

# Lake Springfield



# Site 1

## 2009 DATA

Greene County  
Latitude: 37.1122 Longitude: -93.2608

Date	4/16	5/21	6/1	6/23	7/16	8/4	8/28	9/14	Mean
Secchi (inches)	37	32	26	26	28	26	27	30	29
TP (µg/L)	34	24	33	41	48	35	45	41	37
TN (µg/L)	1420	1070	1220	1160	900	850	870	650	991
CHL (µg/L)	2.5	16.8	17.6	14.4	28.6	18.1	27.2	29.2	16.0
ISS (mg/L)	6.1	7.3	10.7	10.1	13.3	9.0	12.1	7.8	9.3



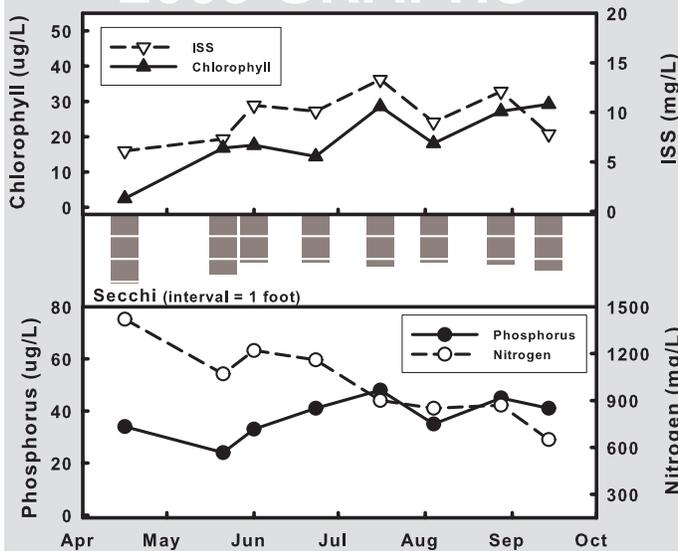
Lake Springfield is used as a cooling water source for James River Power Plant. Site 1 is at the dam, just below the power plant discharge.

2009 Secchi transparency varied little, with the water remaining turbid throughout the season. The April 16 lake visit revealed the clearest water of the season, with the Secchi reading barely exceeding 3 feet. Abundant suspended sediments are largely responsible for the below average water clarity. At 9.3 mg/L, the 2009 mean ISS concentration was 3.5 times the statewide average. The seasonal mean nutrient concentrations are somewhat high, with phosphorus and nitrogen values exceeding the statewide mean by 27% and 57%,

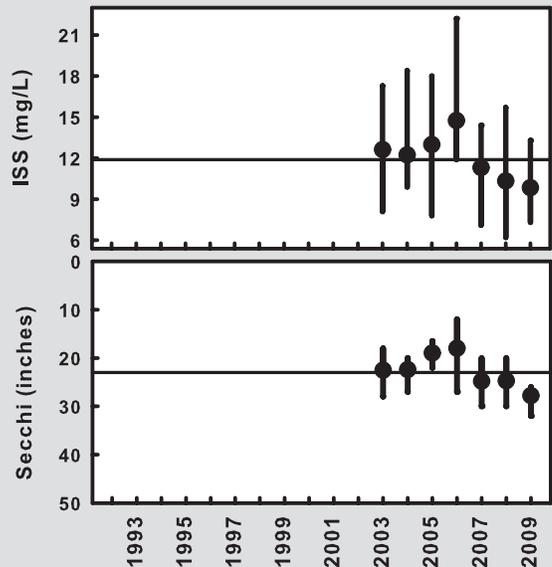
respectively. Nitrogen concentrations decreased steadily as the season progressed, while chlorophyll concentrations increased.

While still high, ISS concentrations have decreased in recent years, with the seasonal mean falling below the long-term average for the third straight year. Likewise, water clarity (as measured by Secchi) has been greater than the long-term average for the third straight year.

## 2009 GRAPHS



## TREND GRAPHS



See pages 10-11 for help interpreting graphs

# Lake Springfield



## Site 2

### 2009 DATA

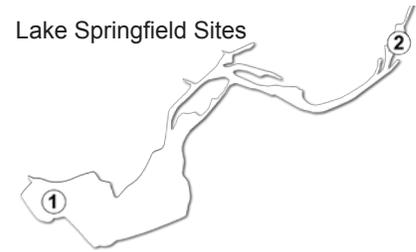
Greene County  
Latitude: 37.1263 Longitude: -93.2256

Date	4/16	5/21	6/1	6/23	7/16	8/4	8/28	9/14	Mean
Secchi (inches)	53	56	49	45	47	42	40	45	47
TP (µg/L)	23	15	22	31	32	56	61	23	30
TN (µg/L)	1240	1030	1220	1210	1330	1000	1180	1090	1158
CHL (µg/L)	2.7	3.8	1.7	2.5	3.0	32.9	44.1	3.7	5.4
ISS (mg/L)	7.2	5.1	4.8	4.9	4.3	3.9	3.5	4.3	4.6

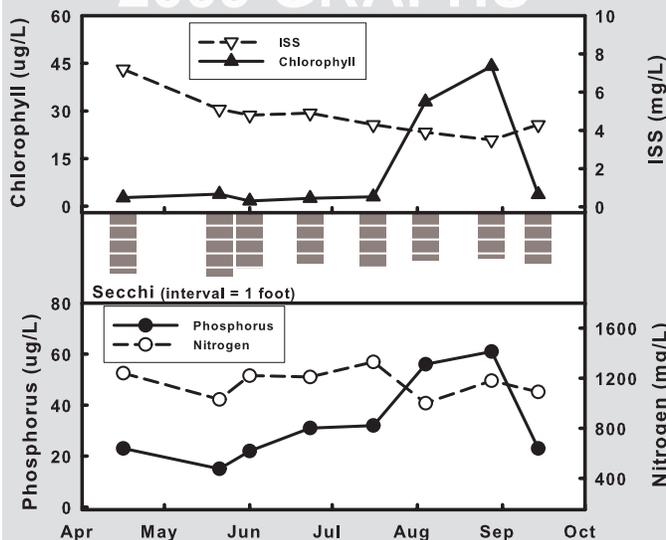
Site 2 is located just up-lake from the highway 60 bridge. The James River's influence is still strong at this site, where the water is still transitioning into Lake Springfield.

Water clarity (Secchi) is greater at Site 2 than at the dam, where warm temperatures and mixing provide a climate conducive to algae growth and sediment resuspension. Concentrations of phosphorus are lower at Site 2 than at the dam, and nitrogen concentrations are higher. The ratio of nitrogen to phosphorus is quite high (38.6) indicating that nitrogen is in abundance and phosphorus is likely the nutrient limiting algae growth. Chlorophyll concentrations at Site 2 averaged a third as high as at the dam, though a doubling of phosphorus precipitated algae blooms on both of Site 2's August sample dates.

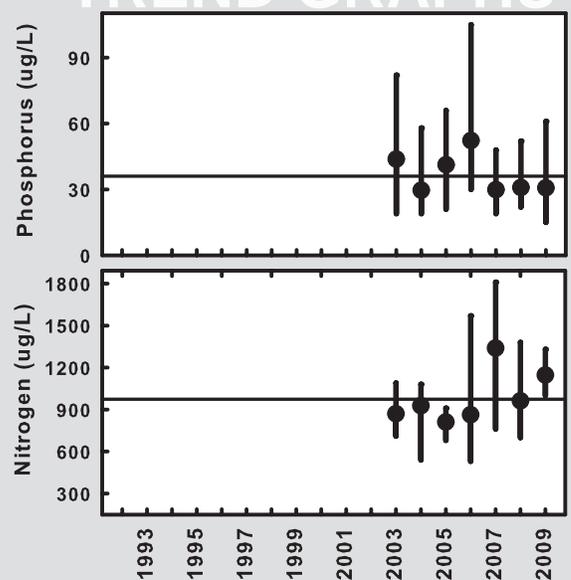
Average phosphorus concentrations at Site 2 have not varied in 3 years, falling well below the long-term mean since 2007. Conversely, nitrogen concentrations have exceeded the long-term mean for 2 of the last 3 years. Seasonal mean algal biomass as measured by chlorophyll concentration (graph not shown) has varied nearly indistinguishably from phosphorus means, with the last 3 years' means lower than the long-term mean. Secchi transparency values (graph not shown) reflect the same trend.



### 2009 GRAPHS



### TREND GRAPHS



See pages 10-11 for help interpreting graphs