2024 Data Snapshot: Walker Lake

Water Clarity

Secchi depth has become significantly shallower since 2003, indicating that the **water clarity in Walker Lake decreased by more than 3 feet** over this time.

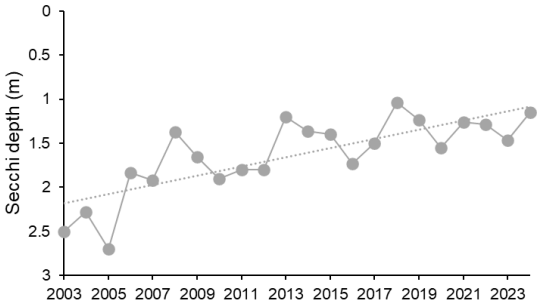

FIGURE 1: SECCHI DEPTH OVER TIME

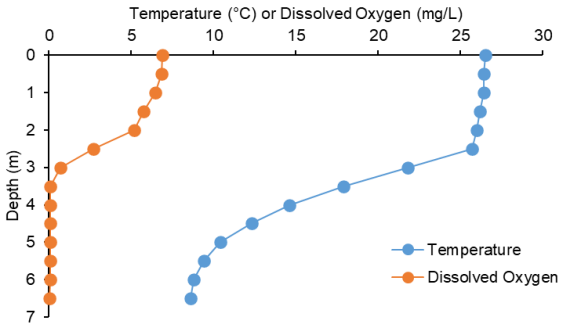

FIGURE 2: JULY 2024 PROFILES

Temperature & Dissolved Oxygen

Walker is typically stratified during the summer, with warm surface waters and cold bottom waters, and lacks oxygen in deep waters. **The depth of oxygen depletion has become significantly shallower (by ~3 feet) since 2008.**

Algae

Walker has generally been meso-eutrophic, or of intermediate to high algal productivity. Average summer **algal abundance has varied considerably since 2003**, with no statistically significant trend over time.

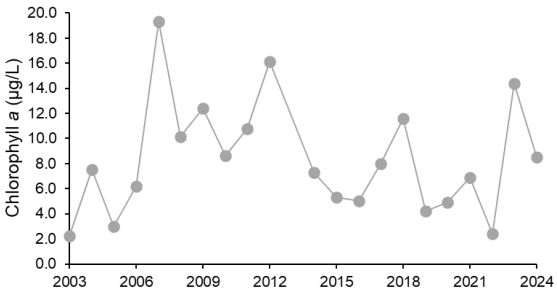

FIGURE 3: SUMMER ALGAE ABUNDANCE OVER TIME

FIGURE 4: SURFACE SUMMER TP OVER TIME

Nutrients

Average summer total phosphorus (TP) concentration in surface waters has significantly decreased since 2003. Phosphorus in the deep waters is not currently monitored.

Cyanobacteria

Screening for potentially toxic cyanobacteria is not conducted routinely but has revealed the presence of potentially toxigenic cyanobacteria.

Data presented here represent PLEON's monitoring of Walker Lake. A comprehensive presentation and explanation of the data can be found in the 2024 PLEON report. Contact PLEON Liaison for more information.

2024 TAKE HOMES: WALKER LAKE

1. Algal abundance in Walker Lake surface waters varies considerably. Therefore, water clarity and the way users visually experience the lake will also differ year to year.
2. Internal phosphorus loading is the release of phosphorus from lake sediments when oxygen is absent. Internal phosphorus loading can fuel the growth of algae, particularly cyanobacteria. The lack of oxygen at the bottom Walker suggests the risk of internal phosphorus loading. Currently, deep-water phosphorus is not quantified in Walker.
3. Cyanobacteria blooms remain a risk in Walker Lake. Infrequent cyanobacteria screens have contained cyanobacteria groups capable of producing cyanotoxins.

HOW TO EVALUATE THESE DATA

This document provides a snapshot of foundational water quality parameters monitored in Walker Lake. Think of these data as a "medical checkup" for the lake. The strength of these data lies in their ability to show trends over time which can be used to (1) evaluate risk factors, (2) target stewardship efforts, and (3) guide management strategies.

Water Clarity: Secchi depth is the depth at which a black and white disk lowered into the water disappears. The deeper the Secchi depth, the clearer the lake. Suspended particles, algae, and dissolved compounds can decrease water clarity.

Temperature & Dissolved Oxygen: Deep temperate lakes have distinct temperature layers during the summer because surface water is warmed by the sun while deep water remains cold. The layers mix in the fall, helping to spread nutrients and oxygen throughout the lake. Oxygen gas dissolved in lake water is generated by surface turbulence and photosynthesis by algae and is removed by the process of decomposition. Low oxygen concentrations can be stressful to lake organisms and can promote nutrient release from lake sediments.

Algae: Algae are photosynthetic, plant-like organisms forming the base of lake food webs. Chlorophyll is a pigment in algal cells that we use to quantify algal abundance. A rapid increase in the amount of chlorophyll to a high level in your lake is an indication of an algal bloom.

Nutrients: Phosphorus and nitrogen are necessary components for the growth of the algae that support lake food webs. Too much nitrogen and phosphorus can fuel algal blooms. These nutrients come from the watershed as well as from lake sediments.

Cyanobacteria: Cyanobacteria (sometimes called blue-green algae) are photosynthetic bacteria often classified as algae. Cyanobacteria are commonly responsible for harmful algal blooms, or HABs, in lakes. Some cyanobacteria can produce toxins that are harmful to wildlife, pets, and humans.