

Little Cedar Lake at West Bend, Wisconsin, Water-Quality Data Summary, 1997-99

This summary covers the period 1997 through 1999, which is the period of water-quality monitoring of Little Cedar Lake by the U.S. Geological Survey (USGS). All data collected during the three-year period are tabled and most are illustrated in graphs. Most of these data have been published in the USGS annual lake data reports, "Water-Quality and Lake-Stage Data for Wisconsin Lakes, Water Years 1997-99".

In reviewing the data, it may be helpful to refer to the methods and explanations of physical and chemical characteristics sections in one of the USGS annual lake data reports "Water-Quality and Lake-Stage Data for Wisconsin Lakes" and to Shaw and others (1994) "Understanding Lake Data."

Lake description and sampling locations:

Little Cedar Lake is classified as a drainage lake, with one main inlet and an outlet (Cedar River). The average depth of the lake is 4 meters; the surface area is 246 acres (0.38 square miles), and the lake's watershed area is 13.2 square miles. Two sites in the lake were sampled. The primary sampling site is located at the deepest point in the lake's southern basin at a depth of about 17 meters. An additional sampling site is located in the lake's northern basin, where the depth is about 8 meters. Lake stage (water level) was monitored near the outlet at the south end of the lake. The locations of the monitoring sites are shown in Figure 1.

Hydrologic conditions during 1997- 99 water years:

Annual variability in lake condition often reflects variability in climatic and hydrologic conditions.

<u>Hydrologic or climatic parameter</u>	<u>Year</u>		
	<u>1997</u>	<u>1998</u>	<u>1999</u>
Temperature, departure from normal (° Celsius):			
December through March	0.85	7.1	3.9
April through May	-3.95	3	2.2
June through August	-1.6	0.7	1.6
Precipitation relative to normal (percentage):	101	101	123
Water year (Oct.-Sept.)			
Watershed runoff relative to normal (percentage):	120 - 140	100 - 120	120-140

Air temperature data are from National Oceanic and Atmospheric Administration "Climatological Data--Wisconsin". Precipitation data are from Pamela Naber-Knox, UW-Extension, Geological and Natural History Survey (written commun., 2000). Watershed runoff data are from Holmstrom and others, 1997 - 99, "Water Resources Data--Wisconsin".

Lake Data:

The following summarizes some highlights of data given in the tables and shown in the figures:

Lake-stage fluctuations:

Lake stages were measured by the USGS on most sampling dates. During the 1997-99 period, observed stages ranged from 8.19 feet on Feb. 10, 1999 to 9.23 feet on July 22, 1999. As is shown in figure 2 range of stage fluctuation small, but common for drainage lakes of this type. Stage values are listed in the tables on the top of Figures 3a-c and 4a-c.

Lake-depth profiles:

Vertical profiles of water temperature, dissolved oxygen, pH, and specific conductance are typical of those for a thermally stratified lake. These profiles, which were measured over the deepest point in the southern basin of the lake at the south sampling site, are listed in Table 1 and shown in figures 3a-c. Profiles for the sampling site in the northern basin of the lake are listed in Table 2 and shown in figures 4a-c. During the February through August sampling period, complete water-column mixing was observed on April or May sampling dates at spring turnover. The lake became thermally stratified through the summer. Typically, by August water in the lower 9 meters of the southern basin was anoxic. At the sampling site in the northern basin water in the lower 1 meter was anoxic by mid June, and by August water in the lower 2 meters was anoxic. The pH, which ranged between 7.4 and 8.4, is common for southeastern Wisconsin lakes and poses no problems for aquatic life.

Chemical constituents:

Analyses of water samples collected in April or May during spring turnover for selected chemical constituents for chemical characterization of the lake are shown in figures 3a-c. In 1997 and 1998, samples collected at near-surface and near-bottom show similar constituent concentrations, as would be expected under mixed water column conditions. Sampling from near-bottom was discontinued in 1999. The constituent values for color, chlorophyll a, chloride, calcium, magnesium, pH, alkalinity, total nitrogen, and total phosphorus are within regional values for this area as described by Lillie and Mason in "Limnological Characteristics of Wisconsin Lakes," 1983, Technical Bulletin No. 138, Department of Natural Resources. There is a trend of increasing concentrations of chloride, which is shown in figure 5. Data for 1963 and 1968 (obtained from Wisconsin Department of Natural Resources) are included.

These data show an approximate ten-fold increase over the approximately 40-year period. Increasing chloride concentration is common to many southeastern Wisconsin lakes. Road salting is generally believed to be the main cause of this trend.

The ratio of dissolved nitrogen to dissolved phosphorus (N:P) averaged 50:1, based on the surface concentrations in April at spring turnover during 1997-99. In July 1999, the ratios for the south and north sampling sites were 3.7:1 and 3.2:1 respectively. Ratios greater than 15:1 indicate algal growth is limited by available phosphorus rather than by available nitrogen. Ratios less than 10:1 indicate nitrogen limited conditions, which favor blue-green algae. Although the N:P ratio in late summer suggests nitrogen limited conditions, there is little likelihood of significant algal blooms because little dissolved phosphorus is available.

Three common measures of water quality used as indices are concentrations of near-surface total phosphorus and chlorophyll *a* concentrations, and Secchi depth. At the south sampling site, total phosphorus concentrations ranged from 0.007 mg/L on June 11, 1997 to 0.019 mg/L on Feb. 19, 1998 and Aug. 18, 1999; chlorophyll *a* ranged from 0.9 µg/L on June 11, 1997 to 9.0 µg/L on Aug. 18, 1999; and Secchi depth ranged from 1.6 m on Aug. 18, 1999 to 8.4 m on Apr. 21, 1998. At the northern sampling site in the northern basin, total phosphorus concentrations ranged from 0.006 mg/L on June 11, 1997 to 0.040 mg/L on Aug 19, 1999, chlorophyll *a* ranged from 1.4 µg/L on June 11, 1997 to 43 µg/L on Aug. 18, 1999. Secchi depths ranged from 1.1 m on Aug. 18, 1999 to 6.0 m on June 11, 1999.

Surface total phosphorus and chlorophyll *a* concentrations, and Secchi depths for the 1997-99 period are shown on figure 6. With just three years of data it is not possible to assess whether there is a trend of improving or deteriorating water quality at either sampling site. Unusually large phosphorus and chlorophyll *a* concentrations and small Secchi depth were observed at both sites on Aug. 18, 1999. These unusual conditions may be the result of greater than usual loading of nutrients from the watershed from the greater than normal rainfall (about 22 inches of rainfall at West Bend during May through August 1999) during the preceding four months.

Total phosphorus concentration 0.5 meters above the lake bottom at the south site for the 1997-99 period ranged from 0.014 mg/L on May 1, 1997 to 0.432 mg/L on Aug. 26, 1997. At the north site concentration ranged from 0.020 mg/L on Apr. 21, 1998 to 0.505 mg/L on Aug. 26, 1997. These phosphorus concentrations for near-bottom waters are indicative of moderate to high phosphorus release from the bottom sediments.

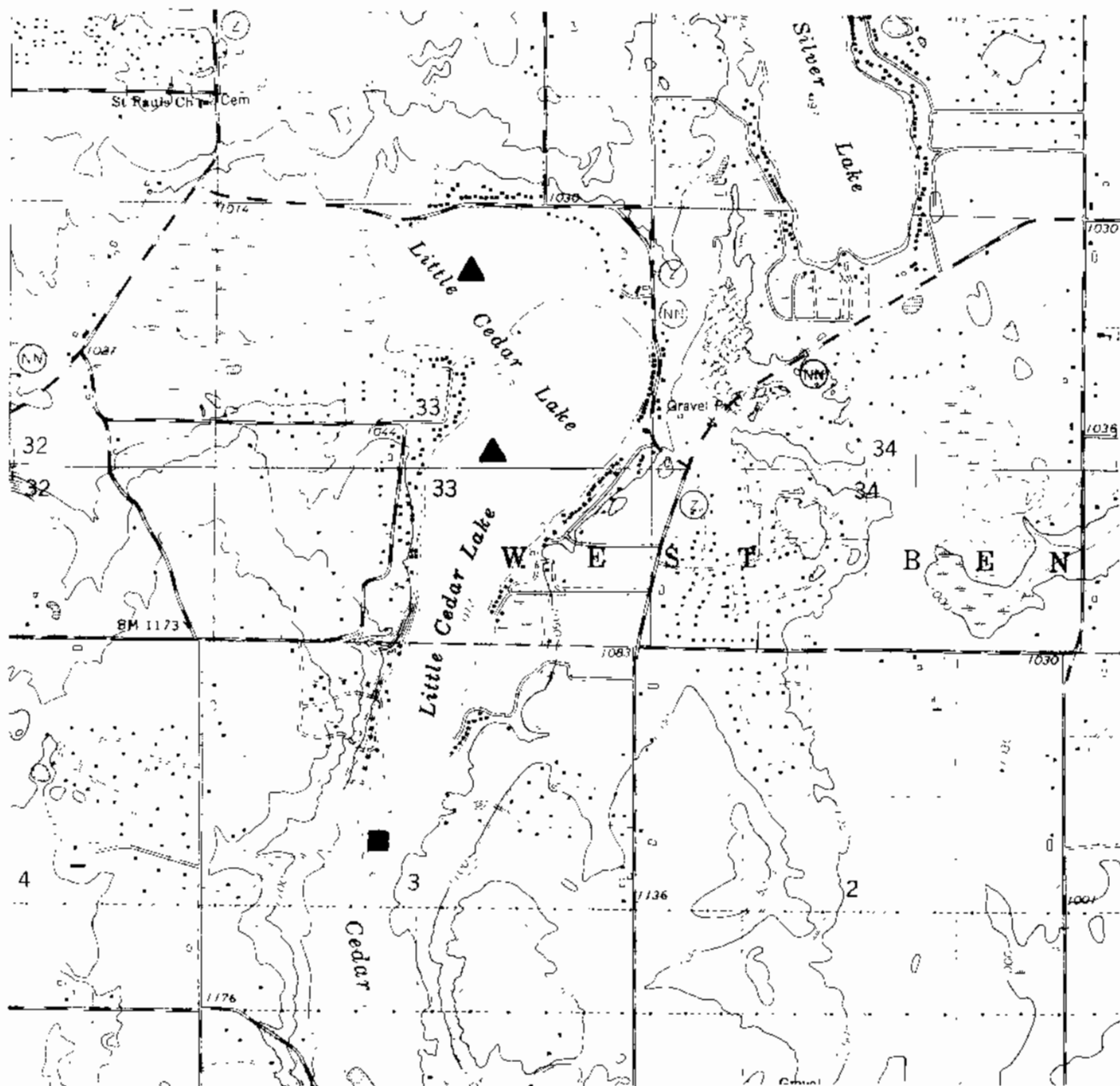
Lake condition:Water-quality index:

Lillie and Mason (1983) classified all Wisconsin lakes using a random data set collected in the summer (July and August). The index, shown on page 14 of "Water-Quality and Lake-Stage data for Wisconsin Lakes, Water Year 2001," (or previous issues of that annual data report) is based on surface total-phosphorus and chlorophyll a concentrations, and Secchi depths. According to the index, surface total-phosphorus concentrations indicate "good" water quality and chlorophyll a concentrations and Secchi depths indicate "very good" water quality in the south basin of Little Cedar Lake. In the north basin, phosphorus concentrations and Secchi depths indicate "good" water quality, whereas, chlorophyll a concentrations indicate "fair" water quality.

Lillie and Mason (1983) also provided a means of comparing the condition of Little Cedar Lake with other lakes in southeastern Wisconsin. The comparison in Table 3 shows the percentage distribution of southeastern Wisconsin lakes within each condition group and the relative position of each of the basins of Little Cedar Lake.

Trophic status:

Another means of assessing the nutrient, or trophic, status of a lake is to use Carlson's Trophic State Index (TSI). The variation in the TSI for both the southern and northern basins of the lake for 1997-99 are graphical shown in figure 7. The data show the south basin of the lake to be generally mesotrophic, or a lake with low-to-moderate nutrient levels with respect to phosphorus. The lake's south basin is lower mesotrophic to upper oligotrophic with respect to chlorophyll a and Secchi depth. The north basin of the lake was upper mesotrophic to lower eutrophic with respect to phosphorus and ranged between oligotrophic to eutrophic with respect to chlorophyll a and Secchi depth.



EXPLANATION

- ▲ Water-quality monitoring site
- Lake-stage monitoring site

Figure 1. Locations of water-quality and lake-stage monitoring sites on Little Cedar Lake near West Bend, Wisconsin.

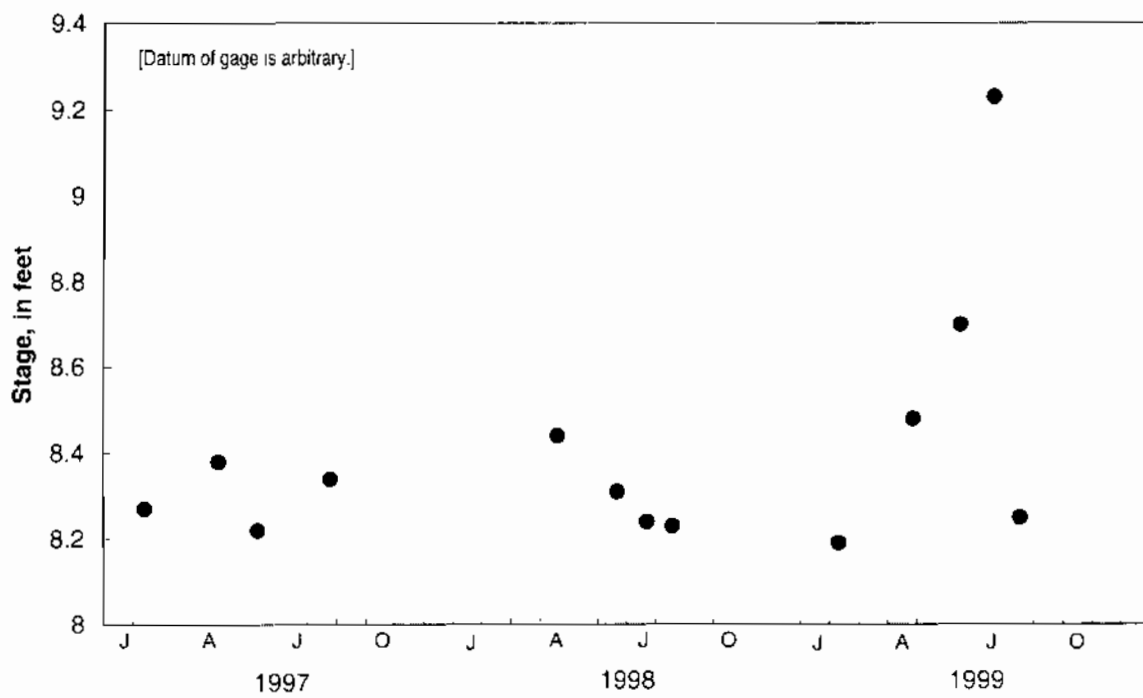


Figure 2. Observed stages (water levels) of Little Cedar Lake near West Bend, Wisconsin, 1997-99.

LOCATION --Lat 43°22'49", long 88°13'45", in NW 1/4 SE 1/4 sec.33, T 11 N., R.19 E., Washington County, Hydrologic Unit 04040003, 2.8 mi southwest of West Bend.

PERIOD OF RECORD.--February to August 1997

REMARKS.--Lake sampled in southern basin at deep hole. Lake ice-covered during February measurements. Water-quality analyses done by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, FEBRUARY 13 TO AUGUST 26, 1997
(Milligrams per liter unless otherwise indicated)

	Feb. 13		May 01		June 11		July 22		Aug 26	
Lake stage (ft)	8.27		8.38		8.22				8.34	
Secchi-depth (meters)			5.0		7.9		4.9		3.9	
Chlorophyll a, phytoplankton (µg/L)			1.5		0.9		3.3		6.6	
Depth of sample (m)	0.5	1.6	0.5	1.4	0.5	1.5	0.5	1.4	0.5	1.7
Water temperature (°C)	1.0	3.5	9.5	6.5	20.5	7.5	24.5	8.5	20.5	9.0
Specific conductance (µS/cm)	510	>60	480	481	498	508	485	520	484	535
pH (units)	8.3	7.5	8.3	8.1	8.4	7.5	8.3	7.5	8.3	7.4
Dissolved oxygen	11.5	0.0	11.4	10.3	10.3	0.0	8.9	0.0	8.5	0.0
Phosphorus, total (as P)	0.013	0.157	0.020	0.014	0.007	0.183	0.010	0.339	0.010	0.432
Phosphorus, ortho, dissolved (as P)	---	---	0.002	0.003	---	---	---	---	---	---
Nitrogen, NO ₂ + NO ₃ , diss (as N)	---	---	0.09	0.12	---	---	---	---	---	---
Nitrogen, ammonia, dissolved (as N)	---	---	0.05	0.10	---	---	---	---	---	---
Nitrogen, amm + org, total (as N)	---	---	0.60	0.50	---	---	---	---	---	---
Nitrogen, total (as N)	---	---	0.69	0.62	---	---	---	---	---	---
Color (Pt Co. scale)	---	---	10	5	---	---	---	---	---	---
Turbidity (NTU)	---	---	0.70	0.50	---	---	---	---	---	---
Hardness, as CaCO ₃	---	---	220	220	---	---	---	---	---	---
Calcium, dissolved (Ca)	---	---	38	38	---	---	---	---	---	---
Magnesium, dissolved (Mg)	---	---	31	31	---	---	---	---	---	---
Sodium, dissolved (Na)	---	---	17	17	---	---	---	---	---	---
Potassium, dissolved (K)	---	---	2	2	---	---	---	---	---	---
Alkalinity, as CaCO ₃	---	---	190	200	---	---	---	---	---	---
Sulfate, dissolved (SO ₄)	---	---	11	11	---	---	---	---	---	---
Chloride, dissolved (Cl)	---	---	37	37	---	---	---	---	---	---
Silica, dissolved (SiO ₂)	---	---	0.4	1.0	---	---	---	---	---	---
Solids, dissolved, at 180°C	---	---	274	276	---	---	---	---	---	---
Iron, dissolved (Fe) µg/L	---	---	<10	<10	---	---	---	---	---	---
Manganese, dissolved (Mn) µg/L	---	---	2	5	---	---	---	---	---	---

2-13-97

5-1-97

6-11-97

7-22-97

8-26-97

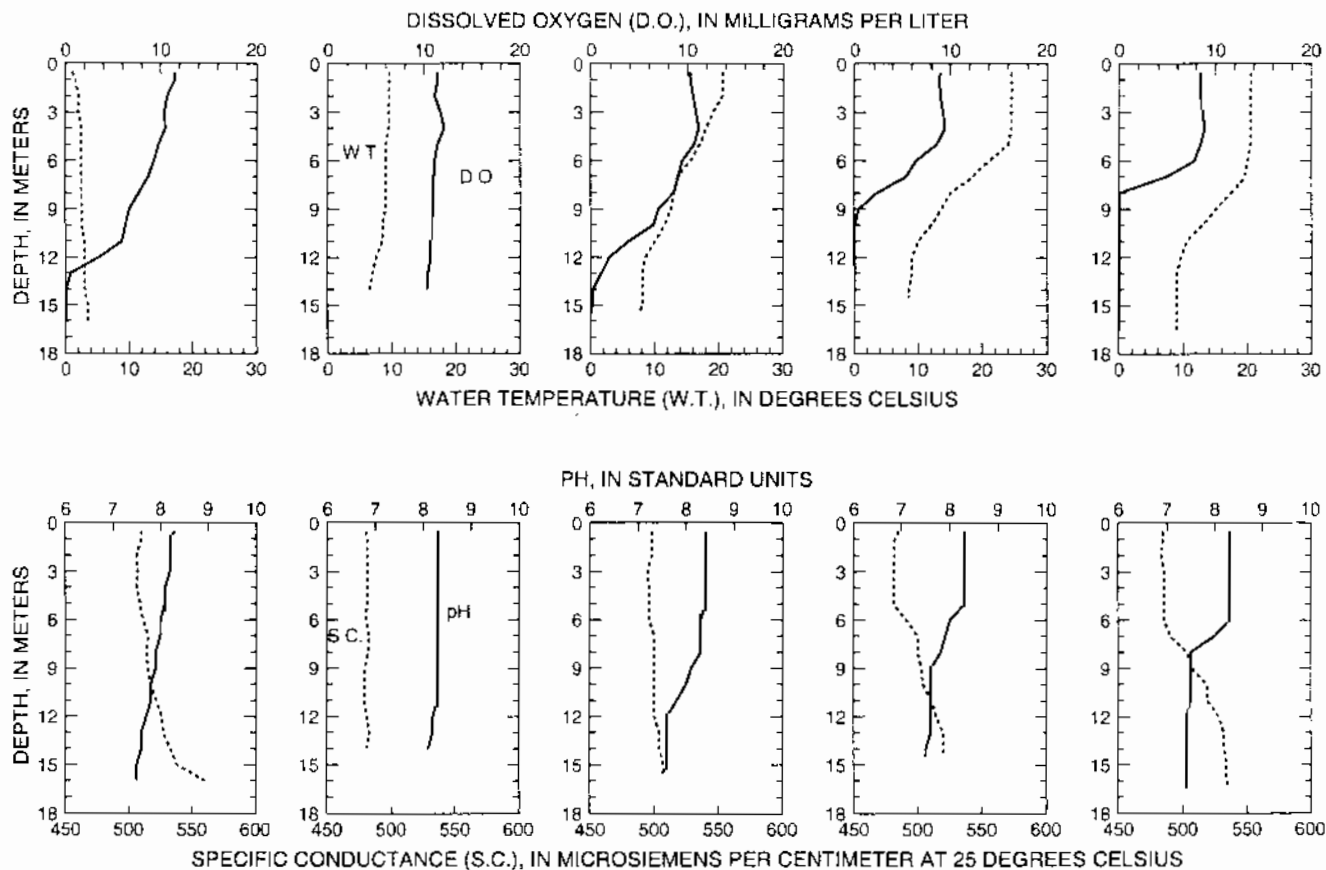


Figure 3a. Water-quality data and depth profiles for Little Cedar Lake, South Site, near West Bend, Wisconsin, 1997.

LOCATION.--Lat 43°22'49", long 88°13'45", in NW 1/4 SE 1/4 sec.33, T.11 N., R.19 E., Washington County. Hydrologic Unit 04040003, 2.8 mi southwest of West Bend.

PERIOD OF RECORD.--February 1997 to current year.

REMARKS.--Lake sampled in southern basin at deep hole. Water-quality analyses done by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, FEBRUARY 19 TO AUGUST 20, 1998
(Milligrams per liter unless otherwise indicated)

	Feb. 19		Apr. 21		June 23		July 24		Aug. 20	
Lake stage (ft)	---		8.44		8.31		8.24		8.23	
Secchi-depth (meters)	---		8.4		6.4		2.8		2.9	
Chlorophyll a, phytoplankton (µg/L)	---		1.62		1.44		2.80		4.20	
Depth of sample (m)	0.5	16.0	0.5	16.5	0.5	15.5	0.5	16.0	0.5	16.5
Water temperature (°C)	3.0	2.7	10.9	8.1	26.5	8.6	25.2	8.8	23.6	8.8
Specific conductance (µS/cm)	487	532	500	499	492	510	466	516	463	536
pH (units)	8.0	7.4	8.1	7.8	8.2	7.5	8.3	7.5	8.4	7.4
Dissolved oxygen	10.4	0.0	11.1	6.8	9.2	0.1	9.1	0.2	8.3	0.3
Phosphorus, total (as P)	0.019	0.225	0.014	0.069	0.012	0.269	0.016	0.305	0.016	0.378
Phosphorus, ortho, dissolved (as P)	---	---	0.007	0.059	---	---	---	---	---	---
Nitrogen, NO ₂ + NO ₃ , diss. (as N)	---	---	0.094	0.059	---	---	---	---	---	---
Nitrogen, ammonia, dissolved (as N)	---	---	0.091	0.262	---	---	---	---	---	---
Nitrogen, amm. + org., total (as N)	---	---	0.44	0.68	---	---	---	---	---	---
Nitrogen, total (as N)	---	---	0.53	0.74	---	---	---	---	---	---
Color (Pt-Co. scale)	---	---	10	15	---	---	---	---	---	---
Turbidity (NTU)	---	---	0.70	0.90	---	---	---	---	---	---
Hardness, as CaCO ₃	---	---	220	220	---	---	---	---	---	---
Calcium, dissolved (Ca)	---	---	36	37	---	---	---	---	---	---
Magnesium, dissolved (Mg)	---	---	31	31	---	---	---	---	---	---
Sodium, dissolved (Na)	---	---	18	18	---	---	---	---	---	---
Potassium, dissolved (K)	---	---	1.6	1.8	---	---	---	---	---	---
Alkalinity, as CaCO ₃	---	---	192	194	---	---	---	---	---	---
Sulfate, dissolved (SO ₄)	---	---	12	5.6	---	---	---	---	---	---
Chloride, dissolved (Cl)	---	---	38	38	---	---	---	---	---	---
Silica, dissolved (SiO ₂)	---	---	0.7	2.3	---	---	---	---	---	---
Solids, dissolved, at 180°C	---	---	286	292	---	---	---	---	---	---
Iron, dissolved (Fe) µg/L	---	---	<10	10	---	---	---	---	---	---
Manganese, dissolved (Mn) µg/L	---	---	5.3	52	---	---	---	---	---	---

2-19-98

4-21-98

6-23-98

7-24-98

8-20-98

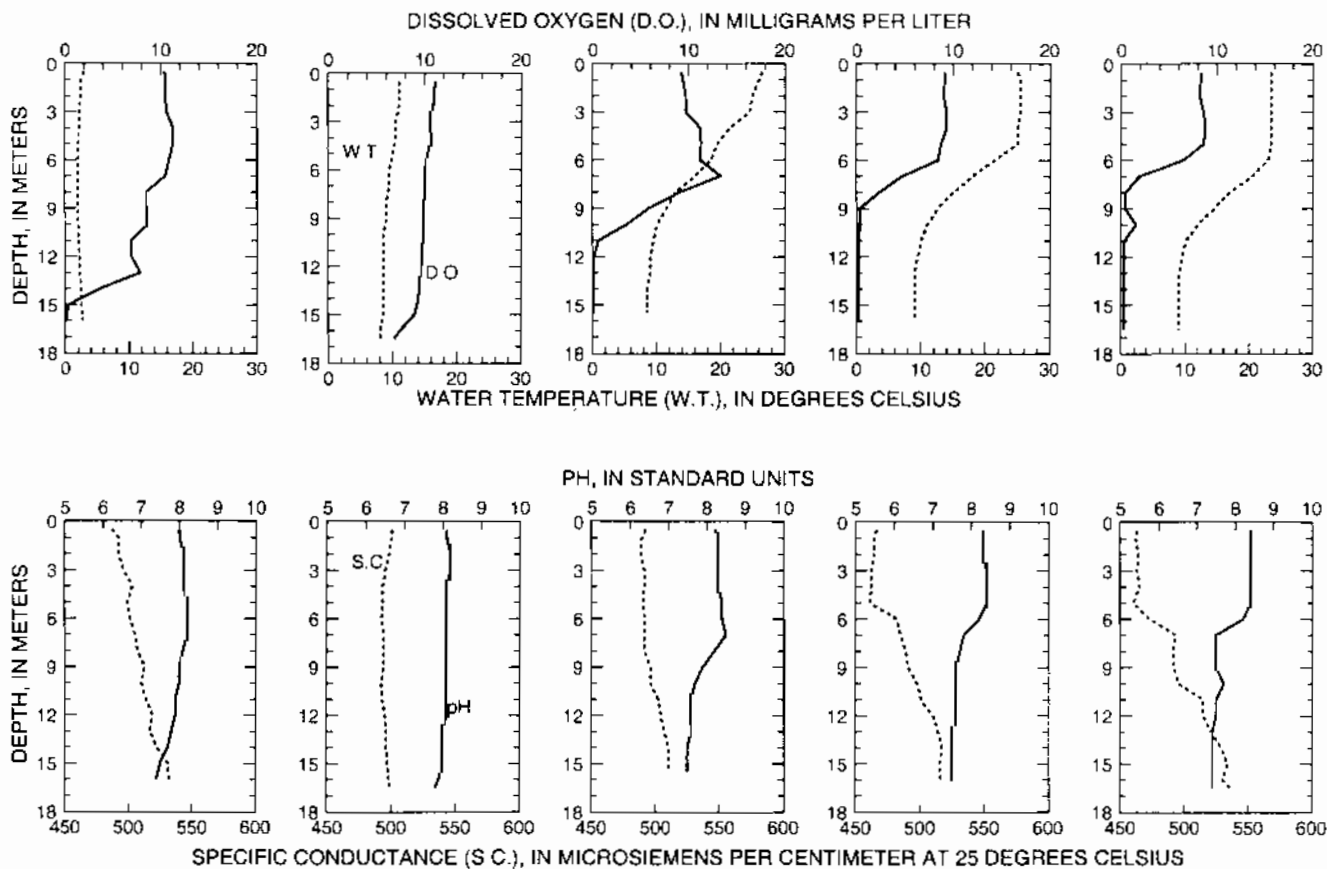


Figure 3b. Water-quality data and depth profiles for Little Cedar Lake, South Site, near West Bend, Wisconsin, 1998.

432249088134500 LITTLE CEDAR LAKE, SOUTH SITE, NEAR WEST BEND, WI

LOCATION.--Lat 43°22'49", long 88°13'45", in NW 1/4 SE 1/4 sec 33, T.11 N., R.19 E., Washington County, Hydrologic Unit 04040003, 2.8 mi southwest of West Bend.

PERIOD OF RECORD.--February 1997 to current year.

REMARKS.--Lake sampled in southern basin at deep hole. Lake ice-covered during February sampling. Water-quality analyses done by Wisconsin State Laboratory of Hygiene

WATER-QUALITY DATA, FEBRUARY 10 TO AUGUST 18, 1999
(Milligrams per liter unless otherwise indicated)

	Feb-10	Apr-29	Jun-17	Jul-22	Aug-18
Lake stage (ft)	8.19	8.48	8.70	9.23	8.25
Secchi depth (m)	---	4.5	4.1	4.1	1.6
Chlorophyll a, phytoplankton (µg/L)	---	4.71	1.82	1.92	9.00
Depth of sample (m)	0.5 15.5	0.5 16.0	0.5 17.0	0.5 17.0	0.5 8.0 16.0
Water temperature (°C)	2.4 3.6	10.8 8.3	21.9 8.5	25.5 8.6	22.7 14.0 8.8
Specific conductance (µS/cm)	435 527	498 504	464 514	452 510	468 508 532
pH (units)	7.9 7.6	8.2 8.0	8.2 7.4	8.2 7.5	8.2 7.4 7.4
Dissolved oxygen (mg/L)	15.2 7.8	11.8 9.0	9.2 0.6	8.5 0.0	8.7 0.0 0.0
Phosphorus, total (as P)	0.009 0.125	0.017 0.038	0.011 0.168	0.010 0.251	0.019 0.026 0.249
Phosphorus, ortho, dissolved (as P)	---	0.003	---	0.005	---
Nitrogen, NO ₂ + NO ₃ , diss. (as N)	---	0.071	---	0.012	---
Nitrogen, ammonia, dissolved (as N)	---	0.073	---	<0.013	---
Nitrogen, amm. + org., total (as N)	---	0.67	---	0.52	---
Nitrogen, total (as N)	---	0.74	---	0.53	---
Color (Pt-Co scale)	---	10	---	---	---
Turbidity (NTU)	---	6.6	---	---	---
Hardness, (as CaCO ₃)	---	210	---	---	---
Calcium, dissolved (Ca)	---	34	---	---	---
Magnesium, dissolved (Mg)	---	31	---	---	---
Sodium, dissolved (Na)	---	18	---	---	---
Potassium, dissolved (K)	---	1.7	---	---	---
Alkalinity, (as CaCO ₃)	---	185	---	---	---
Sulfate, dissolved (SO ₄)	---	20	---	---	---
Chloride, dissolved (Cl)	---	41	---	---	---
Silica, dissolved (SiO ₂)	---	0.3	---	---	---
Solids, dissolved at 180°C	---	286	---	---	---
Iron, dissolved (Fe) µg/L	---	<10	---	---	---
Manganese, dissolved (Mn) µg/L	---	9.4	---	---	---

2-10-99

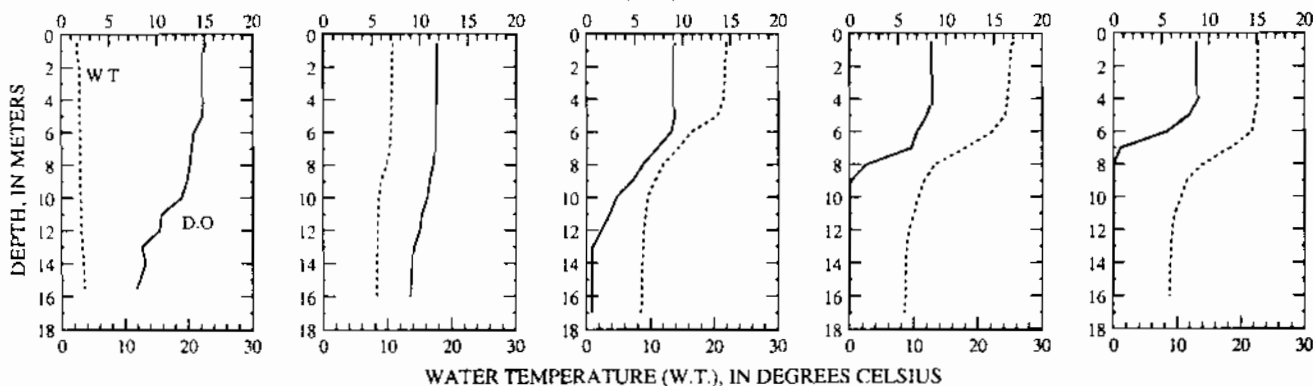
4-29-99

6-17-99

7-22-99

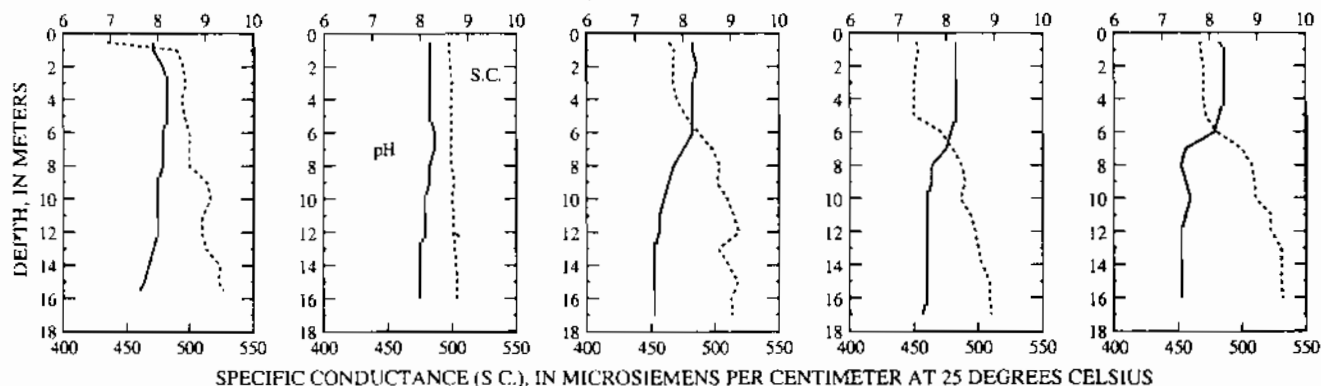
8-18-99

DISSOLVED OXYGEN (D.O.), IN MILLIGRAMS PER LITER



WATER TEMPERATURE (W.T.), IN DEGREES CELSIUS

pH, IN STANDARD UNITS



SPECIFIC CONDUCTANCE (S.C.), IN MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS

Figure 3c. Water-quality data and depth profiles for Little Cedar Lake, South Site, near West Bend, Wisconsin, 1999.

LOCATION --Lat 43°22'55", long 88°13'47", in NW 1/4 NE 1/4 sec 33, T.11 N., R.19 E., Washington County, Hydrologic Unit 04040003, 2.6 mi southwest of West Bend.

PERIOD OF RECORD--February to August 1997

REMARKS--Lake sampled at center of northern basin at deep hole. Lake ice-covered during February measurements. Water-quality analyses done by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, FEBRUARY 13 TO AUGUST 26, 1997
(Milligrams per liter unless otherwise indicated)

	Feb. 13		May 01		June 11		July 22		Aug. 26	
Lake stage (ft)	8.27		8.38		8.22		8.27		8.34	
Secchi-depth (meters)	---		3.1		6.0		2.7		2.6	
Chlorophyll a, phytoplankton (µg/L)	-		5.3		1.4		8.1		9.7	
Depth of sample (m)	0.5	7.5	0.5	7.0	0.5	7.5	0.5	7.5	0.5	7.5
Water temperature (°C)	1.5	4.5	10.5	10.0	21.5	14.0	24.0	16.0	20.0	17.0
Specific conductance (µS/cm)	514	574	486	487	500	522	491	541	495	561
pH (units)	8.0	7.4	8.4	8.4	8.5	7.6	8.4	7.4	8.3	7.1
Dissolved oxygen	11.2	0.2	11.0	13.4	11.4	0.8	8.6	0.1	8.6	0.0
Phosphorus, total (as P)	0.010	0.128	0.017	0.036	0.006	0.098	0.019	0.369	0.037	0.505

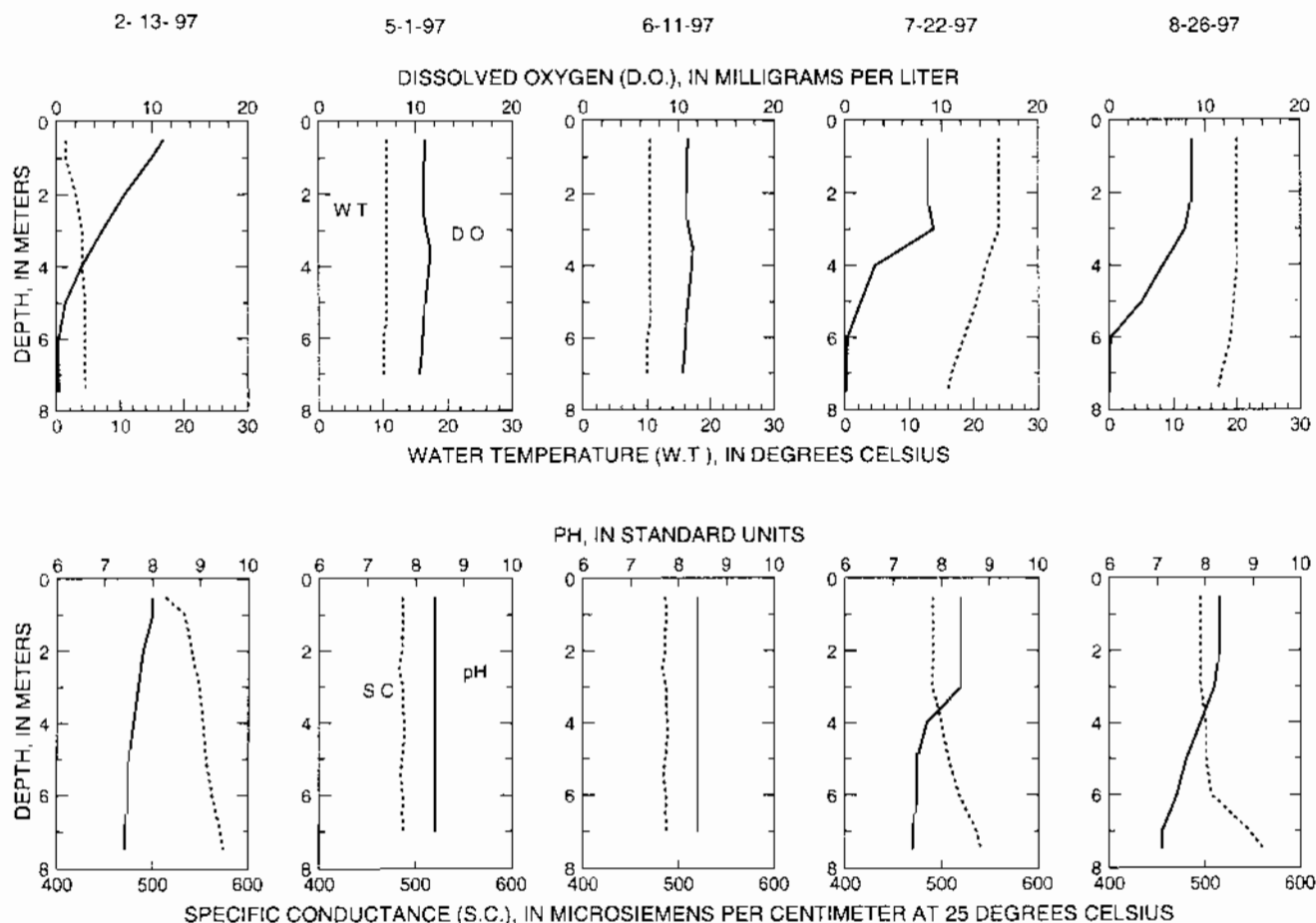


Figure 4a. Water-quality data and depth profiles for Little Cedar Lake, North Site, near West Bend, Wisconsin, 1997.

LOCATION.--Lat 43°22'55", long 88°13'47", in NW 1/4 NE 1/4 sec.33, T.11 N., R.19 E., Washington County, Hydrologic Unit 04040003, 2.6 mi southwest of West Bend.

PERIOD OF RECORD.--February 1997 to current year.

REMARKS.--Lake sampled at center of northern basin at deep hole. Water-quality analyses done by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, FEBRUARY 19 TO AUGUST 20, 1998
(Milligrams per liter unless otherwise indicated)

	Feb. 19		Apr. 21		June 23		July 24		Aug. 20	
Lake stage (ft)	---		8.44		8.31		8.24		8.23	
Secchi depth (meters)	---		1.7		3.1		1.7		2.0	
Chlorophyll a, phytoplankton ($\mu\text{g/L}$)	---		34.1		3.89		13.9		11.8	
Depth of sample (m)	0.5	7.0	0.5	7.5	0.5	7.5	0.5	7.0	0.5	6.5
Water temperature ($^{\circ}\text{C}$)	2.1	4.2	11.0	8.1	26.6	16.0	24.2	18.1	23.1	19.0
Specific conductance ($\mu\text{S/cm}$)	503	559	501	506	499	522	481	510	486	537
pH (units)	8.2	7.6	8.5	7.8	8.4	7.5	8.5	7.3	8.0	6.9
Dissolved oxygen	11.2	3.2	13.9	7.0	9.7	0.2	9.2	0.2	7.1	0.5
Phosphorus, total (as P)	0.010	0.043	0.026	0.020	0.012	0.186	0.027	0.144	0.027	0.094

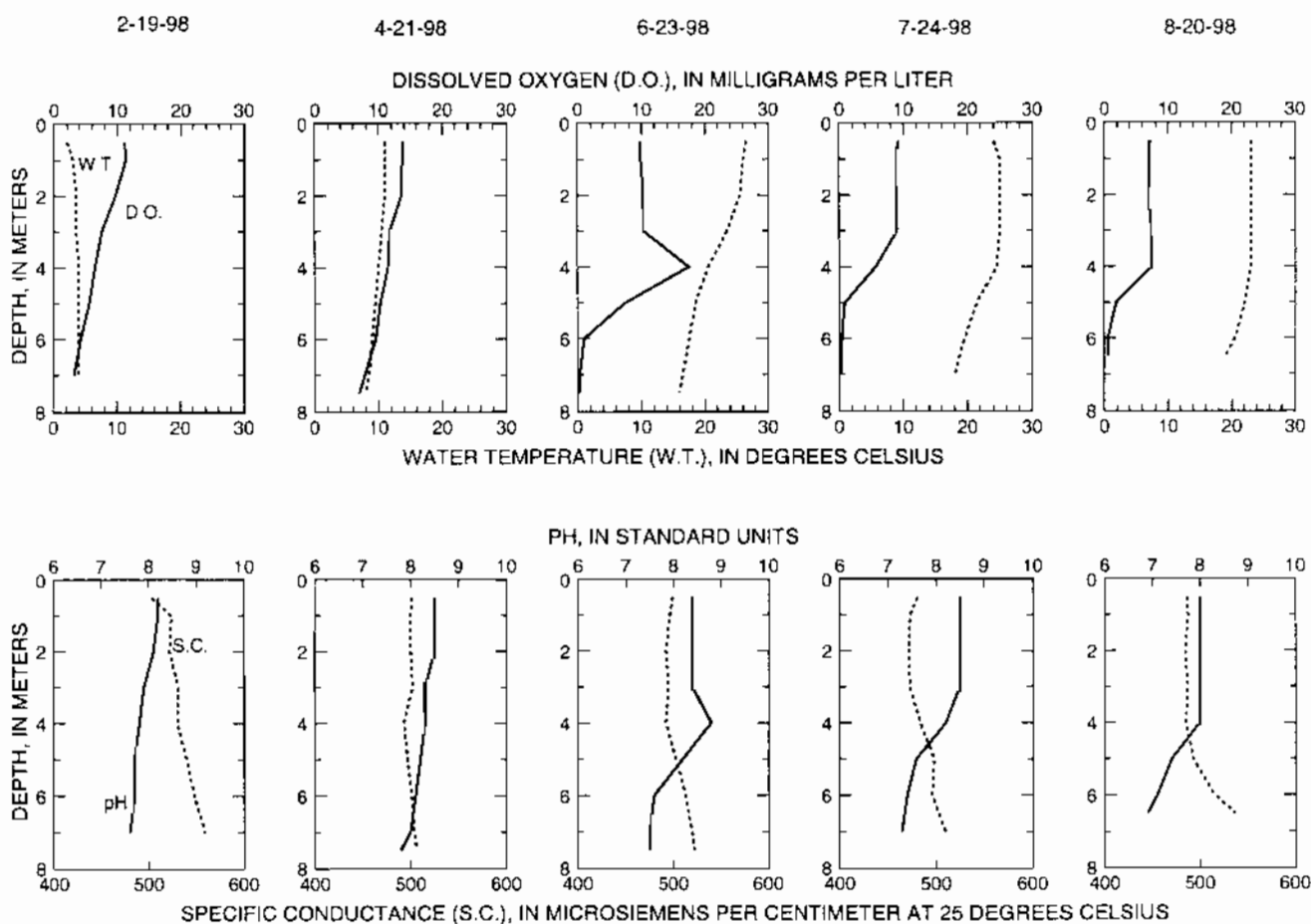


Figure 4b. Water-quality data and depth profiles for Little Cedar Lake, North Site, near West Bend, Wisconsin, 1998.

432255088134700 LITTLE CEDAR LAKE, NORTH SITE, NEAR WEST BEND, WI

LOCATION --Lat 43°22'55", long 88°13'47", in NW 1/4 NE 1/4 sec 33, T.11 N., R. 19 E., Washington County, Hydrologic Unit 04040003, 2.6 mi southwest of West Bend

PERIOD OF RECORD.--February 1997 to current year.

REMARKS.--Lake sampled at center of northern basin at deep hole. Lake ice-covered during February sampling. Water-quality analyses done by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, FEBRUARY 10 TO AUGUST 18, 1999
(Milligrams per liter unless otherwise indicated)

	Feb-10		Apr-29		Jun-17		Jul-22		Aug-18		
Lake stage (ft)	8.19		8.48		8.70		9.23		8.25		
Secchi depth (m)	---		2.0		4.3		2.7		1.1		
Chlorophyll a, phytoplankton (ug/L)	---		7.71		1.49		3.87		43.0		
Depth of sample (m)	0.5	7.0	0.5	7.5	0.5	7.5	0.5	8.0	0.5	6.0	7.5
Water temperature (°C)	3.0	3.6	10.9	7.9	21.1	13.6	25.6	14.1	22.5	17.2	15.3
Specific conductance (uS/cm)	507	551	501	510	482	519	450	521	471	534	551
pH (units)	7.8	7.7	8.4	7.8	8.0	7.4	8.4	7.3	8.6	7.2	7.2
Dissolved oxygen (mg/L)	15.3	9.0	12.4	8.0	7.6	0.5	8.6	0.0	9.3	0.0	0.0
Phosphorus, total (as P)	0.011	0.046	0.024	0.023	0.014	0.101	0.016	0.105	0.040	0.194	0.361
Phosphorus, ortho, dissolved (as P)	---	---	---	---	---	---	0.004	---	---	---	---
Nitrogen, NO ₂ + NO ₃ , diss. (as N)	---	---	---	---	---	---	<0.010	---	---	---	---
Nitrogen, ammonia, dissolved (as N)	---	---	---	---	---	---	0.008	---	---	---	---
Nitrogen, amm. + org., total (as N)	---	---	---	---	---	---	0.6	---	---	---	---

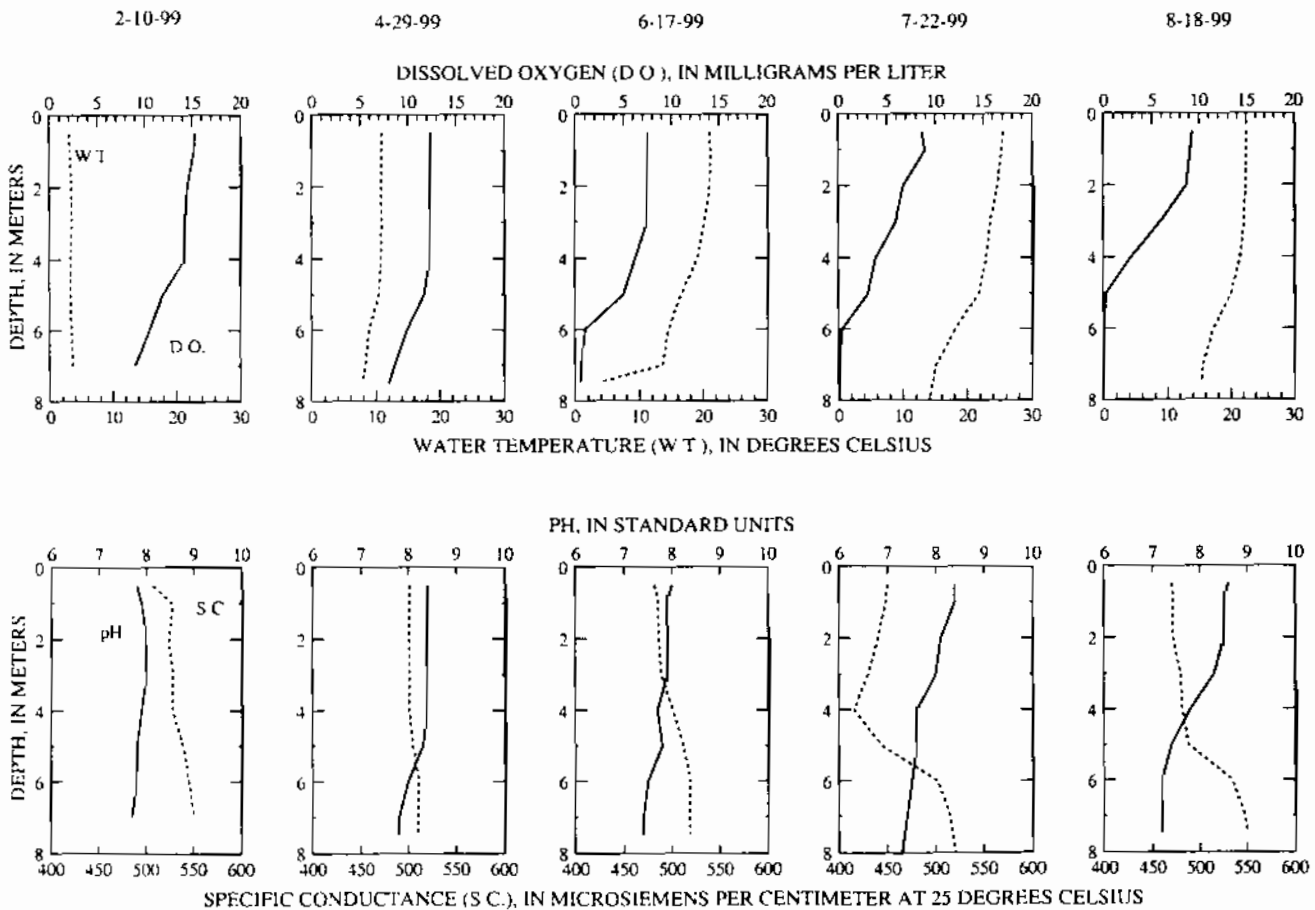


Figure 4c. Water-quality data and depth profiles for Little Cedar Lake, North Site, near West Bend, Wisconsin, 1999.

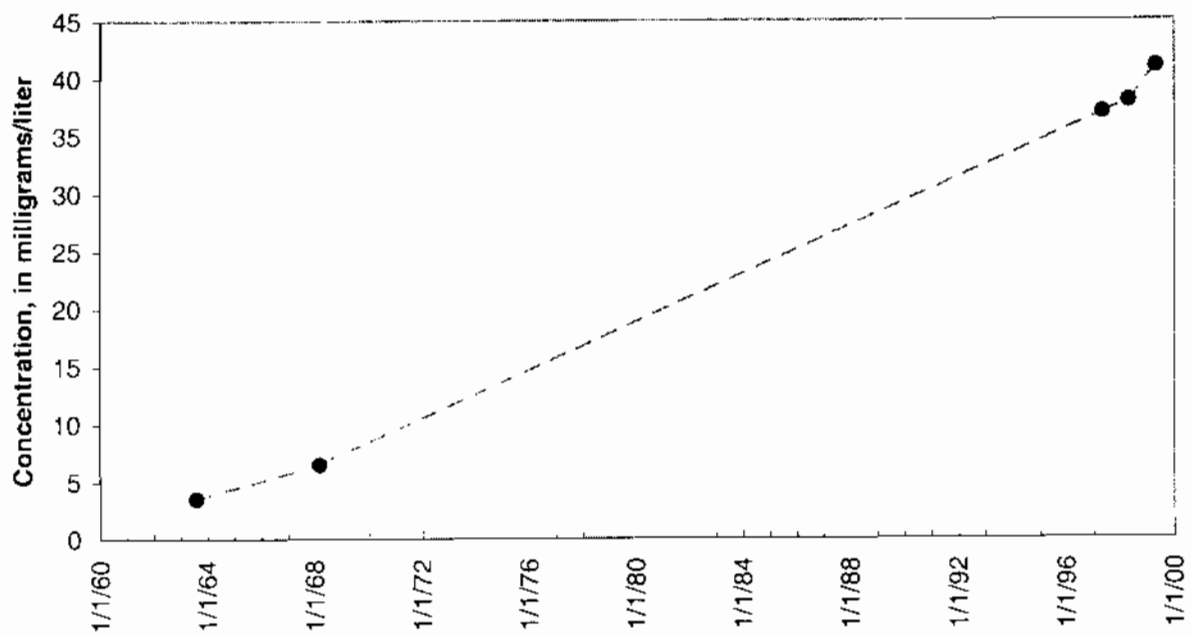


Figure 5. Trend in chloride concentration in Little Cedar Lake near West Bend, Wisconsin, for the period 1963 through 1999.

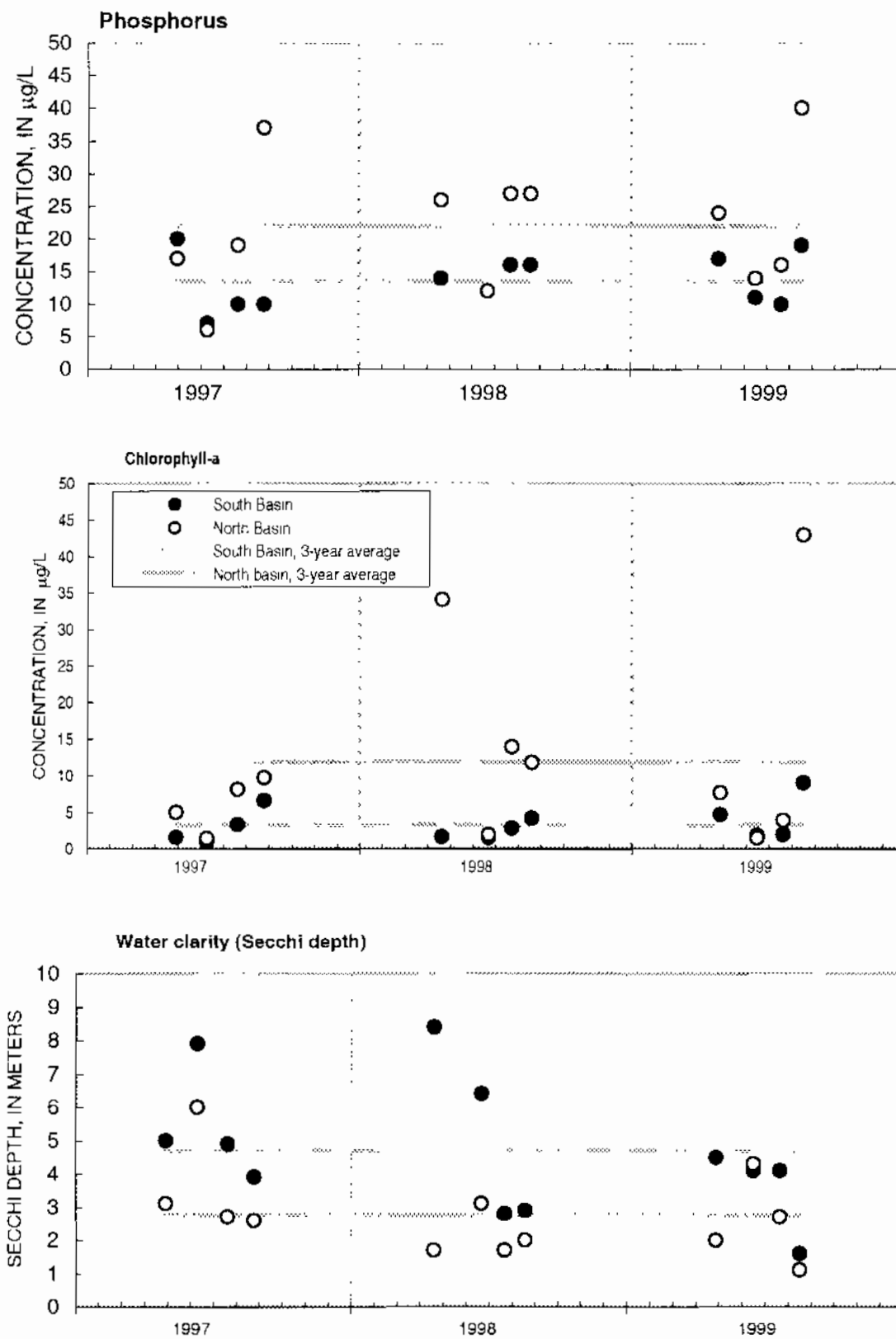


Figure 6 Surface total phosphorus and chlorophyll a concentrations and water clarity for the north and south basins of Little Cedar Lake near West Bend, Wisconsin, 1997-99.

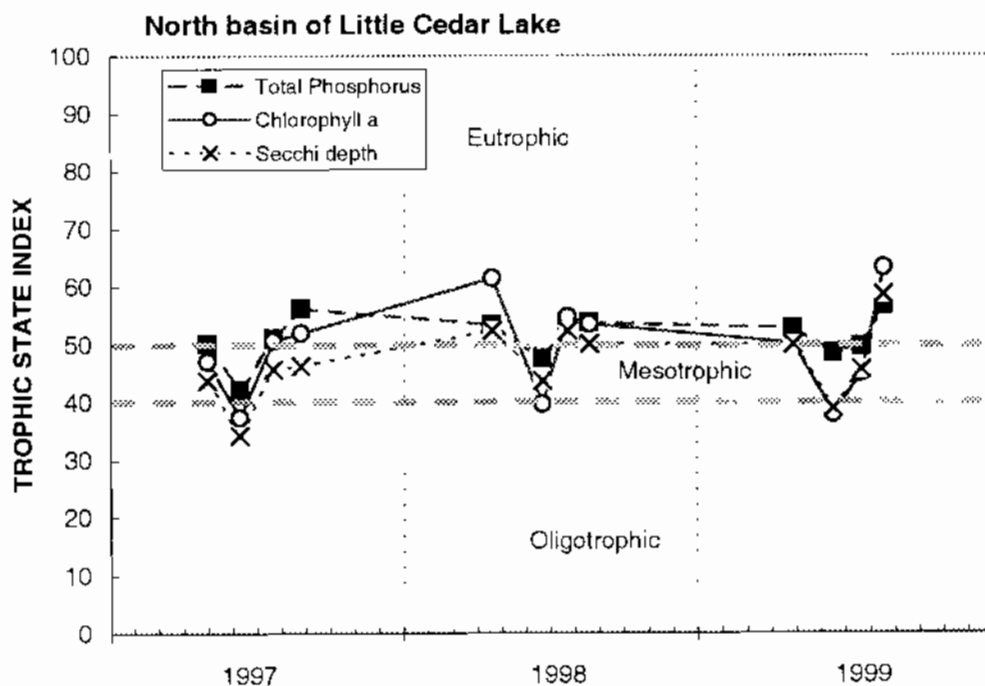
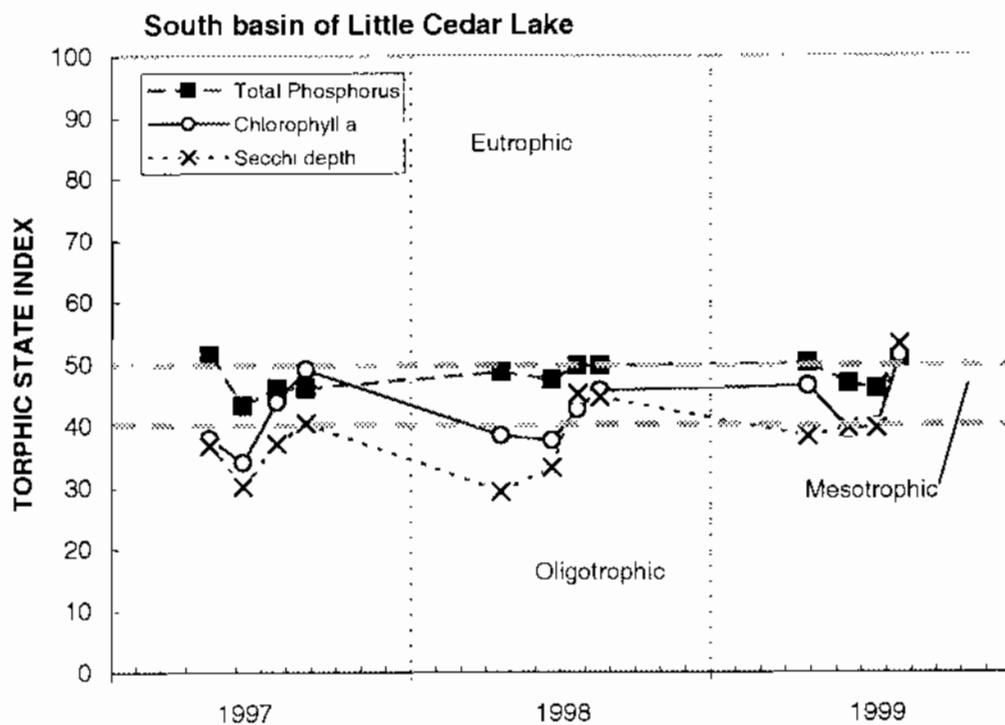


Figure 7. Trophic state indices for south and north basins of Little Cedar Lake near West Bend, Wisconsin, 1997-99.

Table 1. Lake depth profiles of field-measured parameters for South Site, Little Cedar Lake near West Bend, Wisconsin, 1997 through 1999

[°C, degrees Celsius; $\mu\text{S}/\text{cm}$, microsiemens per centimeter; mg/L, milligrams per liter]

Date Time	Depth (meters)	Temperature (°C)	Specific conductance ($\mu\text{S}/\text{cm}$)	pH	Dissolved oxygen (mg/L)
2/13/97 11:19	0.5	1.1	510	8.3	11.5
2/13/97 11:20	1	1.3	510	8.2	11.5
2/13/97 11:21	2	1.9	506	8.2	10.7
2/13/97 11:22	3	2.2	507	8.2	10.4
2/13/97 11:23	4	2.3	506	8.1	10.5
2/13/97 11:24	5	2.4	509	8.1	9.8
2/13/97 11:25	6	2.5	511	8	9.3
2/13/97 11:26	7	2.5	515	8	8.7
2/13/97 11:27	8	2.6	514	7.9	7.7
2/13/97 11:28	9	2.6	515	7.9	6.7
2/13/97 11:29	10	2.7	517	7.8	6.3
2/13/97 11:30	11	2.8	522	7.8	5.9
2/13/97 11:31	12	2.9	526	7.7	3.5
2/13/97 11:32	13	3.1	527	7.6	0.5
2/13/97 11:33	14	3.2	533	7.6	0
2/13/97 11:34	15	3.3	538	7.5	0
2/13/97 11:35	16	3.5	560	7.5	0
5/1/97 11:10	0.5	9.5	480	8.3	11.4
5/1/97 11:26	1	9.4	481	8.3	11.4
5/1/97 11:27	2	9.4	481	8.3	11.1
5/1/97 11:28	3	9.4	481	8.3	11.7
5/1/97 11:29	4	9.3	481	8.3	12.1
5/1/97 11:30	5	9.2	481	8.3	11.4
5/1/97 11:31	6	9.2	480	8.3	11.1
5/1/97 11:32	7	9	483	8.3	11
5/1/97 11:33	8	9	482	8.3	11
5/1/97 11:34	9	8.9	479	8.3	10.8
5/1/97 11:35	10	8.6	479	8.3	10.9
5/1/97 11:36	11	8.4	479	8.3	10.7
5/1/97 11:37	12	7.4	481	8.2	10.7
5/1/97 11:38	13	6.8	483	8.2	10.4
5/1/97 11:39	14	6.6	481	8.1	10.3

Table 1. Lake depth profiles of field-measured parameters for South Site, Little Cedar Lake near West Bend, Wisconsin, 1997 through 1999--continued

[°C, degrees Celsius; $\mu\text{S}/\text{cm}$, microsiemens per centimeter; mg/L, milligrams per liter]

Date Time	Depth (meters)	Temperature (°C)	Specific conductance ($\mu\text{S}/\text{cm}$)	pH	Dissolved oxygen (mg/L)
6/11/97 8:20	0.5	20.5	498	8.4	10.3
6/11/97 8:21	1	20.6	498	8.4	10.3
6/11/97 8:22	2	20.4	498	8.4	10.6
6/11/97 8:23	3	18.9	495	8.4	10.9
6/11/97 8:24	4	18.2	496	8.4	11.2
6/11/97 8:25	5	17.2	496	8.4	10.7
6/11/97 8:26	6	15.5	496	8.3	9.5
6/11/97 8:27	7	13.6	500	8.3	9.1
6/11/97 8:28	8	13.2	500	8.3	8.6
6/11/97 8:29	9	12.6	500	8.1	7
6/11/97 8:30	10	11.6	500	8	6.5
6/11/97 8:31	11	9.8	500	7.8	3.9
6/11/97 8:32	12	8.6	500	7.6	1.9
6/11/97 8:33	13	8.2	504	7.6	1.1
6/11/97 8:34	14	7.9	504	7.6	0.2
6/11/97 8:35	15	7.8	507	7.6	0.1
6/11/97 8:36	15.5	7.7	508	7.5	0
7/22/97 17:15	0.5	24.5	485	8.3	8.9
7/22/97 17:16	1	24.5	482	8.3	8.8
7/22/97 17:17	2	24.5	482	8.3	8.9
7/22/97 17:18	3	24.5	481	8.3	9.2
7/22/97 17:19	4	24.5	481	8.3	9.4
7/22/97 17:20	5	24	481	8.3	8.5
7/22/97 17:21	6	21.2	491	8	6.4
7/22/97 17:22	7	18.3	500	7.9	5.4
7/22/97 17:23	8	14.9	500	7.8	2.3
7/22/97 17:24	9	13.3	503	7.6	0.4
7/22/97 17:25	10	11.8	504	7.6	0
7/22/97 17:26	11	10.2	511	7.6	0
7/22/97 17:27	12	9.2	514	7.6	0
7/22/97 17:28	13	8.8	520	7.6	0
7/22/97 17:29	14	8.7	520	7.5	0
7/22/97 17:30	14.5	8.7	520	7.5	0

Table 1. Lake depth profiles of field-measured parameters for South Site, Little Cedar Lake near West Bend, Wisconsin, 1997 through 1999--continued

[°C, degrees Celsius; $\mu\text{S}/\text{cm}$, microsiemens per centimeter; mg/L, milligrams per liter]

Date Time	Depth (meters)	Temperature (°C)	Specific conductance ($\mu\text{S}/\text{cm}$)	pH	Dissolved oxygen (mg/L)
8/26/97 8:35	0.5	20.3	484	8.3	8.5
8/26/97 8:36	1	20.3	484	8.3	8.5
8/26/97 8:37	2	20.3	483	8.3	8.5
8/26/97 8:38	3	20.3	485	8.3	8.7
8/26/97 8:39	4	20.3	485	8.3	8.9
8/26/97 8:40	5	20.3	485	8.3	8.5
8/26/97 8:41	6	20.2	485	8.3	7.8
8/26/97 8:42	7	19.7	490	8	4.9
8/26/97 8:43	8	17.5	503	7.5	0
8/26/97 8:44	9	14.9	507	7.5	0
8/26/97 8:45	10	12.8	519	7.5	0
8/26/97 8:46	11	10.7	519	7.5	0
8/26/97 8:47	12	9.4	528	7.4	0
8/26/97 8:48	13	9.2	532	7.4	0
8/26/97 8:49	14	9.1	532	7.4	0
8/26/97 8:50	15	8.9	534	7.4	0
8/26/97 8:51	16	8.8	534	7.4	0
8/26/97 8:52	16.5	8.8	536	7.4	0
2/19/98 9:50	0.5	3	487	8	10.4
2/19/98 9:51	1	2.5	492	8	10.5
2/19/98 9:52	2	2.4	492	8.1	10.5
2/19/98 9:53	3	2.3	496	8.1	10.6
2/19/98 9:54	4	2.2	503	8.1	11.3
2/19/98 9:55	5	2.1	499	8.2	11.3
2/19/98 9:56	6	2.1	501	8.2	10.9
2/19/98 9:57	7	2	505	8.2	10.5
2/19/98 9:58	8	2	507	8.1	8.5
2/19/98 9:59	9	2	513	8	8.5
2/19/98 10:00	10	2	510	8	8.6
2/19/98 10:01	11	2.1	514	7.9	6.9
2/19/98 10:02	12	2.2	519	7.9	6.9
2/19/98 10:03	13	2.2	517	5.8	7.8
2/19/98 10:04	14	2.4	522	7.7	3.6
2/19/98 10:05	15	2.5	531	7.5	0.3
2/19/98 10:06	16	2.7	532	7.4	0

Table 1. Lake depth profiles of field-measured parameters for South Site, Little Cedar Lake near West Bend, Wisconsin, 1997 through 1999--continued

[°C, degrees Celsius; $\mu\text{S}/\text{cm}$, microsiemens per centimeter; mg/L, milligrams per liter]

Date Time	Depth (meters)	Temperature (°C)	Specific conductance ($\mu\text{S}/\text{cm}$)	pH	Dissolved oxygen (mg/L)
4/21/98 9:40	0.5	10.9	500	8.1	11.1
4/21/98 9:41	1	10.9	500	8.1	11
4/21/98 9:42	2	10.9	498	8.2	10.9
4/21/98 9:43	3	10.6	495	8.2	10.5
4/21/98 9:44	4	10.4	493	8.1	10.7
4/21/98 9:45	5	9.9	493	8.1	10.3
4/21/98 9:46	6	9.4	492	8.1	10
4/21/98 9:47	7	9.3	494	8.1	10
4/21/98 9:48	8	9	494	8.1	9.9
4/21/98 9:49	9	8.9	494	8.1	9.9
4/21/98 9:50	10	8.7	492	8.1	9.8
4/21/98 9:51	11	8.6	493	8.1	9.7
4/21/98 9:52	12	8.5	495	8.1	9.6
4/21/98 9:53	13	8.4	496	8	9.4
4/21/98 9:54	14	8.4	496	8	9.3
4/21/98 9:55	15	8.3	497	8	8.9
4/21/98 9:56	16	8.2	498	7.9	7.4
4/21/98 9:57	16.5	8.1	499	7.8	6.8
6/23/98 14:00	0.5	26.5	492	8.2	9.2
6/23/98 14:01	1	25.8	489	8.3	9.4
6/23/98 14:02	2	25.1	488	8.3	9.7
6/23/98 14:03	3	24.7	491	8.3	9.7
6/23/98 14:04	4	21.4	491	8.3	11.2
6/23/98 14:05	5	19.6	490	8.4	11.3
6/23/98 14:06	6	18.3	491	8.4	11.2
6/23/98 14:07	7	15.9	491	8.5	13.3
6/23/98 14:08	8	13.2	491	8.2	9.1
6/23/98 14:09	9	11.5	496	7.9	5.8
6/23/98 14:10	10	10.2	496	7.7	3.5
6/23/98 14:11	11	9.4	502	7.6	0.6
6/23/98 14:12	12	8.9	504	7.6	0.1
6/23/98 14:13	13	8.8	507	7.6	0.1
6/23/98 14:14	14	8.7	510	7.5	0.1
6/23/98 14:15	15	8.6	510	7.5	0.1
6/23/98 14:16	15.5	8.6	510	7.5	0.1

Table 1. Lake depth profiles of field-measured parameters for South Site, Little Cedar Lake near West Bend, Wisconsin, 1997 through 1999--continued

[°C, degrees Celsius; $\mu\text{S}/\text{cm}$, microsiemens per centimeter; mg/L, milligrams per liter]

Date Time	Depth (meters)	Temperature (°C)	Specific conductance ($\mu\text{S}/\text{cm}$)	pH	Dissolved oxygen (mg/L)
7/24/98 12:20	0.5	25.2	466	8.3	9.1
7/24/98 12:21	1	25.5	464	8.3	9.1
7/24/98 12:22	2	25.4	464	8.3	9
7/24/98 12:23	3	25.3	462	8.4	9.3
7/24/98 12:24	4	25.2	462	8.4	9.3
7/24/98 12:25	5	25	461	8.4	8.7
7/24/98 12:26	6	21.7	482	8.2	8.4
7/24/98 12:27	7	18	485	7.8	4.7
7/24/98 12:28	8	14.8	489	7.7	2.3
7/24/98 12:29	9	12.7	491	7.6	0.3
7/24/98 12:30	10	11	498	7.6	0.3
7/24/98 12:31	11	10.2	501	7.6	0.2
7/24/98 12:32	12	9.7	510	7.6	0.2
7/24/98 12:33	13	9.2	514	7.5	0.2
7/24/98 12:34	14	9	517	7.5	0.2
7/24/98 12:35	15	8.9	515	7.5	0.2
7/24/98 12:36	16	8.8	516	7.5	0.2
8/20/98 9:30	0.5	23.6	463	8.4	8.3
8/20/98 9:31	1	23.6	462	8.4	8.3
8/20/98 9:32	2	23.6	464	8.4	8.2
8/20/98 9:33	3	23.5	463	8.4	8.6
8/20/98 9:34	4	23.5	465	8.4	8.8
8/20/98 9:35	5	23.5	460	8.4	8.6
8/20/98 9:36	6	22.9	473	8.2	6.4
8/20/98 9:37	7	20.6	493	7.5	1.9
8/20/98 9:38	8	16.8	491	7.5	0.4
8/20/98 9:39	9	14.4	492	7.5	0.4
8/20/98 9:40	10	11.9	495	7.7	1.5
8/20/98 9:41	11	10.2	515	7.5	0.3
8/20/98 9:42	12	9.3	515	7.5	0.3
8/20/98 9:43	13	9.1	521	7.4	0.3
8/20/98 9:44	14	8.9	529	7.4	0.3
8/20/98 9:45	15	8.8	534	7.4	0.3
8/20/98 9:46	16	8.8	530	7.4	0.3
8/20/98 9:47	16.5	8.8	536	7.4	0.3

Table 1. Lake depth profiles of field-measured parameters for South Site, Little Cedar Lake near West Bend, Wisconsin, 1997 through 1999--continued

[°C, degrees Celsius; $\mu\text{S}/\text{cm}$, microsiemens per centimeter; mg/L, milligrams per liter]

Date Time	Depth (meters)	Temperature (°C)	Specific conductance ($\mu\text{S}/\text{cm}$)	pH	Dissolved oxygen (mg/L)
2/10/99 15:45	0.5	2.4	435	7.9	15.2
2/10/99 15:46	1	2.4	490	7.9	14.9
2/10/99 15:47	2	2.8	495	8.1	14.7
2/10/99 15:48	3	2.9	497	8.2	14.7
2/10/99 15:49	4	2.9	494	8.2	14.9
2/10/99 15:50	5	2.9	496	8.2	14.8
2/10/99 15:51	6	2.9	500	8.1	13.9
2/10/99 15:52	7	2.9	500	8.1	13.7
2/10/99 15:53	8	2.9	500	8.1	13.5
2/10/99 15:54	9	2.9	514	8	13.2
2/10/99 15:55	10	3	517	8	12.6
2/10/99 15:56	11	3	510	8	10.5
2/10/99 15:57	12	3.1	510	8	10.3
2/10/99 15:58	13	3.2	513	7.9	8.4
2/10/99 15:59	14	3.4	524	7.8	8.8
2/10/99 16:00	15	3.5	523	7.7	8.2
2/10/99 16:01	15.5	3.6	527	7.6	7.8
4/29/99 11:05	0.5	10.8	498	8.2	11.8
4/29/99 11:06	1	10.8	498	8.2	11.8
4/29/99 11:07	2	10.7	498	8.2	11.8
4/29/99 11:08	3	10.7	500	8.2	11.7
4/29/99 11:09	4	10.6	499	8.2	11.7
4/29/99 11:10	5	10.6	499	8.2	11.7
4/29/99 11:11	6	10.5	499	8.3	11.7
4/29/99 11:12	7	10.3	499	8.3	11.6
4/29/99 11:13	8	9.8	499	8.2	11.4
4/29/99 11:14	9	8.9	502	8.2	11
4/29/99 11:15	10	8.6	500	8.1	10.8
4/29/99 11:16	11	8.5	501	8.1	10.2
4/29/99 11:17	12	8.4	501	8.1	10
4/29/99 11:18	13	8.4	502	8	9.4
4/29/99 11:19	14	8.3	503	8	9.2
4/29/99 11:20	15	8.3	504	8	9.1
4/29/99 11:21	16	8.3	504	8	9

Table 1. Lake depth profiles of field-measured parameters for South Site, Little Cedar Lake near West Bend, Wisconsin, 1997 through 1999--continued

[°C, degrees Celsius; $\mu\text{S}/\text{cm}$, microsiemens per centimeter; mg/L, milligrams per liter]

Date Time	Depth (meters)	Temperature (°C)	Specific conductance ($\mu\text{S}/\text{cm}$)	pH	Dissolved oxygen (mg/L)
6/17/99 14:00	0.5	21.9	464	8.2	9.2
6/17/99 14:01	1	21.9	468	8.2	9
6/17/99 14:02	2	21.7	467	8.3	9
6/17/99 14:03	3	21.6	467	8.2	8.9
6/17/99 14:04	4	21.5	470	8.2	9
6/17/99 14:05	5	20.5	477	8.2	9.2
6/17/99 14:06	6	16.3	487	8.2	8.8
6/17/99 14:07	7	14.3	498	8	7.3
6/17/99 14:08	8	11.9	504	7.8	5.8
6/17/99 14:09	9	10.5	502	7.7	4.7
6/17/99 14:10	10	9.5	510	7.6	3.1
6/17/99 14:11	11	9.2	515	7.5	2.4
6/17/99 14:12	12	8.9	519	7.5	1.5
6/17/99 14:13	13	8.8	503	7.4	0.6
6/17/99 14:14	14	8.7	511	7.4	0.6
6/17/99 14:15	15	8.6	518	7.4	0.6
6/17/99 14:16	16	8.6	513	7.4	0.6
6/17/99 14:17	17	8.5	514	7.4	0.6
7/22/99 11:00	0.5	25.5	452	8.2	8.5
7/22/99 11:01	1	25.1	453	8.2	8.5
7/22/99 11:02	2	25	451	8.2	8.4
7/22/99 11:03	3	24.9	450	8.2	8.6
7/22/99 11:04	4	24.6	450	8.2	8.6
7/22/99 11:05	5	24.3	450	8.2	8
7/22/99 11:06	6	22.2	471	8.1	7
7/22/99 11:07	7	18	480	8	6.4
7/22/99 11:08	8	13.2	487	7.7	1.7
7/22/99 11:09	9	11.6	490	7.7	0.1
7/22/99 11:10	10	10.7	486	7.6	0
7/22/99 11:11	11	10	494	7.6	0
7/22/99 11:12	12	9.3	498	7.6	0
7/22/99 11:13	13	8.9	500	7.6	0
7/22/99 11:14	14	8.8	503	7.6	0
7/22/99 11:15	15	8.7	509	7.6	0
7/22/99 11:16	16	8.7	509	7.6	0
7/22/99 11:17	17	8.6	510	7.5	0

Table 1. Lake depth profiles of field-measured parameters for South Site, Little Cedar Lake near West Bend, Wisconsin, 1997 through 1999--continued

[°C, degrees Celsius; $\mu\text{S}/\text{cm}$, microsiemens per centimeter; mg/L, milligrams per liter]

Date	Time	Depth (meters)	Temperature (°C)	Specific conductance ($\mu\text{S}/\text{cm}$)	pH	Dissolved oxygen (mg/L)
8/18/99	10:30	0.5	22.7	468	8.2	8.7
8/18/99	10:31	1	22.7	468	8.3	8.7
8/18/99	10:32	2	22.7	470	8.3	8.7
8/18/99	10:33	3	22.7	470	8.3	8.7
8/18/99	10:34	4	22.7	470	8.3	8.9
8/18/99	10:35	5	22.2	472	8.2	7.9
8/18/99	10:36	6	21.8	480	8.1	5.6
8/18/99	10:37	7	18.4	500	7.5	0.7
8/18/99	10:38	8	14	508	7.4	0
8/18/99	10:39	9	11.5	510	7.5	0
8/18/99	10:40	10	10.6	511	7.6	0
8/18/99	10:41	11	9.6	523	7.5	0
8/18/99	10:42	12	9.2	523	7.4	0
8/18/99	10:43	13	9	531	7.4	0
8/18/99	10:44	14	8.9	531	7.4	0
8/18/99	10:45	15	8.9	531	7.4	0
8/18/99	10:46	16	8.8	532	7.4	0

Table 2. Lake depth profiles of field-measured parameters for North Site, Little Cedar Lake near West Bend, Wisconsin, 1997 through 1999

[°C, degrees Celsius; $\mu\text{S}/\text{cm}$, microsiemens per centimeter; mg/L, milligrams per liter]

Date Time	Depth (meters)	Temperature (°C)	Specific conductance ($\mu\text{S}/\text{cm}$)	pH	Dissolved oxygen (mg/L)
2/13/97 12:13	0.5	1.7	514	8	11.2
2/13/97 12:14	1	1.6	534	8	9.9
2/13/97 12:15	2	3.0	541	7.8	7.1
2/13/97 12:16	3	3.8	549	7.7	4.8
2/13/97 12:17	4	4.1	553	7.6	2.6
2/13/97 12:18	5	4.5	556	7.5	0.9
2/13/97 12:19	6	4.5	562	7.5	0.2
2/13/97 12:20	7	4.6	571	7.4	0.2
2/13/97 12:21	7.5	4.7	574	7.4	0.2
5/1/97 12:00	0.5	10.4	486	8.4	11.0
5/1/97 12:01	1	10.3	487	8.4	10.9
5/1/97 12:02	1.5	10.4	486	8.4	10.8
5/1/97 12:03	2	10.3	486	8.4	10.7
5/1/97 12:04	2.5	10.3	483	8.4	10.8
5/1/97 12:05	3	10.3	487	8.4	11.1
5/1/97 12:06	3.5	10.3	487	8.4	11.5
5/1/97 12:07	4	10.3	488	8.4	11.4
5/1/97 12:08	4.5	10.3	488	8.4	11.2
5/1/97 12:09	5	10.3	486	8.4	11.0
5/1/97 12:10	5.5	10.3	484	8.4	10.8
5/1/97 12:11	6	10.2	487	8.4	10.7
5/1/97 12:12	6.5	10.2	486	8.4	10.6
5/1/97 12:13	7	10.2	487	8.4	10.4
6/11/97 9:20	0.5	21.3	500	8.5	11.4
6/11/97 9:21	1	21.3	500	8.5	11.2
6/11/97 9:22	2	20.3	504	8.4	10.8
6/11/97 9:23	3	19.0	507	8.4	10.3
6/11/97 9:24	4	17.6	507	8.3	9.2
6/11/97 9:25	5	15.8	509	8.1	7.5
6/11/97 9:26	6	14.5	512	8	5.2
6/11/97 9:27	7	14.1	516	7.8	2.8
6/11/97 9:28	7.5	13.8	522	7.6	0.8
7/22/97 18:00	0.5	24.1	491	8.4	8.6
7/22/97 18:01	1	24.2	491	8.4	8.6
7/22/97 18:02	2	24.2	491	8.4	8.5
7/22/97 18:03	3	24.0	491	8.4	9.2
7/22/97 18:04	4	22.2	500	7.7	3.1
7/22/97 18:05	5	20.6	507	7.5	1.6
7/22/97 18:06	6	18.3	518	7.5	0.2
7/22/97 18:07	7	16.5	536	7.4	0.1
7/22/97 18:08	7.5	16.2	541	7.4	0.1

Table 2. Lake depth profiles of field-measured parameters for North Site, Little Cedar Lake near West Bend, Wisconsin, 1997 through 1999--continued

[°C, degrees Celsius; $\mu\text{S}/\text{cm}$, microsiemens per centimeter; mg/L, milligrams per liter]

Date Time	Depth (meters)	Temperature (°C)	Specific conductance ($\mu\text{S}/\text{cm}$)	pH	Dissolved oxygen (mg/L)
8/26/97 9:15	0.5	20.1	495	8.3	8.6
8/26/97 9:16	1	20.1	495	8.3	8.5
8/26/97 9:17	2	20.1	495	8.3	8.6
8/26/97 9:18	3	20.0	495	8.2	7.9
8/26/97 9:19	4	19.8	501	7.9	5.6
8/26/97 9:20	5	19.6	501	7.6	3.4
8/26/97 9:21	6	19.1	507	7.4	0.1
8/26/97 9:22	7	17.5	546	7.1	0.0
8/26/97 9:23	7.5	16.8	561	7.1	0.0
2/19/98 10:24	0.5	2.1	503	8.2	11.2
2/19/98 10:25	1	2.9	524	8.2	11.3
2/19/98 10:26	2	3.4	522	8.1	9.7
2/19/98 10:27	3	3.7	531	7.9	7.6
2/19/98 10:28	4	3.8	530	7.8	6.5
2/19/98 10:29	5	3.9	540	7.7	5.6
2/19/98 10:30	6	4.0	548	7.7	4.3
2/19/98 10:31	7	4.2	559	7.6	3.2
4/21/98 10:20	0.5	11.0	501	8.5	13.9
4/21/98 10:21	1	11.1	500	8.5	13.7
4/21/98 10:22	2	11.2	500	8.5	13.6
4/21/98 10:23	3	10.6	502	8.3	11.7
4/21/98 10:24	4	10.0	493	8.3	11.5
4/21/98 10:25	5	9.3	497	8.2	10.3
4/21/98 10:26	6	9.0	501	8.1	9.6
4/21/98 10:27	7	8.5	504	8	7.8
4/21/98 10:28	7.5	8.1	506	7.8	7.0
6/23/98 14:50	0.5	26.6	499	8.4	9.7
6/23/98 14:51	1	26.2	496	8.4	9.8
6/23/98 14:52	2	25.3	492	8.4	10.3
6/23/98 14:53	3	23.6	495	8.4	10.2
6/23/98 14:54	4	20.6	492	8.8	17.4
6/23/98 14:55	5	18.7	503	8.2	7.4
6/23/98 14:56	6	17.4	513	7.6	1.0
6/23/98 14:57	7	16.5	520	7.5	0.3
6/23/98 14:58	7.5	16.0	522	7.5	0.2

Table 2. Lake depth profiles of field-measured parameters for North Site, Little Cedar Lake near West Bend, Wisconsin, 1997 through 1999--continued

[°C, degrees Celsius; $\mu\text{S}/\text{cm}$, microsiemens per centimeter; mg/L, milligrams per liter]

Date Time	Depth (meters)	Temperature (°C)	Specific conductance ($\mu\text{S}/\text{cm}$)	pH	Dissolved oxygen (mg/L)
7/24/98 13:00	0.5	24.2	481	8.5	9.2
7/24/98 13:01	1	24.9	473	8.5	8.8
7/24/98 13:02	2	25.0	472	8.5	8.8
7/24/98 13:03	3	25.0	473	8.5	9.0
7/24/98 13:04	4	24.4	484	8.2	5.6
7/24/98 13:05	5	21.7	498	7.6	0.8
7/24/98 13:06	6	19.6	496	7.4	0.4
7/24/98 13:07	7	18.1	510	7.3	0.2
8/20/98 9:00	0.5	23.1	486	8	7.1
8/20/98 9:01	1	23.2	487	8	7.0
8/20/98 9:02	2	23.2	484	8	6.9
8/20/98 9:03	3	23.2	487	8	7.4
8/20/98 9:04	4	23.1	485	8	7.4
8/20/98 9:05	5	22.1	493	7.4	1.9
8/20/98 9:06	6	20.5	515	7.1	0.5
8/20/98 9:07	6.5	19.0	537	6.9	0.5
2/10/99 15:15	0.5	3.0	507	7.8	15.3
2/10/99 15:16	1	3.2	528	7.9	15.2
2/10/99 15:17	2	3.4	524	8	14.5
2/10/99 15:18	3	3.4	528	8	14.2
2/10/99 15:19	4	3.3	528	7.9	14.2
2/10/99 15:20	5	3.3	539	7.8	11.9
2/10/99 15:21	6	3.4	545	7.8	10.5
2/10/99 15:22	7	3.6	551	7.7	9.0
4/29/99 11:40	0.5	10.9	501	8.4	12.4
4/29/99 11:41	1	10.9	501	8.4	12.4
4/29/99 11:42	2	10.9	501	8.4	12.3
4/29/99 11:43	3	10.9	501	8.4	12.3
4/29/99 11:44	4	10.8	501	8.4	12.3
4/29/99 11:45	5	10.5	505	8.3	11.7
4/29/99 11:46	6	8.9	511	8	9.9
4/29/99 11:47	7	8.3	510	7.8	8.6
4/29/99 11:48	7.5	7.9	510	7.8	8.0

Table 2. Lake depth profiles of field-measured parameters for North Site, Little Cedar Lake near West Bend, Wisconsin, 1997 through 1999--continued

[°C, degrees Celsius; $\mu\text{S}/\text{cm}$, microsiemens per centimeter; mg/L, milligrams per liter]

Date Time	Depth (meters)	Temperature (°C)	Specific conductance ($\mu\text{S}/\text{cm}$)	pH	Dissolved oxygen (mg/L)
6/17/99 15:00	0.5	21.1	482	8	7.6
6/17/99 15:01	1	21.2	484	7.9	7.5
6/17/99 15:02	2	21.1	486	7.9	7.4
6/17/99 15:03	3	20.2	489	7.9	7.4
6/17/99 15:04	4	19.1	501	7.7	6.2
6/17/99 15:05	5	16.5	512	7.8	5.0
6/17/99 15:06	6	14.5	519	7.5	1.0
6/17/99 15:07	7	13.6	518	7.4	0.6
6/17/99 15:08	7.5	13.6	519	7.4	0.5
7/22/99 12:00	0.5	25.6	450	8.4	8.6
7/22/99 12:01	1	25.3	448	8.4	8.9
7/22/99 12:02	2	24.7	440	8.1	6.7
7/22/99 12:03	3	23.6	430	8	5.9
7/22/99 12:04	4	23.0	415	7.6	3.8
7/22/99 12:05	5	21.8	444	7.6	3.0
7/22/99 12:06	6	18.1	502	7.5	0.3
7/22/99 12:07	7	15.1	515	7.4	0.0
7/22/99 12:08	8	14.1	521	7.3	0.0
8/18/99 11:15	0.5	22.5	471	8.6	9.3
8/18/99 11:16	1	22.5	472	8.5	9.1
8/18/99 11:17	2	22.4	472	8.5	8.7
8/18/99 11:18	3	22.1	480	8.3	5.9
8/18/99 11:19	4	21.5	482	7.8	2.8
8/18/99 11:20	5	20.0	488	7.4	0.2
8/18/99 11:21	6	17.2	534	7.2	0.0
8/18/99 11:22	7	15.6	548	7.2	0.0
8/18/99 11:23	7.5	15.3	551	7.2	0.0

Table 3. Late summer condition of Little Cedar Lake relative to other southeastern Wisconsin Lakes

[Average July and August values for 1997-1999]

[mg/L; Milligrams per liter] [µg/L; Micrograms per liter]

	Parameter (late Summer values)	Percentage distribution of lakes in southeastern Wisconsin within parameter ranges ¹		
<u>Total Phosphorus (mg/L)</u>				
	<0.010	best condition	7	
Little Cedar Lake, South Basin	0.010-0.020	↓	21	
Little Cedar Lake, North Basin	0.020-0.030		15	
	0.030-0.050		18	
	0.050-0.100		39	
	0.100-0.150			
	>0.150		worst condition	
<u>Chlorophyll a (µg/L)</u>				
Little Cedar Lake, South Basin	0 - 5	best condition	22	
	5 - 10	↓	30	
Little Cedar Lake, North Basin	10 - 15		14	
	15 - 30		10	
	>30		worst condition	24
<u>Secchi depth (meters)</u>				
	>6	best condition	0	
Little Cedar Lake, South Basin	3 - 6	↓	9	
Little Cedar Lake, North Basin	2 - 3		26	
	1 - 2		32	
	0 - 1		worst condition	33

¹ Data in this table are from Lillie, R.A. and Mason, J.W., 1983, *Limnological characteristics of Wisconsin Lakes*: Wisconsin Department of Natural Resources Tech. Bull. 138, 116 p.