

**Town of Wolfeboro
Wolfeboro Waters
Assessment Subcommittee Meeting
Meeting Minutes
1:00pm -Friday March 25, 2022
Great Hall
Wolfeboro Town Hall
Wolfeboro, NH 03894**

*(This is a public town meeting requiring an in-person quorum
with an option for the public and out-of-town subcommittee members to attend online.)*

Attendees: (in person):Warren Muir, Beth Marcoux, Bree Rossiter, Abby Adams, Linda Murray,
(Remote) Emilie Clark, Steve Wingate
(Absent) Andra Dekkers

- 1. The meeting came to order at 1:05pm.** It was moved and approved that Bree Rossiter be appointed to the Subcommittee as a member. The requirements for in-person quorum were met.
- 2. The Nov 12, 2021 meeting minutes** were approved as written.
- 3. Discussion of the results of the Mar 8, 2022 town voting—** All warrant articles passed.
- 4. Discussion of Information items provided in advance of the meeting—**
 - A. Warren (W) noted we have received much data from Bob Craycraft on Winter Harbor (WH). Total P and total N analyses were completed and it was found that in WH, we have lots more N than P indicating the area is P limited. Also, there is a high percentage of P in the water column that is dissolved P. WHO indicates this is not what is expected and the causes for this remain unclear. Bob Craycraft will review procedures and analyses. Other data were also provided to members via email. Warren indicated there were no alarming findings. Abby noted that on Lake Winnepesaukee data the P was 26 which is high. Steve indicated that stream that runs under 109 into WH is likely run off coming from the road.
- 5. Changes at UNH and likely ones in the 2022 LLMP program**

Amanda McQuaid was hired by UNH and is now over Bob Craycraft and the LLMP program. W asked if LLMP would be willing to continue the analyses they did in the past and she agreed. W received a note from her indicating UNH may drop their fluorometry. This is another reason to get the newer fully calibrated fluorometer. W provided a list of equipment and their costs to all members by email. UNH sent a class to study WH and there is a report that will be sent to W. If town is still thinking about a sewer line down Carry Beach what is best way to assess water to determine if there is contamination from failed septic systems. Bigelow suggested using stable isotopes to study this. Linda indicated she hasn't heard any more about this. Doesn't think it will come up this year. Feels it is likely further down the road. When Amanda left DES, she vacated 2 positions at DES. One person has been hired to be the state lead for beach monitoring. Amanda is on search committee for her replacement and she anticipates selection will be made in April of a well-qualified person.

Assessment plans for Upper Beech Pond-- Warren met with Rick Scott and his assistant at Upper Beach Pond Water Treatment plant. The water body is largely protected with very few houses in the area. They have had biological growth in pond in the past. In recent years they treated the pond with copper to knock down growth. Extensive treatments are done to water and by EPA standards the water is of good quality. They add P (3 micrograms per L) to the water to protect and coat pipes, some of which date back to 1890 and many are lead. Warren heard presentation

yesterday that suggested water suppliers are putting P in at higher levels than that. Hiring a new person in Wolfeboro (Bridget) and will be the laboratory and sampling lead person. It was agreed she will be trained to take traditional LLMP samples in early July and late in August for comparison. W recommended sampling during times of bloom as well. W will use fluorometer to determine the presence of cyanobacteria or algae blooms.

Rick Scott mentioned the Public Works Dept work in 2020 to reduce runoff coming down Forest Road and from Partridge Drive. He was proud of what they have done, including a 2,000 gallon catch basin at bottom of Forest Road just before Whitegate Road. The outlet goes into perforated pipes underground before going into a wet land.

- 6. Discussion of NHDES \$10K grants for cyanobacteria-related assessments of town drinking water supplies.** NHDES advertised they have 10K grants available for cyanobacteria related work related to town drinking water supplies. A few local people suggested that WW work with the town to apply for that and hopefully to include the purchase of a portable fluorometer. W has one and there is also one available through a Don Kretchmer on Lake Wentworth. Both measure Phycocyanin and Chlorophyll-a concentrations that are associated with cyanobacteria and green algae respectively. There is newer version of the fluorometer that measures Phycocyanin and Phycoerythrin, two different chemicals associated with different cyanobacteria. W would like to get one. Hillary Snook of EPA provided info on where to buy one (\$1835). Procedures for getting grant are complex so Rick Scott did not want to have the town apply for such a grant. W feels it would be best to get it through budgetary funds.

- 7. Proposal to calibrate the current fluorometer and to buy a companion fluorometer capable of measuring concentrations of phycoerythrin**

Bree said LWA is applying for grant for Paugus Bay water supply and will be getting a fluorometer, but not the new version. W is proposing WW get the newer version that is fully calibrated due to the large amounts of picocyanobacterial found in WH and that is likely present elsewhere in Wolfeboro Waters.

W wants to measure salinity of water as well. Need to collect samples to determine current levels – one per year in a couple of places.

- 8. Report on Andra's, Beth's, and Warren's trip to Bigelow lab**—It was time well spent. We toured labs, heard talks from 5 of their scientists followed by discussion. W will share PowerPoints from those presentations. We also spent 1 hour in lab learning a new method for extracting and cracking cells from the filters of samples we collected in 2021.
- 9. The status of e-DNA and local PCR analyses** – Bigelow ran 4 of our samples through a Nova Scotia lab – determined that the June 2019 Winter Harbor bloom was *Anabaena/Dolichospermum*. In other samples they found 80% picocyanobacteria. Bigelow provided us with a manual that they and a citizens group in Florida prepared that describes the procedures.

10. Proposed purchase of additional equipment and supplies to support our PCR analyses –

Proposed Assessment Items to Purchase

- VortexGenie 2 with variable speed control and timer. (Scientific Industries) \$391.84
- 12-place 15 mL tube adapter for the VortexGenie (order direct from Scientific Industries.) \$107.24
- Biospec Products, zirconia/silica, 0.5mm diameter. A one-pound bottle. \$57.00
- To test for Cyanobium - QuantaPerfecta Sybr Green Fast Mix (Direct from QuantaBio or from VWR) \$265.93
- Additional PrimeTime Gene expression master mix for probes (IDT) \$325

- Microcystis Texas-Red Probe \$350
- Fluoroquik Portable Phycocyanin-Phycocerythrin Fluorometer – calibrated \$1865
- Calibration of the current Fluoroquik Portable Chlorophyll-a- Phycocyanin Fluorometer \$255
- A set of standards to assess any drift in the calibration over time. Est \$75
- Shipping/handling est \$150

Estimated Total - \$3842. Linda indicated the committee is budgeted for this.

Subcommittee moved and approved spending approximately \$4,000.00 on above equipment.

11. Discussion of 2021 data received to date and still expected – W will send out his summary of insights Main insights gained over the past year: the importance of what’s on the bottom of our lakes; the roles of phosphorus, organic matter, iron, nitrogen, picocyanobacteria, the life cycle of Gloeotrichia.

12. Issues/questions to pursue in 2022:

Characterizing the picocyanobacteria in our lakes and their impacts, identifying and figuring out how to measure what controls blooms of the cyanobacteria in our lakes, making sure that we are assessing all the important types of cyanobacteria present, verifying our soluble phosphorus in our water column samples, how to prioritize sources of stormwater runoff, how to treat sources of stormwater runoff beyond public works BMPs and “Soak Up the Rain”, start collecting chloride concentrations in our lakes. Goals for 2022:

- Get baseline LLMP data for Upper Beech Pond
- Get fluorometer data during blooms at the water treatment plant
- Take over fluorometer measurements from UNH
- Do PCR analyses of Gloeotrichia, Dolichospermum/Anabaena, Microcystis, and Cyanobium on our 2021 and 2022 samples
- (If Wolfeboro is still interested in pursuing a sewer line to Carry Beach, etc.) Assess septic system contributions of nutrients in Winter Harbor (and Jockeys Cove?)
- Start collecting baseline chloride levels in our lakes
- Develop an approach to prioritize stormwater runoff streams for mitigation.
- Try to account for the unexpectedly high dissolved phosphorus concentrations in our water samples.
- Identify one or more mitigation strategies for stormwater streams that are not candidates for public works BMPs or Soak-Up-the-Rain approaches, and try to evaluate their efficacy and practicality in our area
- Identify and quantify picocyanobacteria over in Winter Harbor. See whether as relates to the presence of Gloeotrichia or other cyanobacteria (Bigelow doing for 2021 and Gloeo via e-DNA barcoding)
- Learn how representative conditions in Winter Harbor are compared to the rest of Wolfeboro Waters
- Assess the impacts of proposed work on the stream entering the north end of Rust Pond
- Help advise and support the Wolfeboro Bay watershed environmental study
- Figure out how to assess the biological makeup and the oxygenation of our sediments and collect preliminary data in Winter Harbor

W feels we need to look at frequency of measurements and what we should be collecting. Steve feels there should be more measurement of run offs. Majority of data has been collected in summer. W has been collecting samples year-round – sees highest levels of P in spring and fall.

13. Status of the proposed Wolfeboro Bay Watershed Study -- \$100,000 coming from federal government to town and then goes to LWA. June deadline and expect to get money by fall. Zoning board turned down request for 70-unit development on Back Bay. Effort is now beginning to raise \$ to put those 4 acres in conservation.

14. New business— W and Bree attended virtual meeting of the Cyanobacteria Monitoring Collaborative with folks from all over NE. Ken Wagner spoke. W feels what some of the traditional monitoring that we have been doing over the years is not related to what we are seeing happening. Water quality measures were good during bloom in WH. Wagner gave talk that covered a wide range of topics that

addressed the concerns seen in WH. W will send link to talk when it comes online. W encourages all members to watch it. W suggested we may want to pay him to evaluate our data or spend time with the committee.

15. **Other** – a bunch more of our samples have been extracted and they are being sent to Nova Scotia – represent various lakes. Expect those results back in 6-8 weeks and can compare biological bases between lakes.

16. **Public comments**-- none

17. **Adjournment**—The meeting was adjourned at 2:50pm.