	--	--	635	8.2	--	18.0	11
		4.0	07-21-93	1115	1948.3	--	--	615	8.4	22.5	24.5	5.4
HC–15	400222099140015	.1	06-02-93	0930	1945.3	--	--	620	8.1	17.0	18.5	--
		.1	07-20-93	0945	1948.2	--	--	615	8.5	20.0	24.5	--
HC–16	400245099134616	.1	06-02-93	1530	1945.3	--	--	643	8.0	--	18.5	--
		.1	07-20-93	0930	1948.2	--	--	630	8.4	20.0	24.0	--
HC–12	400519099130212	.1	06-02-93	1700	1945.3	--	--	616	8.1	--	20.0	--
		.1	07-20-93	0840	1948.2	--	--	588	7.8	20.0	25.0	--
HC–13	400501099130113	.1	06-02-93	1630	1945.3	--	--	625	8.2	--	20.0	--
		.1	07-20-93	0900	1948.2	--	--	603	8.2	20.0	25.0	--
HC–14	400500099125214	.1	06-02-93	1600	1945.3	--	--	621	8.1	--	19.5	--
		.1	07-20-93	0905	1948.2	--	--	620	8.4	19.5	24.5	--
HC–2	400413099125902	.1	06-03-93	1140	1945.3	--	--	637	8.1	13.0	18.0	1.8
		.1	07-21-93	1540	1948.4	--	--	623	8.4	--	24.0	2.4
		3.2	07-21-93	1515	1948.4	--	--	--	--	--	--	--
		4.5	06-03-93	1130	1945.3	--	--	--	--	13.0	--	--
		15	06-03-93	1155	1945.3	--	--	636	7.6	13.0	14.5	8.0
		15	07-21-93	1530	1948.4	--	--	623	8.2	--	23.5	3.5
HC–1	400408099121901	--	06-03-93	1730	--	1.2	1,945.3	--	8.3	12.5	18.5	.9
		--	07-22-93	1330	--	2.5	1,948.6	545	8.8	--	28.0	1.6

Table 7. Reservoir elevations and water-quality data for water samples collected from Harlan County Reservoir, Nebraska, June and July 1993—Continued

Downstream order and map reference number (fig. 5)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Transparency (secchi disk) (meters) (00078)	Light-penetration depth to 1% of surface light (meters) (85328)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	Oxygen, dissolved (% saturation) (00301)	Oxygen, demand chemical (high level) (mg/L) (00340)	Coliform, fecal, 0.7 µm-mf (cols/100 mL) (31625)	Calcium, total recoverable (mg/L as Ca) (00916)	Magnesium, total recoverable (mg/L as Mg) (00927)	Sodium, total recoverable (mg/L as Na) (00929)	Bicarbonate, water, wh it field (mg/L as HCO_3) (00450)	Carbonate, water, wh it field (mg/L as CO_3) (00447)
HC–8	--	06-02-93	1150	--	--	704	7.5	--	57	--	84	24	40	342	0
	--	07-22-93	1000	--	--	712	6.5	81	32x	--	62	18	26	282	0
HC–7	0.1	06-02-93	1200	--	--	707	6.1	74	--	--	75	21	43	341	0
HC–7 dup	.1		1205	--	--	707	6.1	74	29	--	75	21	44	342	0
HC–7	.1	07-20-93	1220	--	--	711	4.1	54	--	--	50	15	21	235	0
HC–7 dup	.1	07-20-93	1221	--	--	--	--	--	--	--	--	--	--	--	--
	.1		1225	--	--	711	4.1	54	12x	--	48	14	21	229	0
HC–7	.6	07-20-93	1150	--	0.6	711	--	--	--	--	--	--	--	--	--
HC–7 dup	.6	07-20-93	1155	--	.6	711	--	--	--	--	--	--	--	--	--
HC–7	.8	06-02-93	1236	0.27	.8	--	--	--	--	--	--	--	--	--	--
HC–7 dup	.8		1241	.27	.8	--	--	--	--	--	--	--	--	--	--
HC–7	2.0	07-20-93	1300	--	--	711	3.8	50	9.9x	--	50	15	21	241	0
	2.5	06-02-93	1230	--	--	707	5.6	68	25	--	77	21	43	336	0
HC–17	.1	06-02-93	1830	--	--	704	3.1	37	--	600	--	--	--	--	--
	.1	07-20-93	1055	--	--	711	3.3	44	--	730	--	--	--	--	--
HC–4	.1	06-03-93	1310	--	--	705	7.8	89	35	--	43	19	36	243	0
	.1	07-21-93	1045	--	--	708	7.4	97	19x	--	43	19	36	236	0
	1.6	06-03-93	1300	.5	1.6	705	--	--	--	--	--	--	--	--	--
	1.6	07-21-93	1025	.5	1.6	708	--	--	--	--	--	--	--	--	--
	4.0	06-03-93	1315	--	--	705	7.4	85	29	--	42	18	40	246	0
	4.0	07-21-93	1115	--	--	708	7.2	94	18x	--	43	19	36	232	0

Table 7. Reservoir elevations and water-quality data for water samples collected from Harlan County Reservoir, Nebraska, June and July 1993—Continued

Downstream order and map reference number (fig. 5)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Transparency (secchi disk) (meters) (00078)	Light-penetration depth to 1% of surface light (meters) (85328)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	Oxygen, dissolved (% saturation) (00301)	Oxygen, demand chemical (high level) (mg/L) (00340)	Coliform, fecal, 0.7 µm-mf (cols/100 mL) (31625)	Calcium, total recoverable (mg/L as Ca) (00916)	Magnesium, total recoverable (mg/L as Mg) (00927)	Sodium, total recoverable (mg/L as Na) (00929)	Bicarbonate, water, wh it field (mg/L as HCO_3) (00450)	Carbonate, water, wh it field (mg/L as CO_3) (00447)
HC–15	0.1	06-02-93	0930	--	--	705	7.4	85	--	K75	--	--	--	--	--
	.1	07-20-93	0945	--	--	711	7.8	101	--	K150	--	--	--	--	--
HC–16	.1	06-02-93	1530	--	--	705	8.8	102	--	K150	--	--	--	--	--
	.1	07-20-93	0930	--	--	711	6.9	88	--	160	--	--	--	--	--
HC–12	.1	06-02-93	1700	--	--	705	5.9	71	--	157	--	--	--	--	--
	.1	07-20-93	0840	--	--	711	4.8	63	--	K220	--	--	--	--	--
HC–13	.1	06-02-93	1630	--	--	705	8.6	103	--	103	--	--	--	--	--
	.1	07-20-93	0900	--	--	711	5.5	72	--	270	--	--	--	--	--
HC–14	.1	06-02-93	1600	--	--	705	7.5	89	--	36	--	--	--	--	--
	.1	07-20-93	0905	--	--	711	7.3	94	--	160	--	--	--	--	--
HC–2	.1	06-03-93	1140	--	--	705	7.8	89	27	--	40	18	39	237	0
	.1	07-21-93	1540	--	--	708	6.7	84	20x	--	41	20	37	236	6.5
	3.2	07-21-93	1515	1.0	3.2	--	--	--	--	--	--	--	--	--	--
	4.5	06-03-93	1130	1.4	4.5	--	--	--	--	--	--	--	--	--	--
	15	06-03-93	1155	--	--	705	.9	9.7	24	--	40	18	39	244	0
	15	07-21-93	1530	--	--	708	3.9	50	13x	--	41	20	38	234	0
HC–1	--	06-03-93	1730	--	--	706	6.5	--	27	--	34	17	39	218	0
	--	07-22-93	1330	--	--	712	8.2	113	17x	--	36	17	32	198	4.0

Table 7. Reservoir elevations and water-quality data for water samples collected from Harlan County Reservoir, Nebraska, June and July 1993—Continued

Downstream order and map reference number (fig. 5)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Alkalinity, water, wh it field (mg/L as $CaCO_3$) (00416)	Sulfate, filtered 0.45 µm (mg/L as SO_4) (00945)	Chloride, filtered 0.45 µm (mg/L as Cl) (00940)	Total suspended solids, residue total at 105 °C (mg/L) (00530)	Nitrogen, nitrate, filtered 0.45 µm (mg/L as N) (00618)	Nitrogen, nitrite, filtered 0.45 µm (mg/L as N) (00613)	Nitrogen, nitrite plus nitrate, filtered 0.45 µm (mg/L as N) (00631)	Nitrogen ammonia, filtered 0.45µm (mg/L as N) (00608)	Nitrogen ammonia plus organic, total (mg/L as N) (00625)	Phosphorus, total (mg/L as P) (00665)	Phosphorus, ortho, filtered 0.45 µm (mg/L as P) (00671)
HC–8	--	06-02-93	1150	280	90	24	558	1.5	0.02	1.5	0.02	1.2	0.43	0.17
	--	07-22-93	1000	231	45	17	440	.76	.02	.78	.04	1.1	.57	.33
HC–7	0.1	06-02-93	1200	279	88	31	59	1.5	.03	1.5	.05	.9	.32	.21
HC–7 dup	.1		1205	280	89	31	57	1.5	.03	1.5	.05	.8	.33	.21
HC–7	.1	07-20-93	1220	192	41	13	89	.48	.03	.51	.09	1.1	.50	.35
HC–7 dup	.1		1221	--	--	--	--	--	--	--	--	--	--	--
			1225	188	42	13	373	.48	.03	.51	.08	1.2	.50	.32
HC–7	.6	07-20-93	1150	--	--	--	--	--	--	--	--	--	--	--
HC–7 dup	.6		1155	--	--	--	--	--	--	--	--	--	--	--
HC–7	.8	06-02-93	1236	--	--	--	--	--	--	--	--	--	--	--
HC–7 dup	.8		1241	--	--	--	--	--	--	--	--	--	--	--
HC–7	2.0	07-20-93	1300	198	56	14	382	.50	.03	.53	.07	1.0	.50	.32
	2.5	06-02-93	1230	276	88	30	66	1.5	.03	1.5	.07	.9	.34	.21
HC–17	.1	06-02-93	1830	--	--	--	--	--	--	--	--	--	--	--
	.1	07-20-93	1055	--	--	--	--	--	--	--	--	--	--	--
HC–4	1.0	06-03-93	1310	199	83	24	20	.39	.04	.43	.12	.6	.15	.12
	1.0	07-21-93	1045	195	79	24	28	.36	.01	.37	.04	.8	.19	.10
	1.6	06-03-93	1300	--	--	--	--	--	--	--	--	--	--	--
	1.6	07-21-93	1025	--	--	--	--	--	--	--	--	--	--	--
	4.0	06-03-93	1315	201	84	27	25	.40	.04	.44	.12	.8	.20	.12
	4.0	07-21-93	1115	190	41	25	24	--	.02	<.05	.03	.8	.17	.10

Table 7. Reservoir elevations and water-quality data for water samples collected from Harlan County Reservoir, Nebraska, June and July 1993—Continued

Downstream order and map reference number (fig. 5)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Alkalinity, water, wh it field (mg/L as $CaCO_3$) (00416)	Sulfate, filtered 0.45 µm (mg/L as SO_4) (00945)	Chloride, filtered 0.45 µm (mg/L as Cl) (00940)	Total suspended solids, residue total at 105 °C (mg/L) (00530)	Nitrogen, nitrate, filtered 0.45 µm (mg/L as N) (00618)	Nitrogen, nitrite, filtered 0.45 µm (mg/L as N) (00613)	Nitrogen, nitrite plus nitrate, filtered 0.45 µm (mg/L as N) (00631)	Nitrogen ammonia, filtered 0.45µm (mg/L as N) (00608)	Nitrogen ammonia plus organic, total (mg/L as N) (00625)	Phosphorus, total (mg/L as P) (00665)	Phosphorus, ortho, filtered 0.45 µm (mg/L as P) (00671)
HC–15	0.1	06-02-93	0930	--	--	--	--	--	--	--	--	--	--	--
	.1	07-20-93	0945	--	--	--	--	--	--	--	--	--	--	--
HC–16	.1	06-02-93	1530	--	--	--	--	--	--	--	--	--	--	--
	.1	07-20-93	0930	--	--	--	--	--	--	--	--	--	--	--
HC–12	.1	06-02-93	1700	--	--	--	--	--	--	--	--	--	--	--
	.1	07-20-93	0840	--	--	--	--	--	--	--	--	--	--	--
HC–13	.1	06-02-93	1630	--	--	--	--	--	--	--	--	--	--	--
	.1	07-20-93	0900	--	--	--	--	--	--	--	--	--	--	--
HC–14	.1	06-02-93	1600	--	--	--	--	--	--	--	--	--	--	--
	.1	07-20-93	0905	--	--	--	--	--	--	--	--	--	--	--
HC–2	.1	06-03-93	1140	194	84	27	4	0.43	0.04	0.47	0.17	0.6	0.14	0.11
	.1	07-21-93	1540	194	83	24	9	.16	.01	.17	.03	.6	.10	.07
	3.2	07-21-93	1515	--	--	--	--	--	--	--	--	--	--	--
	4.5	06-03-93	1130	--	--	--	--	--	--	--	--	--	--	--
	15	06-03-93	1155	200	82	25	9	.38	.08	.46	.42	.9	.15	.11
	15	07-21-93	1530	192	79	24	13	.19	.02	.21	.04	.6	.12	.08
HC–1	--	06-03-93	1730	179	84	16	16	--	<.01	.07	.10	.9	.17	.06
	--	07-22-93	1330	170	73	23	7	--	.01	<.05	.02	.8	.12	.06

Table 7. Reservoir elevations and water-quality data for water samples collected from Harlan County Reservoir, Nebraska, May and July 1993—Continued

Downstream order and map reference number (fig. 5)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Iron, total recoverable (µg/L as Fe) (01045)	Iron, filtered 0.45 µm (µg/L as Fe) (01046)	Manganese, total recoverable (µg/L as Mn) (01055)	Manganese, filtered 0.45 µm (µg/L as Mn) (01056)	Zinc, total recoverable (µg/L as Zn) (01092)	Zinc, filtered 0.45 µm (µg/L as Zn) (01090)	Triazine, screen (ELISA) water, filtered, recoverable, as atrazine (µg/L) (34756)	Alachlor (GC/MS), water, filtered, recoverable, (µg/L) (46342)	Ametryn (GC/MS), water, filtered, recoverable, (µg/L) (38401)	Atrazine (GC/MS), water, filtered, recoverable (µg/L) (39632)	Cyanazine (GC/MS), water, filtered, recoverable (µg/L) (04041)
HC–8	--	06-02-93	1150	4,900	<10	230	<10	30	<10	2.6	--	--	--	--
	--	07-22-93	1000	3,300	8	220	2	20	<3	1.6	<0.05	<0.05	1.5	0.22
HC–7	0.1	06-02-93	1200	1,400	<3	80	3	20	<3	3.1	.06	<.05	2.6	.82
HC–7 dup	.1	06-02-93	1205	1400	<3	90	3	20	<3	2.4	.05	<.05	2.8	.83
HC–7	.1	07-20-93	1220	2,000	12	150	49	<10	<3	1.2	<.05	<.05	.93	<.05
HC–7 dup	.1		1221	--	--	--	--	--	--	--	<.05	<.05	1.1	.12
	.1		1225	2,100	12	160	49	10	4	1.2	<.05	<.05	1.2	.15
HC–7	.6	07-20-93	1150	--	--	--	--	--	--	--	--	--	--	--
HC–7 dup	.6		1155	--	--	--	--	--	--	--	--	--	--	--
HC–7	.8	06-02-93	1236	--	--	--	--	--	--	--	--	--	--	--
HC–7 dup	.8	06-02-93	1241	--	--	--	--	--	--	--	--	--	--	--
HC–7	2.0	07-20-93	1300	2,100	10	150	41	10	<3	1.3	<.05	<.05	1.3	.17
	2.5	06-02-93	1230	1,600	3	100	3	20	<3	2.8	.06	<.05	2.6	.89
HC–17	.1	06-02-93	1830	--	--	--	--	--	--	--	--	--	--	--
	.1	07-20-93	1055	--	--	--	--	--	--	--	--	--	--	--
HC–4	.1	06-03-93	1310	700	5	40	2	10	<3	1.2	--	--	--	--
	.1	07-21-93	1045	670	<3	70	<1	<10	<3	1.1	<.05	<.05	1.1	.11
	1.6	06-03-93	1300	--	--	--	--	--	--	--	--	--	--	--
	1.6	07-21-93	1025	--	--	--	--	--	--	--	--	--	--	--
	4.0	06-03-93	1315	740	<3	50	2	20	<3	1.0	--	--	--	--
	4.0	07-21-93	1115	650	<3	70	<1	20	<3	1.0	<.05	<.05	1.1	.06

Table 7. Reservoir elevations and water-quality data for water samples collected from Harlan County Reservoir, Nebraska, May and July 1993—Continued

Downstream order and map reference number (fig. 5)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Iron, total recoverable (µg/L as Fe) (01045)	Iron, filtered 0.45 µm (µg/L as Fe) (01046)	Manganese, total recoverable (µg/L as Mn) (01055)	Manganese, filtered 0.45 µm (µg/L as Mn) (01056)	Zinc, total recoverable (µg/L as Zn) (01092)	Zinc, filtered 0.45 µm (µg/L as Zn) (01090)	Triazine, screen (ELISA) water, filtered, recoverable, as atrazine (µg/L) (34756)	Alachlor (GC/MS), water, filtered, recoverable, (µg/L) (46342)	Ametryn (GC/MS), water, filtered, recoverable, (µg/L) (38401)	Atrazine (GC/MS), water, filtered, recoverable (µg/L) (39632)	Cyanazine (GC/MS), water, filtered, recoverable (µg/L) (04041)
HC–15	0.1	06-02-93	0930	--	--	--	--	--	--	--	--	--	--	--
	.1	07-20-93	0945	--	--	--	--	--	--	--	--	--	--	--
HC–16	.1	06-02-93	1530	--	--	--	--	--	--	--	--	--	--	--
	.1	07-20-93	0930	--	--	--	--	--	--	--	--	--	--	--
HC–12	.1	06-02-93	1700	--	--	--	--	--	--	--	--	--	--	--
	.1	07-20-93	0840	--	--	--	--	--	--	--	--	--	--	--
HC–13	.1	06-02-93	1630	--	--	--	--	--	--	--	--	--	--	--
	.1	07-20-93	0900	--	--	--	--	--	--	--	--	--	--	--
HC–14	.1	06-02-93	1600	--	--	--	--	--	--	--	--	--	--	--
	.1	07-20-93	0905	--	--	--	--	--	--	--	--	--	--	--
HC–2	.1	06-03-93	1140	210	<3	20	6	10	13	1.0	--	--	--	--
	.1	07-21-93	1540	200	<3	30	<1	<10	6	1.1	<0.05	<0.05	1.0	<0.05
	3.2	07-21-93	1515	--	--	--	--	--	--	--	--	--	--	--
	4.5	06-03-93	1130	--	--	--	--	--	--	--	--	--	--	--
	15	06-03-93	1515	540	<3	250	210	30	6	.9	--	--	--	--
	15	07-21-93	1530	320	3	40	6.0	<10	5	1.1	<.05	<.05	1.1	.10
HC–1	--	06-03-93	1730	250	<10	90	<10	30	20		--	--	--	--
	--	07-22-93	1330	110	10	30	1.0	<10	<3		<.05	<.05	.75	<.05

Table 7. Reservoir elevations and water-quality data for water samples collected from Harlan County Reservoir, Nebraska, June and July 1993—Continued

Downstream order and map reference number (fig. 5)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Deethyl-atrazine (GC/MS), water, filtered, recoverable (µg/L) (04040)	Deiso-propyl-atrazine (GC/MS), water, filtered, recoverable (µg/L) (04038)	Metol-achlor (GC/MS), water, filtered, recoverable (µg/L) (39415)	Metri-buzin (GC/MS), water, filtered, recoverable (µg/L) (82630)	Prometon (GC/MS), water, filtered, recoverable (µg/L) (04037)	Pro-metryn (GC/MS), water, filtered, recoverable (µg/L) (04036)	Prop-azine (GC/MS), water, filtered, recoverable (µg/L) (38535)	Simazine (GC/MS), water, filtered, recoverable (µg/L) (04035)	Chloro-phyll-*a* (µg/L) (70953)	Chloro-phyll-*b* (µg/L) (70954)
HC–8	--	06-02-93	1150	--	--	--	--	--	--	--	--	--	--
	--	07-22-93	1000	0.36	0.18	0.73	<0.05	<0.05	<0.05	<0.05	<0.05	--	--
HC–7	0.1	06-02-93	1200	.20	.08	1.1	<.05	<.05	<.05	<.05	<.05	--	--
HC–7 dup	.1		1205	.23	.09	1.2	<.05	<.05	<.05	<.05	<.05	--	--
HC–7	.1	07-20-93	1220	.27	.14	.20	<.05	<.05	<.05	<.05	<.05	--	--
HC–7 dup	.1		1221	.28	.14	.23	<.05	<.05	<.05	<.05	<.05	--	--
	.1		1225	.30	.15	.29	<.05	<.05	<.05	<.05	<.05	--	--
HC–7	.6	07-20-93	1150	--	--	--	--	--	--	--	--	22	2.9
HC–7 dup	.6		1155	--	--	--	--	--	--	--	--	21	2.9
HC–7	.8	06-02-93	1236	--	--	--	--	--	--	--	--	4.7	1.5
HC–7 dup	.8		1241	--	--	--	--	--	--	--	--	--	--
HC–7	2.0	07-20-93	1300	.31	.15	.30	<.05	<.05	<.05	<.05	<.05	--	--
	2.5	06-02-95	1230	.20	.08	1.1	<.05	<.05	<.05	<.05	<.05	--	--
HC–17	.1	06-02-93	1830	--	--	--	--	--	--	--	--	--	--
HC–17	.1	07-20-93	1055	--	--	--	--	--	--	--	--	--	--
HC–4	.1	06-03-93	1310	--	--	--	--	--	--	--	--	--	--
	.1	07-21-93	1045	.29	.08	.13	<.05	<.05	<.05	<.05	<.05	--	--
	1.6	06-03-93	1300	--	--	--	--	--	--	--	--	4.1	.2
	1.6	07-21-93	1025	--	--	--	--	--	--	--	--	20	.2
	4.0	06-03-93	1315	--	--	--	--	--	--	--	--	--	--
	4.0	07-21-93	1115	.31	.08	.13	<.05	<.05	<.05	<.05	<.05	--	--

Table 7. Reservoir elevations and water-quality data for water samples collected from Harlan County Reservoir, Nebraska, June and July 1993—Continued

Downstream order and map reference number (fig. 5)	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Deethylatrazine (GC/MS), water, filtered, recoverable (µg/L) (04040)	Deisopropylatrazine (GC/MS), water, filtered, recoverable (µg/L) (04038)	Metolachlor (GC/MS), water, filtered, recoverable (µg/L) (39415)	Metribuzin (GC/MS), water, filtered, recoverable (µg/L) (82630)	Prometon (GC/MS), water, filtered, recoverable (µg/L) (04037)	Prometryn (GC/MS), water, filtered, recoverable (µg/L) (04036)	Propazine (GC/MS), water, filtered, recoverable (µg/L) (38535)	Simazine (GC/MS), water, filtered, recoverable (µg/L) (04035)	Chlorophyll-*a* (µg/L) (70953)	Chlorophyll-*b* (µg/L) (70954)
HC–15	0.1	06-02-93	0930	--	--	--	--	--	--	--	--	--	--
	.1	07-20-93	0945	--	--	--	--	--	--	--	--	--	--
HC–16	.1	06-02-93	1530	--	--	--	--	--	--	--	--	--	--
	.1	07-20-93	0930	--	--	--	--	--	--	--	--	--	--
HC–12	.1	06-02-93	1700	--	--	--	--	--	--	--	--	--	--
	.1	07-20-93	0840	--	--	--	--	--	--	--	--	--	--
HC–13	.1	06-02-93	1630	--	--	--	--	--	--	--	--	--	--
	.1	07-20-93	0900	--	--	--	--	--	--	--	--	--	--
HC–14	.1	06-02-93	1600	--	--	--	--	--	--	--	--	--	--
	.1	07-20-93	0905	--	--	--	--	--	--	--	--	--	--
HC–2	.1	06-03-93	1140	--	--	--	--	--	--	--	--	--	--
	.1	07-21-93	1540	0.35	0.10	0.13	<0.05	<0.05	<0.05	<0.05	<0.05	--	--
	3.2	07-21-93	1515	--	--	--	--	--	--	--	--	6.0	0.8
	4.5	06-03-93	1130	--	--	--	--	--	--	--	--	1.2	<.1
	15	06-03-93	1155	--	--	--	--	--	--	--	--	--	--
	15	07-21-93	1530	.32	.08	.13	<.05	<.05	<.05	<.05	<.05	--	--
HC–1	--	06-03-93	1730	--	--	--	--	--	--	--	--	--	--
	--	07-22-93	1330	.30	.09	.08	<.05	<.05	<.05	<.05	<.05	--	--

[1]Reservoir water-surface elevation as measured at dam.

Table 8. Vertical specific-conductance, pH, water-temperature, and dissolved-oxygen profiles from Rathbun Reservoir, Iowa, June and August 1993

[meters used in this table can be converted to feet by multiplying by 3.281; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mm, millimeters; Hg, mercury; %, percent; mg/L, milligrams per liter; five digit numbers in parentheses are U.S. Geological Survey WATSTORE parameter codes]

Down-stream order and map reference number (fig. 2)	U.S. Geological Survey identification number	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Reservoir elevation above sea level[1] (feet) (72020)	Specific conduct-ance (µS/cm) (00095)	Fleid pH (units) (00400)	Temp-erature, water (°C) (00010)	Baro-metric pressure (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	Oxygen, dissolved (% satur-ation) (00301)
					June 1993						
RA–7	405336092571807	0.1	06-09-93	1337	912.90	206	7.7	19.0	737	7.8	86
		.5		1340		206	7.7	19.0	737	7.8	86
		1.0		1345		206	7.7	19.0	737	7.8	86
		2.0		1347		206	7.7	19.0	737	7.8	86
		3.0		1351		207	7.7	19.0	737	7.8	86
		4.0		1354		207	7.7	19.0	737	7.8	86
		5.0		1358		207	7.7	18.5	737	7.7	86
		6.0		1403		207	7.7	18.5	737	7.7	86
		7.0		1407		210	7.7	18.5	737	7.5	83
		8.0		1410		209	7.6	18.5	737	7.3	80
RA–8	404800092531208	.1	06-10-93	1156	912.95	155	7.0	21.5	737	4.5	53
		1.0		1202		158	6.9	20.5	737	4.6	53
		2.0		1206		160	6.9	20.5	737	4.6	53
		3.0		1211		161	6.9	20.5	737	4.8	55
		4.0		1215		172	6.9	20.0	737	4.5	51
		5.0		1221		198	7.0	19.5	737	4.5	51
		6.0		1226		203	7.0	19.5	737	4.4	50
		6.7		1229		204	7.0	19.0	737	4.2	47
RA–3	404800092531203	.1	06-10-93	0902	912.95	190	7.4	18.5	738	8.2	90
		.1		1000		196	7.4	20.5	738	8.3	95
		1.0		0906		190	7.5	18.0	738	8.2	90
		1.0		1006		196	7.4	18.0	738	9.0	98
		3.0		0910		192	7.4	18.0	738	8.2	90
		3.0		1008		194	7.4	18.0	738	8.7	95
		5.0		0914		190	7.4	18.0	738	8.1	88

Table 8. Vertical specific-conductance, pH, water-temperature, and dissolved-oxygen profiles from Rathbun Reservoir, Iowa, June and August 1993—Continued

Downstream order and map reference number (fig. 2)	U.S. Geological Survey identification number	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Reservoir elevation above sea level[1] (feet) (72020)	Specific conductance (µS/cm) (00095)	Field pH (units) (00400)	Temperature, water (°C) (00010)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	Oxygen, dissolved (% saturation) (00301)
					June 1993—Continued						
RA–3	404800092531203	5.0	06-10-93	1011	912.95	194	7.4	18.0	738	9.1	99
		7.0		0918		189	7.4	18.0	738	8.0	87
		7.0		1014		195	7.4	18.0	738	9.2	100
		9.0		0921		189	7.4	18.0	738	8.0	86
		9.0		1017		195	7.4	17.5	738	9.2	99
		11.0		0924		189	7.4	18.0	738	7.8	85
		11.0		1020		194	7.4	17.5	738	9.1	98
		12.0		0927		191	7.4	17.5	738	7.9	86
		12.0		1023		194	7.4	17.5	738	9.0	97
		13.0		0929		189	7.4	17.5	738	7.8	84
		13.0		1025		195	7.4	17.5	738	9.0	98
		14.0		0933		191	7.4	17.5	738	7.7	84
		14.0		1027		196	7.4	17.5	738	8.8	95
		15.0		0937		191	7.4	17.5	738	7.7	83
		15.0		1029		196	7.4	17.5	738	8.7	94
		16.0		0940		190	7.4	17.5	738	7.7	83
		16.0		1031		194	7.4	17.5	738	8.8	95
					August 1993						
RA–7	405336092571807	.1	08-04-93	1134	926.00	157	7.3	24.5	744	5.3	66
		1.0		1137		154	7.3	24.5	744	5.1	63
		2.0		1141		153	7.3	24.0	744	5.0	60
		3.0		1143		154	7.2	24.0	744	4.9	60
		4.0		1147		153	6.9	24.0	744	4.9	60
		5.0		1151		152	6.8	24.0	744	4.9	59

Table 8. Vertical specific-conductance, pH, water-temperature, and dissolved-oxygen profiles from Rathbun Reservoir, Iowa, June and August 1993—Continued

Downstream order and map reference number (fig. 2)	U.S. Geological Survey identification number	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Reservoir elevation above sea level[1] (feet) (72020)	Specific conductance (µS/cm) (00095)	Field pH (units) (00400)	Temperature, water (°C) (00010)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	Oxygen, dissolved (% saturation) (00301)
					August 1993—Continued						
RA–7	405336092571807	6.0	08-04-93	1155	926.00	150	6.7	24.0	744	4.8	59
		7.0		1158		150	6.7	24.0	744	4.8	58
		8.0		1202		150	6.6	24.0	744	4.8	58
		9.0		1205		150	6.6	24.0	744	4.8	59
		10.0		1209		161	6.5	23.5	744	3.0	36
RA–8	404800092531208	.1	08-05-93	1131	925.90	174	6.9	24.0	743	5.0	60
		1.0		1134		174	6.9	24.0	743	4.8	58
		2.0		1138		174	6.7	24.0	743	4.7	57
		3.0		1141		174	6.6	24.0	743	4.6	56
		4.0		1143		174	6.5	24.0	743	4.6	56
		5.0		1146	925.90	174	6.4	24.0	743	4.4	53
		6.0		1155		174	6.2	23.5	743	1.1	13
		7.0		1201		170	6.0	22.5	743	.3	4
		8.0		1203		171	6.0	22.0	743	.3	3
		8.5		1206		167	6.0	22.0	743	.2	3
RA–3	404800092531203	.1	08-03-93	0826	926.30	190	8.1	25.0	739	8.6	108
		1.0		0832		190	8.1	25.0	739	8.5	107
		3.0		0834		190	8.1	25.0	739	8.4	106
		5.0		0837		189	8.1	25.0	739	8.4	105
		7.0		0841		191	7.7	25.0	739	8.0	100
		9.0		0845		193	7.3	25.0	739	7.0	88
		11.0		0849		196	7.2	25.0	739	6.4	80
		13.0		0853		182	6.9	24.5	739	4.1	51
		15.0		0900		180	6.7	23.0	739	2.2	26
		17.0		0904		186	6.6	22.5	739	1.5	18
		18.0		0908		181	7.0	22.5	739	1.2	14

[1]Reservoir water-surface elevation as measured at dam.

Table 9. Vertical specific-conductance, pH, water-temperature, and dissolved-oxygen profiles from Clinton Lake, Kansas, May and July 1993

[meters used in this table can be converted to feet by multiplying by 3.281; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mm, millimeters; Hg, mercury; %, percent; mg/L, milligrams per liter; five digits in parentheses are U.S. Geological Survey WATSTORE parameter codes]

Downstream order and map reference number (fig. 3)	U.S. Geological Survey identification number	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Reservoir elevation above sea level[1] (feet) (72020)	Specific conductance (µS/cm) (00095)	Field pH (units) (00400)	Temperature, water (°C) (00010)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	Oxygen, dissolved (% saturation) (00301)
					May 1993						
CL–13	385354095265413	0.1	05-28-93	1445	881.68	388	7.9	24.5	745	8.6	106
		1.0		1446		390	7.7	23.0	745	5.2	62
		2.0		1447		345	7.4	18.5	745	4.8	53
		3.0		1448		375	7.3	17.5	745	3.4	37
		4.0		1449		437	7.2	17.0	745	2.8	29
		5.0		1450		439	7.2	16.5	745	2.6	27
		6.0		1451		438	7.2	16.0	745	2.5	26
		6.5		1452		438	7.2	16.0	745	2.0	21
CL–20	385718095251220	.1	05-27-93	1147	882.25	326	7.7	20.0	745	7.7	87
		1.0		1150		326	7.7	20.0	745	7.7	86
		2.0		1153		326	7.7	19.5	745	7.6	85
		3.0		1156		450	7.4	17.5	745	2.9	32
		3.5		1201		490	7.2	16.5	745	.9	9
		3.5		1205		490	7.2	16.5	745	.4	4
CL–6	385254095244206	.1	05-28-93	1120	881.78	350	7.5	21.0	745	6.6	76
		1.0		1121		351	7.5	20.5	745	5.2	59
		2.0		1122		342	7.4	19.0	745	4.5	49
		3.0		1123		345	7.3	19.0	745	3.4	38
		4.0		1124		420	7.2	16.5	745	.7	7
		5.0		1125		432	7.2	16.0	745	.4	5
		5.3		1126		436	7.2	16.0	745	.3	3

Table 9. Vertical specific-conductance, pH, water-temperature, and dissolved-oxygen profiles from Clinton Lake, Kansas, May and July 1993—Continued

Downstream order and map reference number (fig. 3)	U.S. Geological Survey identification number	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Reservoir elevation above sea level[1] (feet) (72020)	Specific conductance (µS/cm) (00095)	Field pH (units) (00400)	Temperature, water (°C) (00010)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	Oxygen, dissolved (% saturation) (00301)
					May 1993—Continued						
CL–2	385542095195402	0.1	05-26-93	1511	882.66	285	8.0	20.5	745	9.0	102
		1.0		1512		286	8.1	20.5	745	9.0	103
		2.0		1513		285	8.1	20.5	745	9.1	103
		3.0		1514		285	8.0	20.0	745	9.0	102
		4.0		1515		285	8.0	20.0	745	8.9	101
		5.0		1520		285	8.0	20.0	745	8.9	100
		6.0		1521		284	8.0	20.0	745	8.8	100
		7.0		1522		284	8.0	20.0	745	8.8	100
		8.0		1523		284	8.0	20.0	745	8.8	99
		9.0		1524		284	8.0	20.0	745	8.8	99
		10.0		1525		284	8.0	20.0	745	8.8	99
		11.0		1526		287	7.9	19.0	745	8.4	93
		12.0		1527		295	7.7	17.0	745	6.7	71
		13.0		1528		320	7.4	13.5	745	4.0	39
					July 1993						
CL–13	385354095265413	.1	07-15-93	1217	880.06	328	8.1	27.5	739	4.9	64
		1.0		1220		360	7.5	25.0	739	4.8	60
		2.0		1223		378	7.5	24.5	739	4.8	60
		3.0		1225		378	7.5	24.5	739	4.8	60
		4.0		1228		377	7.5	24.5	739	4.8	59
		5.0		1230		377	7.5	24.5	739	4.8	59
		5.8		1231		370	7.5	24.5	739	4.8	59
CL–20	385718095251220	.1	07-14-93	1204	879.79	335	8.1	26.0	739	6.0	77
		1.0		1206		451	7.7	25.0	739	4.8	60
		2.0		1209		493	7.6	23.5	739	4.2	51
		2.7		1213		500	7.5	23.0	739	3.5	42

Table 9. Vertical specific-conductance, pH, water-temperature, and dissolved-oxygen profiles from Clinton Lake, Kansas, May and July 1993—Continued

Downstream order and map reference number (fig. 3)	U.S. Geological Survey Identification number	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Reservoir elevation above sea level[1] (feet) (72020)	Specific conductance (µS/cm) (00095)	Field pH (units) (00400)	Temperature, water (°C) (00010)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	Oxygen, dissolved (% saturation) (00301)
					July 1993—Continued						
CL–6	385254095244206	0.1	07-13-93	1010	879.68	280	7.7	25.5	737	3.6	45
		1.0		1011		275	7.7	25.5	737	3.4	43
		2.0		1012		270	7.6	24.5	737	2.2	27
		3.0		1013		257	7.6	23.5	737	1.2	15
		4.0		1016		230	7.5	23.5	737	.5	6
CL–2	385542095195402	.1	07-14-93	1008	879.78	313	8.2	26.0	739	7.2	92
		1.0		1012		319	8.3	26.0	739	7.1	90
		2.0		1014		323	8.2	25.5	739	6.2	79
		3.0		1019		326	7.9	25.5	739	5.5	70
		4.0		1025		330	7.8	25.5	739	4.5	57
		5.0		1029		331	7.7	25.0	739	3.8	48
		6.0		1031		332	7.6	25.0	739	3.2	40
		7.0		1034		331	7.6	25.0	739	3.3	42
		8.0		1036		331	7.6	25.0	739	3.6	44
		9.0		1038		332	7.5	25.0	739	2.7	34
		10.0		1041		332	7.4	25.0	739	1.6	20
		11.0		1043		333	7.4	25.0	739	1.2	15
		12.0		1046		333	7.3	24.5	739	.6	8
		13.0		1048		336	7.2	24.5	739	.2	3

[1] Reservoir water-surface elevation as measured at dam.

Table 10. Vertical specific-conductance, pH, water-temperature, and dissolved-oxygen profiles from Pomona Lake, Kansas, June and July 1993

[meters used in this table can be converted to feet by multiplying by 3.281; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mm, millimeters; Hg, mercury; %, percent; mg/L, milligrams per liter; five digits in parentheses are U.S. Geological Survey WATSTORE parameter codes]

Downstream order and map reference number (fig. 4)	U.S. Geological Survey identification number	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Reservoir elevation above sea level[1] (feet) (72020)	Specific conductance (µS/cm) (00095)	Field pH (units) (00400)	Temperature, water (°C) (00010)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	Oxygen, dissolved (% saturation) (00301)
					June 1993						
PO–7	384002095381707	0.1	06-16-93	1106	976.12	391	8.0	26.5	737	7.9	101
		1.0		1107		391	8.0	26.5	737	7.8	100
		2.0		1108		388	8.0	26.5	737	7.7	100
		2.5		1109		382	8.0	26.0	737	7.6	97
PO–12	384052095360812	.1	06-15-93	1121	976.30	283	8.0	26.0	742	7.5	95
		1.0		1124		282	8.0	25.5	742	7.2	91
		2.0		1127		275	7.9	24.0	742	6.5	80
		3.0		1131		272	7.8	23.0	742	5.6	68
		4.0		1135		272	7.6	22.0	742	4.8	56
		5.0		1138		270	7.6	21.5	742	4.5	52
		6.0		1140		272	7.5	21.5	742	4.2	49
PO–3	383935095343003	.1	06-15-93	1245	976.30	269	8.0	25.0	742	8.3	103
		1.0		1250		269	8.0	24.0	742	8.0	98
		1.2		1252		268	8.0	24.0	742	7.9	97
		2.0		1254		266	7.9	23.5	742	7.7	93
		3.0		1256		266	7.8	22.5	742	7.1	85
		4.0		1300		266	7.7	21.5	742	6.0	70
		5.0		1302		265	7.6	21.0	742	6.0	69
		6.0		1304		265	7.6	20.5	742	5.8	67
		7.0		1306		266	7.5	20.5	742	5.3	61
		8.0		1309		265	7.5	20.0	742	4.9	55
		9.0		1311		265	7.5	20.0	742	4.6	52
		10.0		1314		264	7.4	19.5	742	4.2	47
		11.0		1317		265	7.4	19.5	742	3.6	41
		11.5		1319		267	7.4	19.0	742	2.8	31
		12.0		1322		268	7.3	18.5	742	2.1	23

Table 10. Vertical specific-conductance, pH, water-temperature, and dissolved-oxygen profiles from Pomona Lake, Kansas, June and July 1993—Continued

Down-stream order and map reference number (fig. 4)	U.S. Geological Survey identification number	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Reservoir elevation above sea level[1] (feet) (72020)	Specific conduct-ance (µS/cm) (00095)	Field pH (units) (00400)	Temp-erature, water (°C) (00010)	Baro-metric pressure (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	Oxygen, dissolved (% satur-ation) (00301)
					July 1993						
PO–7	384002095381707	0.1	07-28-93	1125	992.64	261	7.5	28.5	738	6.1	81
		1.0		1129		259	7.5	28.0	738	5.8	76
		2.0		1131		259	7.5	27.5	738	5.7	75
		3.0		1132		261	7.6	27.5	738	5.6	74
		4.0		1135		262	7.6	27.5	738	5.2	68
		4.0		1300		264	7.6	27.5	738	3.8	49
		5.0		1138		236	7.2	26.0	738	2.2	28
		6.0		1141		207	7.2	25.0	738	1.9	23
		6.0		1250		219	7.2	25.0	738	2.2	28
PO–12	384052095360812	.1	07-28-93	1601	992.64	288	8.3	29.5	738	7.4	101
		1.0		1607		295	8.3	29.5	738	7.3	99
		2.0		1612		295	8.0	28.0	738	5.7	75
		3.0		1617		287	7.7	27.0	738	4.7	61
		4.0		1621		276	7.6	26.5	738	4.0	52
		6.0		1626		270	7.5	25.5	738	3.7	47
		8.0		1631		217	7.3	24.5	738	2.3	28
		10.0		1634		200	7.2	24.0	738	1.5	18
		12.0		1639		196	7.2	23.5	738	1.0	13
		12.5		1643		200	7.2	23.5	738	.9	11
PO–3	383935095343003	.1	07-27-93	1425	992.62	256	7.1	25.5	735	5.5	70
		1.0		1430		250	7.6	26.5	735	4.9	63
		2.0		1435		252	7.6	26.0	735	4.8	61
		3.0		1440		249	7.5	25.5	735	4.6	58
		4.0		1447		251	7.5	25.5	735	4.6	58

Table 10. Vertical specific-conductance, pH, water-temperature, and dissolved-oxygen profiles from Pomona Lake, Kansas, June and July 1993—Continued

Downstream order and map reference number (fig. 4)	U.S. Geological Survey identification number	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Reservoir elevation above sea level[1] (feet) (72020)	Specific conductance (µS/cm) (00095)	Field pH (units) (00400)	Temperature, water (°C) (00010)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	Oxygen, dissolved (% saturation) (00301)
					July 1993—Continued						
PO–3	383935095343003	5.0	07-27-93	1452	992.62	246	7.5	25.5	735	4.3	54
		6.0		1505		250	7.4	25.0	735	3.9	49
		8.0		1511		236	7.4	25.0	735	3.3	41
		10.0		1515		237	7.3	24.5	735	2.7	34
		12.0		1520		185	7.2	23.5	735	2.3	29
		14.0		1525		176	7.2	23.5	735	2.2	26
		15.0		1530		176	7.1	23.0	735	2.0	24
		16.0		1532		176	7.2	23.0	735	1.9	23
		16.5		1535		174	7.1	23.0	735	1.8	22

[1] Reservoir water-surface elevation as measured at dam.

Table 11. Vertical specific-conductance, pH, water-temperature, and dissolved-oxygen profiles from Harlan County Reservoir, Nebraska, June and July 1993

[meters used in this table can be converted to feet by multiplying by 3.281; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mm, millimeters; Hg, mercury; %, percent; mg/L, milligrams per liter; five digits in parentheses are U.S. Geological Survey WATSTORE parameter codes]

Down-stream order and map reference number (fig. 5)	U.S. Geological Survey identification number	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Reservoir elevation above sea level[1] (feet) (72020)	Specific conduct-ance (µS/cm) (00095)	Field pH (units) (00400)	Temp-erature, water (°C) (00010)	Baro-metric pressure (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	Oxygen, dissolved (% satur-ation) (00301)
					June 1993						
HC–7	400513099222107	0.5	06-02-93	1201	1945.3	792	8.1	20.5	707	6.1	74
		1.0		1202		792	8.2	20.5	707	5.9	71
		2.0		1203		789	8.2	20.5	707	5.7	69
		2.5		1204		789	8.2	20.5	707	5.6	68
HC–4	400153099180804	.5	06-03-93	1301	1945.3	632	8.2	18.0	705	7.8	89
		1.0		1302		633	8.2	18.0	705	7.4	86
		2.0		1303		633	8.2	18.0	705	7.4	86
		3.0		1304		634	8.2	18.0	705	7.4	85
		4.0		1305		635	8.2	18.0	705	7.4	85
HC–2	400413099125902	.5	06-03-93	1100	1945.3	637	8.1	18.0	705	7.8	89
		1.0		1101		638	8.1	18.0	705	7.7	88
		2.0		1102		637	8.1	18.0	705	7.6	87
		3.0		1103		639	8.1	18.0	705	7.6	87
		4.0		1104		639	8.1	18.0	705	7.5	86
		5.0		1105		634	8.1	18.0	705	7.5	86
		6.0		1106		634	8.1	18.0	705	7.4	85
		7.0		1107		634	8.1	18.0	705	6.8	78
		8.0		1108		637	8.0	17.5	705	6.5	74
		9.0		1109		637	8.0	17.5	705	6.0	68
		10.0		1110		635	8.0	17.0	705	5.8	66
		11.0		1111		635	7.9	17.0	705	5.5	61
		12.0		1112		635	7.9	16.5	705	5.1	57
		13.0		1113		634	7.8	15.5	705	3.6	40
		14.0		1114		636	7.6	15.0	705	1.9	20
		15.0		1115		636	7.6	14.5	705	.9	10

Table 11. Vertical specific-conductance, pH, water-temperature, and dissolved-oxygen profiles from Harlan County Reservoir, Nebraska, June and July 1993—Continued

Down-stream order and map reference number (fig. 5)	U.S. Geological Survey Identification number	Sampling depth (meters) (00098)	Date (month-day-year)	Time (24-hour)	Reservoir elevation above sea level[1] (feet) (72020)	Specific conduct-ance (µS/cm) (00095)	Field pH (units) (00400)	Temp-erature, water (°C) (00010)	Baro-metric pressure (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	Oxygen, dissolved (% satur-ation) (00301)
					July 1993						
HC–7	400513099222107	0.1	07-20-93	1155	1948.2	511	7.7	25.0	711	4.1	54
		1.0		1157		507	7.6	25.0	711	3.9	51
		2.0		1201		490	7.6	24.5	711	3.8	49
		3.0		1204		491	7.6	24.5	711	3.7	47
HC–4	400153099180804	.1	07-21-93	1020	1948.3	612	8.3	25.0	708	7.4	97
		1.0		1027		613	8.4	25.0	708	7.4	97
		2.0		1033		613	8.4	25.0	708	7.4	96
		3.0		1039		615	8.4	25.0	708	7.3	95
		4.0		1047		615	8.4	24.5	708	7.2	94
		5.0		1053		614	8.4	24.5	708	6.9	90
HC–2	400413099125902	.1	07-21-93	1517	1948.4	623	8.4	24.0	708	6.6	84
		1.0		1521		622	8.4	24.0	708	6.5	83
		2.0		1525	6	623	8.4	24.0	708	6.5	83
		3.0		1535		624	8.4	24.0	708	6.4	83
		4.0		1537		622	8.4	24.0	708	6.4	82
		5.0		1541		625	8.4	24.0	708	6.1	78
		6.0		1544		625	8.4	24.0	708	6.0	77
		7.0		1548		627	8.4	24.0	708	5.9	76
		8.0		1553		625	8.4	24.0	708	5.8	74
		9.0		1555		623	8.4	24.0	708	5.8	74
		10.0		1558		622	8.4	23.5	708	5.7	73
		11.0		1602		622	8.4	23.5	708	5.6	72
		12.0		1605		622	8.3	23.5	708	5.4	69
		13.0		1609		623	8.3	23.5	708	5.3	68
		14.0		1612		623	8.2	23.5	708	4.2	54
		15.0		1617		623	8.2	23.5	708	3.9	50

[1]Reservoir water-surface elevation as measured at dam.