

**Data evaluation methodology based on Trophic State Indices (TSIs):**

Utilizing the TSIs for TP, Chl, and SD, one can evaluate probable shortcomings in data analyses and/or to delineate other environmental effects/scenario.

It is generally understood that the values for TSI(TP), TSI(Chl), and TSI(SD) should be within four to five (4 to 5) points of each other. If they are not, it does not necessarily imply lab data analyses errors, but may indicate other environmental aspects some of which were summarized by Carlson and Simpson, 1996 (*cf.*, table below).

Table: Using the Indices beyond Classification (Carlson and Simpson, 1996)

Relationship Between TSI Variables	Conditions
$TSI(Chl) = TSI(TP) = TSI(SD)$	Algae dominate light attenuation; TN/TP ~ 33:1
$TSI(Chl) > TSI(SD)$	Large particulates, such as Aphanizomenon flakes, dominate
$TSI(TP) = TSI(SD) > TSI(Chl)$	Non-algal particulates or color dominate light attenuation
$TSI(SD) = TSI(Chl) > TSI(TP)$	Phosphorus limits algal biomass (TN/TP >33:1)
$TSI(TP) > TSI(Chl) = TSI(SD)$	Algae dominate light attenuation but some factor such as nitrogen limitation, zooplankton grazing or toxics limit algal biomass.

**References:**

Carlson, R.E. 1977. A Trophic State Index for Lakes. *Limnol. and Oceanog.* 22(2):361-369.  
Carlson, R.E. and Simpson, J. 1996. A Coordinator's Guide to Volunteer Lake Monitoring Methods. North American Lake Management Society. 96 pp.