

Water Quality Monitoring

Wasa Lake water quality is determined by natural environmental factors and human actions. Some natural factors we can't control but we need to recognize that lakes are vulnerable and in order to make them thrive all lake users, must assume responsibility for their care. We need to understand that what we do on land and in the water affects Wasa Lake.

E.coli

E.coli numbers are a common measure of fecal contamination in fresh recreational water. Recreational waters may be contaminated with fecal material from sewage systems, humans, animals and storm water run off especially during flood conditions. 30 samples, were taken from around the lake by WLLID trustees between June 15th and August 24th 2016. 28 were less or equal to 5 E.coli/100 ml of water. One was 15 and another 9. All were acceptable results. B C standard for recreational waters is less or equal to 200 E.coli/100ml of water in 5 samples over 30 days. If we ever get near to those numbers IHA would investigate. IHA has approved WLLID to do the same E.coli testing for 2017 with the same transportation and lab cost arrangements.

Temperature and Dissolved Oxygen.

Those factors have a huge effect on lake water and aquatic species. Water temperature changes the density (heaviness) of the water. Warm water lighter, cold water heavier. BUT, Water is most dense at 4 C and strangely enough it expands and gets less dense (lighter) above 4 C and below 4 C temperature. Water turns to ice at 0 C which is colder than 4 C so it is less dense and it floats. If it didn't do that the lake would freeze from the bottom up. This strange property of water, and wind and changes in air temperature in spring and fall cause the lake water to turn over and mix. It's complicated but very important to lake water and aquatic species. During the summer and winter the water temperature and density are more distinct and the water stratifies or forms 3 layers an upper lighter warmer one, a lower heavier colder one and a narrow middle layer which helps prevent mixing. Also very complicated. Turnovers also affect dissolved oxygen levels. Warm water holds less dissolved oxygen than cold water so the turnovers change the oxygen levels in different lake depths which all aquatic life need to survive. So we measure water temperatures and dissolved oxygen 1m from the top , 1 m from the bottom. To date those levels indicate that turnover is occurring, which is a good sign.

Secchi Depth

Oxygen is the key ingredient in lake life and water quality. It enters the water from the air by wind action and through photosynthesis, a process by which sunlight produces oxygen from water and the chlorophyll in algae and aquatic plants. As long as the sunlight penetrates deep enough oxygen is produced. So we measure water clarity or light penetration recording the depth at which the secchi disc disappears and reappears. A minimum of 1.9 m about 6 ft is considered a minimum I can't recall recording a depth less than 2.0 m. Readings have usually been lower in spring with the turnover mixing and sometimes over 6.0m in late Sept. and Nov. Those levels are quite acceptable. If

Secchi readings trend lower it may indicate that the level of nutrients and growth like algae in the lake are increasing and the water will become less clear. Secchi levels seem to rate Wasa Lake between a nutrient rich, green, shallow lake with excess plant and algae growth and a nutrient poor, clear, deep lake, with little vegetation and low algae.

Nutrients

Chemical nutrient levels in Wasa Lake have not been measured regularly over the years. This year they will.

The concentrations in water of various substances including phosphorus, carbon, oxygen and nitrogen control the total amount of plant matter that can grow.

In most lakes phosphorus is the nutrient in shortest supply and its amount controls the extent of algae growth. In excess however, phosphorus accelerates growth and artificially ages a lake. Phosphorus can be released when lake sediments are stirred up but total phosphorus is greatly influenced by human activity. Phosphorus and nitrogen in fertilizers, pesticides, herbicides, flooded septic systems, storm water run off, wash off the land or seep into ground water eventually increasing plant growth and algae.

Lakes with phosphorus levels of .01 to .03 mg/l tend to remain uncontaminated by algae blooms. Eight water samples were tested for phosphorus levels at various sites during the 2012-13 flood and they ranged from .004 to .03 mg/l. Several small algae blooms have been identified in the lake in recent years, so further phosphorus and nitrogen testing is warranted.