

**Town of Wolfeboro
Wolfeboro Waters
Assessment Subcommittee Meeting
Draft Meeting Minutes
November 12, 2021**

Present: Emilie Clark, Andra Dekkers, Abby Adams, Warren Muir, Bree Rossiter, Peter Countway, Steve Wingate, Linda Murray, Beth Marcoux

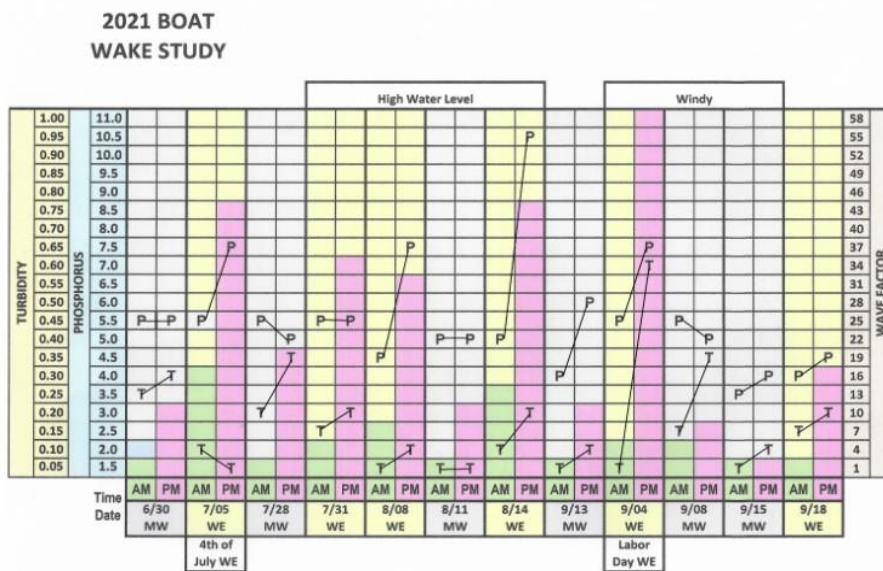
1. July 26 2021 minutes unanimously accepted as written.

2. **Status of the Boat Wake Impact pilot study:**

Steve Wingate presented results from a pilot study completed by Steve Wingate, Abby Adams and Joanne Akie.

Using a standardized collector, water samples were collected and analyzed for total P as well as turbidity. Researchers also counted the number of boats and estimated their wave size. Data was collected over 4 months on weekdays and weekends.

The researchers spent 100 hours doing sampling and boat counts and 60 hours completing data analysis.



Phosphorus and Turbidity

- **PHOSPHORUS**

- **Total Mid-Week Average**

- AM 4.9
- PM 5.1
- Difference 0.2 = 4% Increase

- **Total Weekend Average**

- AM 5.1
- PM 7.3
- Difference 2.2 = 30% Increase

- **TURBIDITY**

- **Total Mid-Week Average**

- AM 0.17
- PM 0.22
- Difference 0.05 = 23% Increase

- **Total Weekend Average**

- AM 1.13
- PM 2.00
- Difference 0.87 = 43% Increase

Results showed an increase in phosphorus and turbidity on weekends and with increased boat traffic, suggesting waves have an impact on both phosphorus and turbidity.

Warren asked who this has been presented to? And what is next step? Steve indicated this study was presented at a meeting of the Lakes Region Planning Commission. Steve indicated he hoped the next step would be a larger study, possibly completed by DES. Warren recommended it be presented to the Wolfeboro Waters Committee. Steve indicated that Bree will help in writing up the study. Andra asked if this could be written up for an article in Granite State News and other newspapers and Abby agreed the Communications subcommittee will see that it is done.

3. Status of Shoreline Observational Survey – The Lake Tahoe App

An attempt was made this summer to have residents and lake observers complete a shoreline survey. A long version of the survey was developed to gather information about the changes occurring around the lake. Only 4 people completed it. A one-page survey was also developed and put on the Wolfeboro Waters website. Data were lost due to changes in IT personnel at the town level. An App was identified (Lake Tahoe App) by the Lake Winnepesaukee Association that may address this need. Bree gave a brief presentation on use of this app (available through Citizen Science Tahoe). Bree has been in contact with the developer for more information about using the app and costs associated with it and will provide an update in the future.

NH Lakes is taking the lead on the watershed management plan. Lake Winnepesaukee Association is planning to apply for federal money through a 319 grant. Some money is to be used for engineering on White Gate Road to supplement what was done previously.

Lake Winnepesaukee Association submitted a pre-proposal in October that was successful. The full proposal is due in January.

4. Status of 2021 sampling and results received to date – Warren sent several data sets to all subcommittee members via email. Data included: days the lake is ice covered, sampling that was done this summer, surface water temperatures, and data from Mirror Lake.

Summary of data from 2020 – Data in yellow are measurements that were above DES recommended values. Most of those were at White Gate and in Back Bay. This was the year of the drought.

2021 data from Bob Craycraft have very few measurements above 8.

Many issues to be explored – due to Covid, will pursue these in small groups via zoom.

5. Status of Thermocycler/PCR and e-DNA analyses (Pete Countway) – Pete identified another app called Lake Observer that is similar to the Lake Tahoe app. The two can be compared.

Pete presented an overview of what has been done to date: (Slide presentation available).

- Committee purchased a Handheld thermocycler – quantitative PCR machine, uses molecular tech to study unseen world.
- Two trainings were conducted (Mid-April and early May) to familiarize all with technology.
- New Machine and Bigelow machine were compared and analysis showed two machines performed differently –
- In August Pete returned to Warren's lab and did pipetting side by side; feels technique may be responsible for some of the differences in two machines.
- Based on DNA sequencing, encountered Gloeo, Anabaena, and Microcystis-like cells
- Pete's lab validated primers that can be used simultaneously on a single sample. Found that DNA primers and probes will work with versions of species seen in local lakes, allowing assays to be run simultaneously using ½ the amount of reagents.
- DNA sequencing work results: Pete ran DNA sequencing to identify the Family, Genus, and Species of bacteria found in WH. Bar graphs were generated of the distinct genetic types and compared to a national data base in order to identify them. (See slides from Peter Countway's PowerPoint) At Family level, dominant species is Cyanobium. At Genus level, Anabaena dominates sample from Muir's beach and the last 3 sequences are dominated by Cyanobium. Concluded that Cyanobium is dominant. Peter indicated that little is known about toxic threat of pico-cyanobium and will need to look at changes over time.

- Samples collected over past three months should be available soon (possibly next week). Peter indicated he is doing long-range sequencing and hopes to get better data on species from WH sites.
- Have a couple of new assays that have been ordered to detect genes for *Anabaena* and microcystins. Toxicity assay can be run at same time so use only ½ of reagent would normally use.

Abby asked if the conclusion is that WH samples are dominated by Pico rather than *Glo* and others? Will we need a specific assay for PICO? Peter indicated it isn't known if PICO is toxic yet. Further indicated they see cyanobium in a lot of lakes in Maine that are similar to Winnepesaukee. He indicated that lakes that are green tend to have more *Anabaena* and microcystins. Pete feels PICO is a good one to monitor.

Warren indicated that we have 28 samples collected this summer and extraction work is needed. Pete indicated he is willing to come and provide a review session on extraction techniques for the group.

Warren spoke Hillary Snook from EPA who is interested in what Wolfeboro Waters Assessment group is doing.

6. EPA/NASA/NOAA CyAN App (Andra Dekkers)

Andra has done some preliminary investigation of this app. She indicated it does have potential to be helpful for us. Satellite data are available going back to 2015. They have been working to corroborate data with measurement on various lakes around the US. Andra is working to learn how to access data from this app for WH.

7. There was no new business

8. The meeting was adjourned at 3:12pm