

Bull Shoals Lake

Bull Shoals Lake is approximately 45,440 acres in size, the majority of which is located in Arkansas. It is the last of four reservoirs found in the White River System (it is preceded by Taneycomo, Table Rock, and Beaver Lakes).

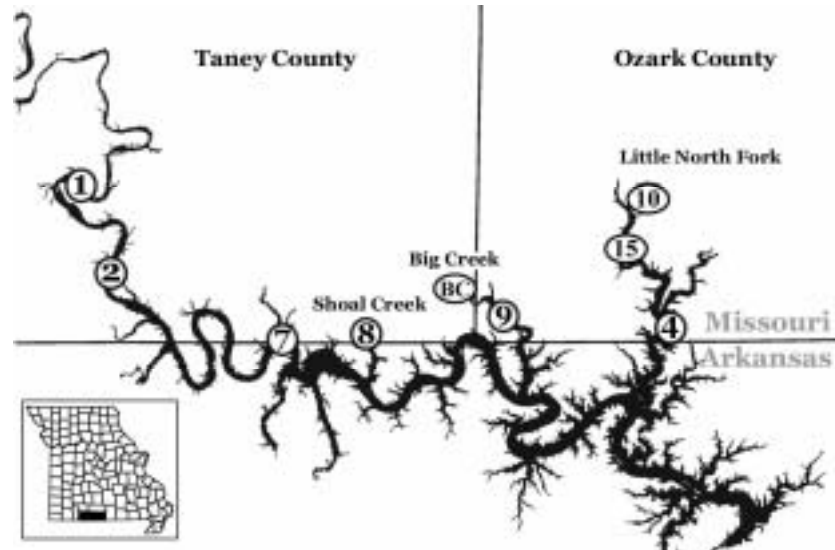


Figure 25. Location of Bull Shoals Lake and its sample sites.

Parameters		1	2	7	8	BC	9	10	15	4
Secchi Transparency (inches)	Mean	73	92	103	83		111	59	77	124
	Minimum	66	58	46	48		78	29	29	80
	Maximum	84	117	134	114		144	113	124	171
Phosphorus (ug/L)	Mean	15	12	8	10	4	6	21	14	8
	Minimum	13	9	6	8	3	5	14	9	4
	Maximum	16	16	13	16	5	7	46	46	11
Nitrogen (ug/L)	Mean	365	394	283	310	514	207	423	317	265
	Minimum	320	300	210	210	260	170	240	250	160
	Maximum	410	870	420	490	860	230	850	600	380
Chlorophyll (ug/L)	Mean	7.9	7.3	4.3	5	0.5	3	8.4	5.5	2.6
	Minimum	6.2	4.4	2.8	3.9	0.2	2.2	4.8	4.5	1.6
	Maximum	9.8	12.8	6.7	6.4	1.8	3.9	13.1	6.4	3.7
ISS (mg/L)	Mean					1.1				
	Minimum					0.7				
	Maximum					1.4				

Table 6. Descriptive statistics for Bull Shoals Lake, 2004.

As expected, nutrients and chlorophyll decreased and Secchi transparencies increased in the main lake as the site location moved down-lake toward the dam. Nutrients were low across the entire lake. Site 10 had the highest mean concentrations of phosphorus and chlorophyll and the lowest mean Secchi transparency (shown in **bold**). Site BC had the highest mean nitrogen concentration (**bold**) and the lowest mean phosphorus and chlorophyll concentrations.

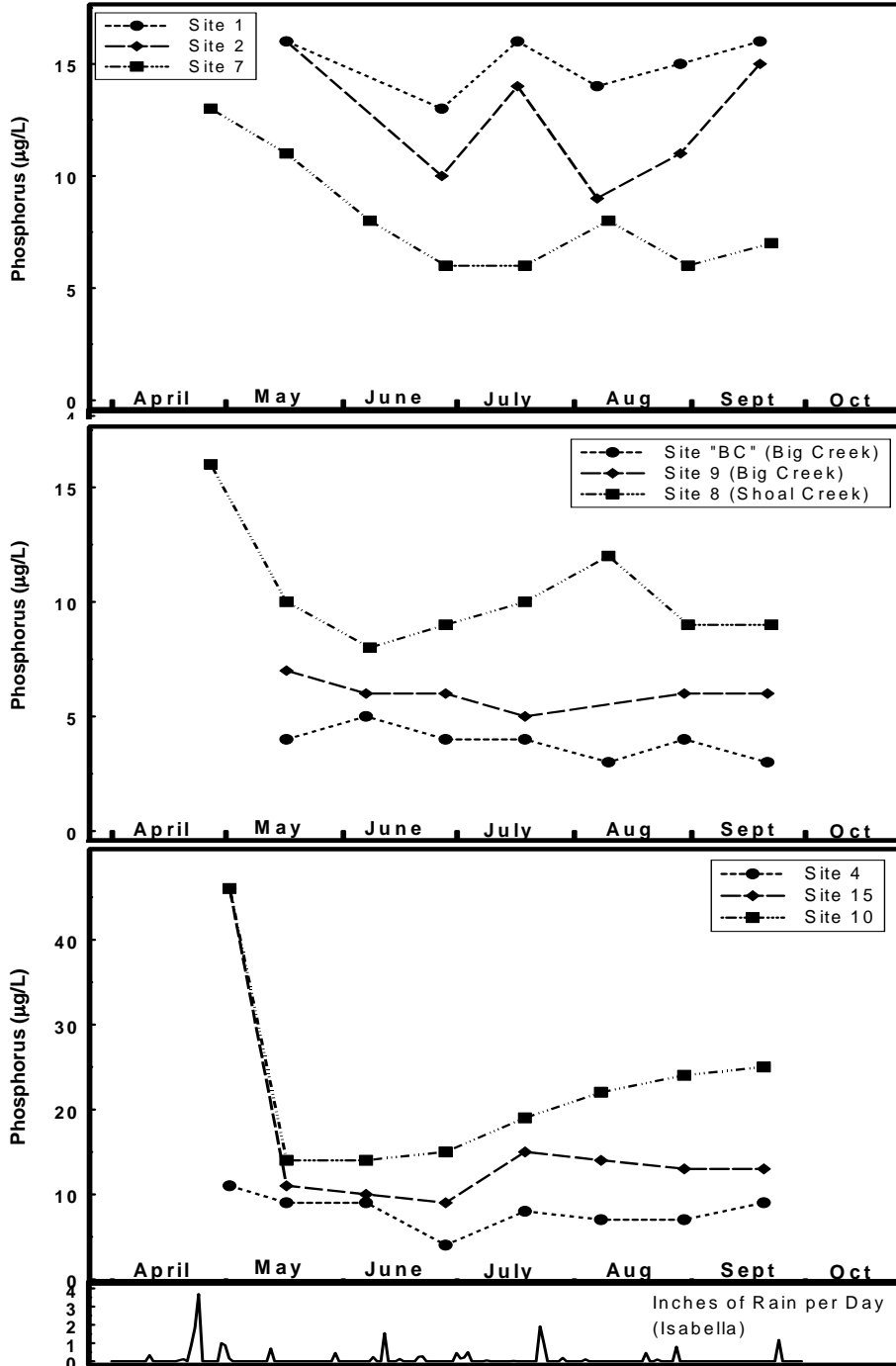


Figure 26. Phosphorus concentrations in Bull Shoals Lake, by site.

Phosphorus concentrations peaked in late April, probably due to runoff following a rain event. After this early-season peak, phosphorus concentrations remained stable at all sites.

Nitrogen concentrations were also relatively stable at all sites (graphs not shown)

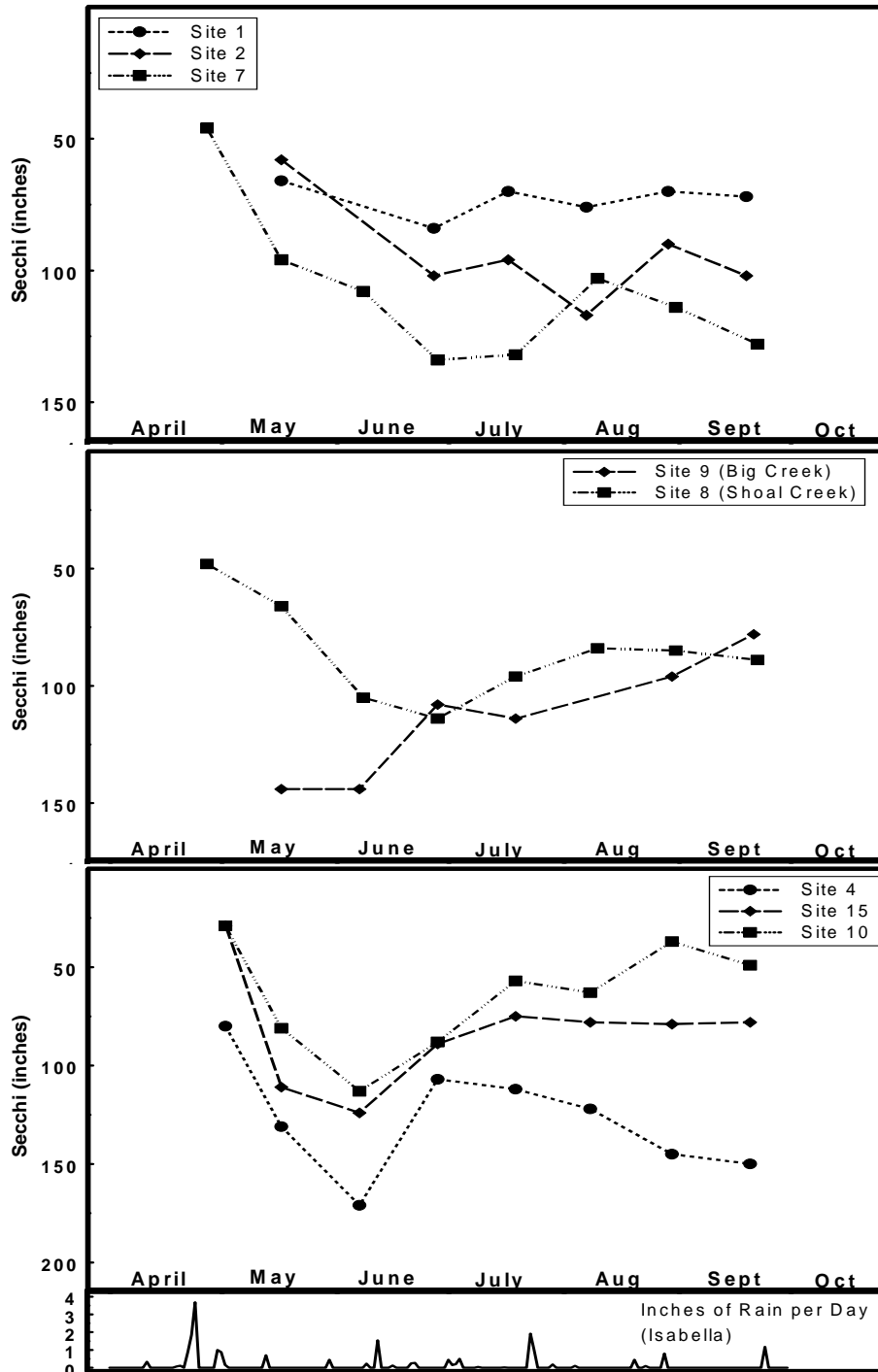


Figure 27. Secchi transparency values in Bull Shoals Lake, by site.

Secchi transparency values were largely determined by algae in Bull Shoals lake in 2004. Because of the nature of the chlorophyll-Secchi relation at Bull Shoals Lake, small increases in the amount of algae (as measured by chlorophyll concentration – graphs not shown) lead to dramatic reductions in water clarity. As an example: the 91 inch range in Secchi transparency at Site 4 relates to a range of only 2.1ug/L of chlorophyll. (See Figure 113, page 90)

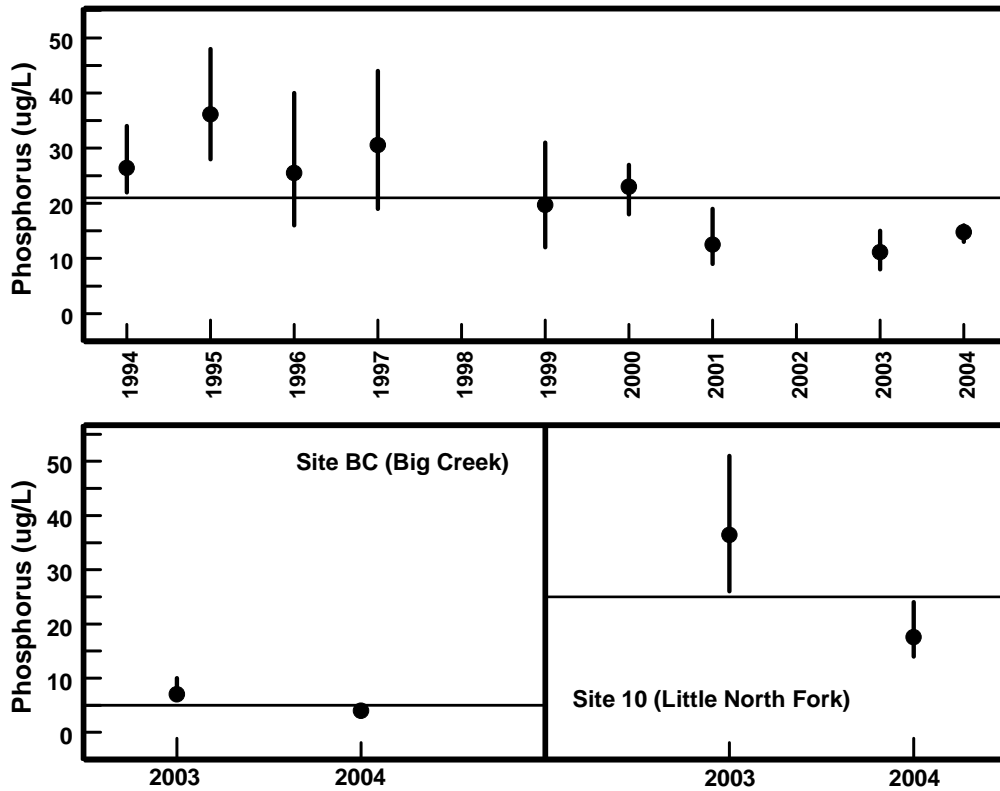


Figure 28. Summer phosphorus trends in Bull Shoals Lake, Sites 1 (top), BC and 10 (bottom). Graphs show only values collected between May 15 and September 15.

Site 1 is below Powersite Dam of Lake Taneycomo. Phosphorus has decreased at Site 1 over the last 11 years. This trend reflects decreasing phosphorus concentrations in the effluent from the Branson treatment plant, but other factors are likely involved. This trend will likely continue as phosphorus reduction efforts continue throughout the White River chain of lakes.

While phosphorus concentrations at Site 1 were slightly higher in 2004 relative to 2003, this pattern is reversed for Site BC (Big Creek) and Site 10 (Little North Fork). At these two sites, phosphorus concentrations decreased slightly. Differences between the two years are minor and probably relate to differences in inflow patterns.