

# Sugar Creek Lake



# Site 1

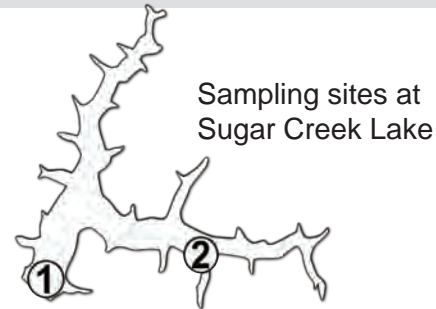
## 2010 DATA

Randolph County  
 Latitude: 39.4740 Longitude: -92.4783

Date	5/1	5/21	6/13	7/5	7/24	8/15	9/6	9/30	Mean
Secchi (inches)	21	21	21	39	26	30	27	26	26
TP (µg/L)	83	74	68	44	62	50	55	60	61
TN (µg/L)	1240	1250	850	590	830	840	730	860	874
CHL (µg/L)	7.8	13.2	24.2	18.3	46.8	38.5	27.9	24.1	22.0
ISS (mg/L)	12.9	9.4	9.4	4.5	6.8	2.9	5.2	5.7	6.5

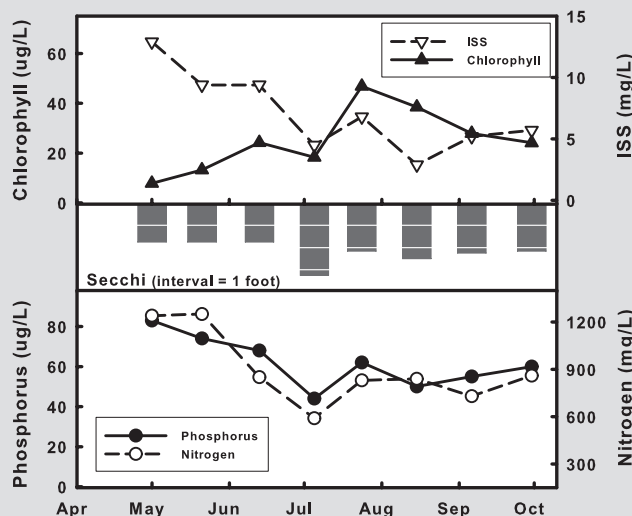
Phosphorus and nitrogen generally follow the same trend over the course of the sample season, a decrease to minimal values in July, followed by a nominal increase and stable conditions during the remainder of the season. Inorganic suspended sediment also follows the same general trend. In contrast, chlorophyll starts the season at its minimal value and increases to a peak in late July. Chlorophyll values then slowly but steadily decline across the next three sample dates. The lower chlorophyll values early in the season were a result of suspended sediment being high enough to cause light limitation of the algae

After 8 years of geometric mean phosphorus values that ranged between 43-48µg/L, the summer mean for 2010 was 58µg/L. This represents nominally higher phosphorus levels after

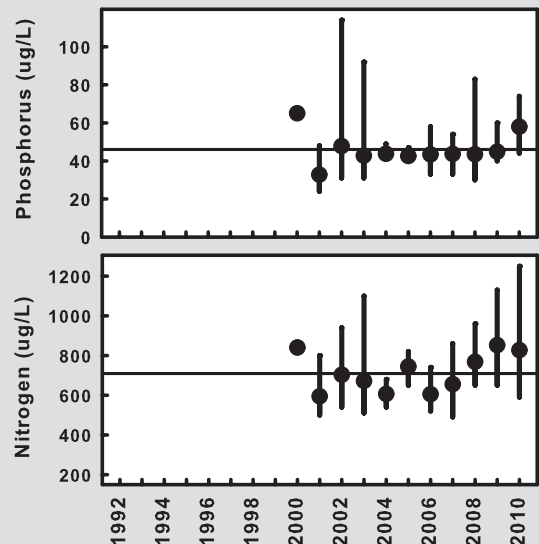


extremely consistent conditions over an extended period of time. This shift in phosphorus concentrations would not be notable except for the consistent conditions that preceded 2010. During this same period, summertime nitrogen means have ranged from 605 - 852µg/L, with this last year having an average of 827µg/L. The year-to-year variations in nitrogen levels in Sugar Creek Lake have been similar to that seen in most Missouri lakes.

## 2010 GRAPHS



## TREND GRAPHS



See pages 10-11 for help interpreting graphs

# Sugar Creek Lake



# Site 2

## 2010 DATA

Randolph County  
 Latitude: 39.4766 Longitude: -92.4619

Date	5/1	5/21	6/13	7/5	7/24	8/15	9/6	9/30	Mean
Secchi (inches)	17	22	18	41	28	27	26	26	25
TP (µg/L)	89	70	80	40	50	64	66	62	63
TN (µg/L)	1180	1250	920	570	840	880	770	850	884
CHL (µg/L)	21.0	17.7	49.2	13.6	29.4	45.5	28.3	29.5	26.9
ISS (mg/L)	11.4	9.3	10.6	3.3	4.5	4.9	10.6	6.7	7.0

Long-term patterns in water quality at Site 2 are similar to those at Site 1, even though Site 2 is located in an arm that drains a large portion of the lake's watershed. It is normal for down-lake sites to have lower nutrients and inorganic suspended sediment values than up-lake sites due to sedimentation. In past years the water quality at these two sites has been very comparable.

The graph below compares results from Site 1 directly to Site 2 results, with both the horizontal and vertical scales being equal. Both data from individual sample events as well as annual mean values are shown. The diagonal line is the 1:1 line, if the same mea-

surement was collected at both sites on a given day, the symbol would fall on the line. Symbols located above the line indicate higher concentrations at Site 2 and symbols below the line represent higher concentrations at Site 1.

In 61% of the individual sample events nitrogen levels at Site 2 were higher than at Site 1. The average difference was 66µg/L, with a maximum difference of 280µg/L. It is somewhat surprising that in a third of the samples, the Site 1 nitrogen concentration exceeded that measured at Site 2, with an average difference of 77µg/L and a maximum difference of 280µg/L. When annual mean values are calculated, Site 2 was equal to or higher than Site 1 in all but one case (2009). The differences between sites were much lower, with the average difference being 12µg/L and a maximum difference of 82µg/L. This indicates that while water quality, on average, is very similar for these two sites, there can be notable differences on any individual day.

