

White Pond Water Quality Monitoring Program Update August 4, 2022

CURRENT WATER USE STATUS: SWIM AT YOUR OWN RISK/PET ADVISORY

SUMMARY:

Water sampling conducted August 2 shows cyanobacteria and microcystin toxin results below state beach closure limits. The pond remains at Swim at Your Own Risk, due to the possibility that small wind-blown visible blooms and scums may accumulate temporarily at areas along the shoreline. Areas of concentrated cyanobacteria may contain toxins at significant levels. Areas of visible cyanobacteria in the water or scums along the shoreline should be avoided when encountered. Rinse off with fresh water if you have contact with these areas, and be especially alert to prevent small children and pets from having contact. A Pet Advisory is posted.

Water sampling will continue weekly to monitor cyanobacterial populations in the pond.

When water use advisories are issued, the town will notify the public via the White Pond Bloom Notifications (sign up at <https://concordma.gov/3039/White-Pond-Watershed>), as well as posting signage at public access points to the pond.

Cyanobacteria Sampling and Bloom Status

The August 2 samples show that phycocyanin (a measure of cyanobacteria biomass) has significantly increased in the bloom forming cyanobacteria (BFC) samples taken near the town beach and at the Deep 1 and Deep 2 sites compared to last week. Phycocyanin levels are similar to what was seen in samples taken June 28, when *Microcystis* became the dominant species in the pond, and Lim-Tex reported that the pond was “fully seeded” with colonies of *Microcystis*. Shortly after the June 28 samples were taken, a wind-driven accumulation of cyanobacteria was seen along the shoreline at the town beach during the July 4 weekend. This week’s results suggest that *Microcystis* is present in large enough amounts that wind-driven accumulations of cyanobacteria may occur in the coming weeks.

Estimated microcystin toxin remains low in the whole lake water (WLW) samples. The WLW samples represent the lake water and toxin levels a person would typically be exposed to while swimming. For the BFC samples, this week’s results show increases in estimated and measured microcystin toxin, similar to what was seen in the June 28 samples. It is important to note that the BFC samples are a more concentrated sample than the whole lake water (WLW) samples. Estimated microcystin levels in the BFC samples represent toxin levels that could be encountered in areas where cyanobacteria have accumulated (usually along the shoreline as a result of wind or currents). Concentrated areas of cyanobacteria may contain toxins in significant amounts. Pond users should be alert to the possibility that areas of concentrated algae and/or small scums may occur along the shoreline in coming weeks. Avoid contact with these areas.

Phycocyanin results to date at three sample sites are shown in the graphs on the last page of this update.

Pond water will continue to be monitored weekly.

Pond users who are interested in learning more about the sampling program can visit the White Pond Reports webpage <https://concordma.gov/3126/Bloom-Reports>. Two documents on this page provide

more information about the sampling protocol and rationale being used in the White Pond water sampling program.

White Pond Monitoring Addendum Oct 29 2021

<https://concordma.gov/DocumentCenter/View/37187/White-Pond-Monitoring-Addendum-Oct-29-2021>

Evaluation of Size Structure in Freshwater Cyanobacteria

<https://concordma.gov/DocumentCenter/View/37186/Evaluation-of-Size-Structure-in-Freshwater-Cyanobacteria>

A-Pod HAB Trap update

Activities this past week:

About 30 pounds of cyanobacteria (HABs), fine residue, pine needles and fragments of benthic algae were removed from all four A-pods this week. A slight scum build up was observed for a few days before the main and secondary A-Pod in Thoreau's Cove. The main A-Pod "A" in Thoreau's cove had the greatest volume/weight of contained/trapped HABs, residues, etc. during removal actions from each of the four A-Pods. The main A-Pod, unlike the others, includes removal of deeper layers of HABs and also has a larger collection member catchment area.

Based on sonde measurements of phycocyanin (PC), cyanobacteria is present in fairly low concentrations in shallow (approx. top 5 feet) areas of the water column (similar or less than past weeks). A slight increase in PC was seen in deeper samples. Notably, a significant increase in dissolved oxygen content (about 120% of saturation) was seen from 20 feet down to 32 feet (at the end of our main A-Pod collection member - 300 feet from shore). This increase in dissolved oxygen could be due to HABs or greater growth/biomass of benthic algae, which were seen on the bottom of the pond last year during initial surveys. PC remained fairly constant (1.9 to 2.6 RFUs) from 5 to 32 feet.

Jon Higgins made a presentation to the White Pond Advisory Committee on July 27 summarizing progress on the A-Pod project. Copies of the presentation will be available on the town White Pond web page <https://concordma.gov/3126/Bloom-Reports> under the topic Important Additional Documents.

Signage with QR codes has been placed on all A-Pod units. For those who are curious about the A-Pod technology, more information is available at <https://blog.cyanos.org/2021/04/19/a-pod-hab-trap-and-removal-process-jonathan-b-higgins>.

All pond users are asked to stay away from the A-Pods and not disturb or fish near them (fish hooks may cause damage if they snag the fabric). The floating fabric of the A-Pods can be easily damaged and is an important part of the cyanobacteria collection system.

White Pond phycocyanin (PC) levels through August 2 at all sample sites. Note the high levels of phycocyanin observed in the June 28 BFC samples—this represents the “seeding event” where large numbers of *Microcystis* emerged and seeded the pond. Note that the PC level in the August 2 BFC sample taken at the Town Beach is similar to the June 28 results.

 BFC = Bloom-forming cyanobacteria <50µm = Less than 50 micron fraction
WLW = Whole lake water ★ Grab = Accumulated on water surface or shoreline

