



Cyanobacteria Plan Advisory Committee Meeting 4

DRAFT Meeting Minutes

March 10, 2023, 9:00 AM – 12:00 PM

Room 110, NHDES, 29 Hazen Dr., Concord, NH and virtual

Members Present

Doug Darling, Chair
Kristin Conte
Charles DeCurtis
Laura Diemer
Don Kretchmer
Andrea LaMoreaux
Abby Mathewson
Amanda McQuaid
David Neils
Rep. Andrew Renzullo
Tom Shevenell
Inga Sidor
Patricia Tarpey
Michele L. Tremblay
Senator Ruth Ward

Representing

Tucker Pond Association
Drinking Water Suppliers
The Nature Conservancy
Environmental Engineers
Environmental Engineers
NH LAKES
NH Department of Health and Human Services
University of New Hampshire
New Hampshire Department of Environmental Services
New Hampshire House of Representatives
Volunteer Monitor of Lake Water Quality
Veterinarians
Lake Association
New Hampshire Rivers Council
New Hampshire Senate

Members Absent

Scott Decker
Sara Holland

Fish and Game Department
Lakes Management Advisory Committee

NHDES Staff Present

Ted Diers
Kate Hastings
Erin Holmes
Nisa Marks
Rene Pelletier
Liz Pelonzi
Pierce Rigrod
Tracie Sales (virtually)

Water Division Assistant Director
Cyanobacteria Harmful Algal Blooms Program Coordinator
Watershed Bureau Administrator
Watershed Coordinator
Water Division Director
Drinking Water and Groundwater Bureau
Drinking Water and Groundwater Bureau
Rivers and Lakes Programs

Guests Present (Virtually)

Representative Rosemarie Rung

Members of the public: Alexa Cetta, Laura Colcord, Warren Muir, 3 unknown phone numbers

I. **Welcome and introductions:** Chair Doug Darling convened the meeting at 9:04. Members introduced themselves.

II. **Consent agenda:** The committee did not have any corrections to the January 26, 2023 draft meeting minutes. They were approved by consent.

III. **Various Updates:** On behalf of the committee, Doug Darling formally acknowledged receipt of a letter from Wolfeboro Waters Committee with five topics for inclusion in the plan and supporting water quality information. He also acknowledged a recommendation from a member of the Eastman Pond and Streams Committee to monitor nutrient transport to remote ponds not yet affected by blooms.

Dave Neils informed the committee that NH LAKES has invited Doug and him to present at the Lakes Congress on June 2. The cyanobacteria plan will not be done by then, but they will speak to the process of its development. Andrea LaMoreaux said the theme of this year's congress is "restoring and preserving the health of our lakes."

Nisa Marks provided an update on the \$30,000 allocated to NHDES in 2022 HB1066. The two contracts are on the Executive Council agenda for March 22, meaning their completion date will be later than originally anticipated.

Representative Rosemarie Rung provided an update on HB276 (cyanobacteria project funding) which has been referred to the House Finance Committee. The Finance Committee told Representative Rung that it intends to hold the bill until fall when they will have a better sense of the state's remaining bonding ability. It would be within the Finance Committee's authority to amend the bill to have a different funding source. Doug asked if there was discussion of whether to have the bill authorize loans or grants. Rep. Rung said there was not. She talked with Finance Committee members about current funding needs. She said there was not material opposition, just concerns about how to fund the bill.

IV. **Needs assessment:** Doug continued discussion from meeting 3 about what changes are needed to better control the nutrient pollution that causes cyanobacteria blooms. Doug circulated a summary of recommendations from the last meeting to verify there was consensus on the committee about each item. Doug also asked that committee members bring these recommendations back to constituent organizations to gather support for the plan and these types of changes:

1. Creation of a formal permit process for in-lake management. This should require implementing a watershed plan to address external nutrients before pursuing in-lake management.
2. Creation of additional funding streams to facilitate both planning and implementation of watershed management plans for lakes with excess nutrients.
3. Creation of a statewide programmatic watershed management plan for waterbodies impaired by cyanobacteria, to include those general management steps that apply broadly.
4. Promote stronger legislation to address nutrients in runoff from new development. The development permitting process should be revised to abide by existing water quality rules with respect to phosphorus. Alteration of Terrain (AOT) permits should better regulate shoreland development.
5. Incentivize waterfront property owners to maintain and upgrade septic systems, possibly through a septic remediation/upgrade loan fund.

Regarding bullet one, Kristen Conte asked to change "before" to "while" in order to cover lakes that do not have excess nutrient loading. Doug said consensus last time was to have in-lake treatment be a last-ditch effort. Amanda McQuaid said she agreed with addressing watershed conditions before doing in-waterbody management, and that those lakes where external loading is already under control could go directly to in-lake management. The committee's consensus was to keep the wording of bullet one as is.

Relative to bullet 2, Pat Tarpey asked how one would know that a lake has excess nutrients without doing a watershed management plan. Doug said the presence of cyanobacteria blooms would be one indication, complemented by monitoring data from VLAP, VRAP or other monitoring programs. Don Kretchmer suggested striking the last three words of bullet 2, since there are lakes where planning should be done before the waterbody is impaired not only once excess nutrients are present. Amanda and Kristen agreed and emphasized that some lakes have blooms without having large nutrient inputs. Michele L. Tremblay asked to add rivers to bullet 2. Based on conversation, the committee supported a revised bullet 2: "Creation of additional funding streams to facilitate both planning and implementation of watershed management plans for lakes and rivers."

The committee supported bullet 3 as is.

Relative to bullet 4, Michele asked why the focus was on AOT rules and not on the Shoreland and Wetlands acts. Pat clarified that the current AOT permitting process addresses larger developments, but not some smaller ones creating sediment and nutrient runoff. She suggested decreasing the slope requirements from 25% to 15% to trigger AOT permitting review of smaller projects.

For bullet 4, Tom Shevenell suggested keeping the first sentence and adding "for example." Don asked to add redevelopment in addition to new development, because of how widespread redevelopment is on lakeshores. Doug asked if there was consensus on the general need for stronger legislation for runoff. The committee confirmed. Bullet 4 is revised to "Promote stronger legislation to address nutrients in runoff from new development and redevelopment. For example, the development permitting process should be revised to abide by existing water quality rules with respect to phosphorus and alteration of Terrain (AOT) permits should better regulate shoreland development."

Laura Diemer said that she would also want to see a broader effort focused on nutrient sources. She said that input from other stakeholders is needed. She also suggested getting more funding for existing groups like NH LAKES and New Hampshire Rivers Council to increase education efforts about stormwater management and septic systems.

The committee expressed support for bullet 5. Michele suggested removing "possibly" in bullet 5 and substituting "such as." The committee supported that change, to read "Incentivize waterfront property owners to maintain and upgrade septic systems, such as through a septic remediation/upgrade loan fund."

Ted Diers gave a heads up that there is a fair bit of sensitivity from parties such as the governor's office and Executive Council about subsidizing second home development and that the recommendation for septic assistance may raise some eyebrows. Doug suggested there could be future refinement of the policy recommendation to limit incentives to year-round homes, people under certain income thresholds, or certain locations. Andrea said it is a misconception that everyone living around lakes has the funds to fix septic systems, and there is a combination of people who cannot afford upgrades/repairs and those who choose not to. She supports creating a remediation assistance fund that includes funding caveats. Michele agreed that it would be easier to pass an assistance fund if there were an income limitation or other financial qualification as part of the proposal.

Doug said that at Tucker Pond the lake association paid half of the cost of inspection for a certain number of people. Amanda asked when the septic study commission report was. Ted said it was about three years ago.

Senator Ward asked how one could know if someone upgrades their septic system. Doug said septic systems are regulated by towns. NHDES has a database of septic system replacements that does not

include records of septic system cleanings. Sen. Ward suggested that because there is a process by which it is known when system upgrades are done, there is a mechanism for sending reimbursements to those who upgrade their system.

Doug raised the idea of using shoreland overlay districts as a mechanism to influence the extent of development while maintaining local control. Michele said the Office of Strategic Initiatives (OSI) has model ordinances that municipalities can adopt. Ted pointed out that OSI has been subsumed into the Department of Business and Economic Affairs. He said the model ordinances were compiled by NHDES and are in the “innovative land use manual.” He said that regional planning commissions have taken over work on the manual and NHDES no longer houses it.

Doug asked for more detail about how to set up shoreland overlay districts. Laura said they are zoning districts the town can adopt and then apply regulations just to that zone. Many towns do have a overlay district for specific waterbodies, and they can make it easier to get more restrictive municipal ordinances passed. Doug said different towns have different setback distances and different additional requirements, such as lower slope requirements for AOT permits or requirements about how often to pump septic systems. Doug shared an example from Sunapee of an ordinance requiring septic pumping once every three years, with exceptions. Doug suggested that NHDES compile information on how local ordinances are applied for and pursued. He also suggested that NHDES post on the agency’s website BMPs, model ordinances, and how to apply overlay districts to the shoreline.

Ted suggested the committee look at the PREPA model (Piscataquog Region Estuary Planning Assessment), which identifies the criteria that could be helpful to prevent impacts to waterbodies, does a community by community analysis, and then reports back to the communities about areas for improvement. That information is then used to apply for grants to assist communities in attaining higher standards. The model has been pretty successful. Ted warned that NHDES is not a land use planning organization, so is not well staffed to do too much of this. He suggested that regional planning commissions are the best partner for that work because they have planners on staff. Michele said that EPA watershed plans also do something similar.

Andrea agreed that there is a need for overlay districts and that there are an increasing number of local septic ordinances to look to as examples. She said that she is asked periodically about how to create them. NH LAKES does not have the capacity to walk stakeholders through the process of adoption. She said it is usually volunteers who are interested in getting overlay districts adopted, and that having an agency or other group to walk volunteers through the adoption process is needed. Doug echoed the need for public assistance through the process.

Pat commented that some municipalities do not have any zoning at all and that other places will not want to adopt an overlay district. She said municipalities often look to the state for what the minimum setbacks should be. She also said that towns can revoke larger setbacks as elected officials come and go. She would like to see the state itself be more restrictive about what can be done in the shoreland buffer.

Dave said examples of different types of shoreland overlay districts could be included in a statewide programmatic watershed-based plan (proposed in bullet 3). The committee supported that idea. Michele suggested that there be separate recommendations for shoreland setbacks and for septic restrictions within the shoreland buffer. Ted agreed that was a good idea since septic is usually regulated based on protecting health, which has different tools than those used in other types of land use decisions. Andrea also agreed.

Pat opened conversation about septic site assessments. Pat said that the law current requires a site assessment at the time of sale. The site assessment is not a true evaluation of the septic system, and the results are not shared with the state or town. The site current assessment is therefore functioning as a “buyer beware” notice, but not as a mechanism for protecting water quality. Pat said that while a buyer/seller has 60 days to fix shortcomings, in practice that usually goes undone. She said site assessment results should be required to be shared with town and state, and that the seller or buyer should be required to fix the septic if it is found to be faulty or inadequate. Multiple committee members agreed that many septic repairs go undone even if septic systems are known to be in failure. Don emphasized that results of a site assessment should be recorded regardless of if in failure or not. He mentioned that having those results helps with watershed planning. Massachusetts and Maine both have requirements to fix systems in failure. Michele referenced that there were concerns from the Association of Realtors when the septic study commission discussed idea of requiring septic fixes at the time of sale. Michele pointed out that septic issues are contributing to the degradation of the resources that attract people to buy homes here in the first place. Andrea said she met with the Realtors recently and they still emphasize creating incentives, such as a fund to assist with repairs, over a requirement-based policy. Michele suggested putting in a requirement for municipal notification as a first step. Doug said information from the site assessment should be reported to the state as well as the town, since many towns do not have active health officers.

Doug clarified that current law requires a site evaluation to determine whether a septic system could fit on the site, that site evaluators are forbidden from actually inspecting the septic system. Ted affirmed that as correct. Doug said that NHDES administrative rules state that the site assessment “shall not” constitute an inspection of the existing septic system. Doug suggested changing the administrative rules to remove that prohibition, and that legislation should also be pursued requiring an inspection at time of sale.

Kristen asked who at NHDES results would be reported to. Ted said NHDES has a subsurface bureau with expertise in septic systems. However, the subsurface bureau currently has a 30% vacancy rate (one of the bureaus with the highest vacancy rate), making capacity a significant challenge. Ted noted that enforcement actions on septic systems can linger for years, and that current law means that local health officers have much more authority than NHDES.

Laura said a clearer definition is needed of septic “failure,” as most forms of failure are unseen. She said that getting better training for site evaluators would also help. Pat said she thought there was a good licensing program for septic evaluators. Ted said that is the case, but that septic evaluations are not currently part of a home sale. Doug suggested that NHDES communicate more broadly about what an inspection is and described that an inspection is different from what is typically done at time of pumping. Pumpers often reference that the septic seems fine, but pumpers do not do a full inspection. Doug asked for consensus that new legislation is needed to direct inspection at the time of a property’s sale, and that that information be required to go to the town and state. The committee agreed.

Senator Ward asked if the components of a full inspection are detailed somewhere. Doug and Pat described various components: looking in the tank, checking baffles, putting a camera up the pipe to check for root growth, clearing out the distribution box, digging two holes in the septic field to look for liquid, looking at soil saturation, etc. Ted referenced the system evaluator certification program as the best source for information about inspections. Pat said that the Granite State Installers and Designers website also may have information. Doug asked that information about what constitutes a septic evaluation be more obvious in NHDES communication materials, and said it was a common point of

confusion among residents at Tucker Pond. Michele said most homeowners will not be reachable by an education campaign, and wondered if communication should target haulers/servicers instead. Nisa mentioned that she commonly gets calls from people with questions about septic assessments and inspections. The committee agreed on the need for a factsheet about the different types of inspections, evaluations, etc., what they mean, and who does them. Ted said he would pursue that.

Doug asked if the rules based on human health safety are adequate to protect water quality, given the distances that nutrients are known to leach (hundreds of feet). Laura said septic systems are generally designed to treat pathogens, not nitrogen and phosphorus. There are starting to be advanced systems available that have a smaller footprint and better treatment of nutrients. However, those systems are usually more expensive and have additional maintenance compared to traditional septic systems. Advanced systems' higher cost and the lack of public awareness are barriers to greater adoption.

Pat said septic systems contribute 10 – 20% of the phosphorus load in studies around Winnepesaukee. Pat asked how big a problem septic systems are from the public health perspective, including pathogens and pharmaceuticals. Abby Mathewson said human health has historically been the concern driving regulation, not nutrient seepage. She said that as the threat to public health from cyanobacteria increase and as increasing linkages are drawn between cyanobacteria and ALS, DHHS is open to expanding what they consider part of protecting the public health.

Doug asked how strong the data are that connect ALS and cyanobacteria blooms. Abby said there are several peer reviewed articles out, but the research is still developing. Amanda said there are an increasing number of studies connecting the toxin BMAA to neurological disease, and in New Hampshire there are observed clusters of ALS that correlate with water quality indicators of cyanobacteria blooms. She said analysis is complicated by multiple exposure pathways including aerosolization and food ingestion. The science is still developing. Amanda offered to share the key studies about this topic.

Doug summarized the committee discussion by recommending NHDES monitor advanced septic systems and make information available about them because of septic systems' contribution to the movement of nutrients into waterbodies. Don supported that idea. He said there is not a lot of info about nutrient emissions over time from either new systems or conventional ones. He suggested some sort of demonstration project to assess the removal efficiency of newer technologies would be helpful and should be added to the list of research needs. He said new septic technology will be needed because many sites are too small to have an adequate system with existing technology. Amanda agreed that nutrient tracking is needed and pointed out the mention of high dissolved phosphorus in the letter from Wolfeboro Waters. Tom said there is not a good understanding of groundwater dynamics into lakes, which relates to how nutrients move out of the terrestrial system and into waterbodies. Doug suggested adding a research need to understand how nutrients move through New Hampshire soils.

Tom said leaf fall also contributes phosphorus to the lake; Dave and Andrea said that is a natural part of the ecosystem. They also get phone calls about cutting trees around lakes to reduce leaf fall, which is not advisable.

Dave said the transport of nutrients in sediment in stormwater runoff is a large issue and asked the committee for ideas on how to address stormwater sedimentation. Pat said part of issue is the number of private dirt roads near lakes, where smaller homeowners and road associations are stuck with high costs to properly maintain their roads. Michele asked what the alternative is, since when roads are paved the volume of runoff increases. Pat said that her lake association has done gravel road

maintenance workshops. Michele said there is an existing handbook of best management practices for gravel road maintenance.

Michele asked whether runoff is actually contributing a significant nutrient load. Doug said that 63% of the phosphorus input into Tucker Pond is from runoff and that samples showed ten times higher phosphorus levels in tributaries during a rainstorm. Don gave examples of a number of lakes where 60+% of the phosphorus comes from runoff. He said that the biggest portion of nutrients often comes from the developed area of a watershed, and that controlling development is one of the most important things that can be done to minimize nutrient issues from runoff. Dave said that many watershed plans calculate phosphorus sources based on a land use mapping exercise, without doing any stormwater sampling. Dave said that stormwater sampling is hard to do and often has a high degree of uncertainty.

Michele asked if there is research that connects the location of sediment plumes with where blooms occur. Don said most runoff occurs when lake is freely mixing, so it is hard to correlate bloom location with sediment input location. He also said that biological uptake is low during mud season because there is not a lot of greenery. Finally, he said that blooms move around a lot with winds, currents, and other factors, making location correlation not the right way to think about runoff contributions to blooms. Don and Doug emphasized that the science shows that phosphorus contributes to blooms and that phosphorus comes into waterbodies through runoff. They also said that it would be a mistake to say that because there is not a bloom near a tributary, that tributary is not contributing nutrients.

Pat pointed out that stormwater infrastructure is often set up to channel stormwater directly into lakes and rivers. Don agreed and said that the effect of hard-piped stormwater is to connect properties throughout the watershed directly to waterbodies. Laura said channel modifications such as straightening also change the movement of nutrients into lakes and rivers. She identified that many tributaries are scoured out because of increased runoff from developed areas around smaller streams.

Dave suggested there is a general need to increase participation in LakeSmart as a way to help manage stormwater without regulatory action. Michele described that the Watershed Stewards program is the New Hampshire Rivers Council's correlate for stormwater action on private lands. Amanda agreed that action on individual properties can contribute a significant percentage of nutrient runoff. Doug wondered if there would be a way to link LakeSmart and Soak Up the Rain to some sort of incentive for homeowners. Michele said that the Rivers Council offers incentives by bundling homeowner services, such as getting a discount on septic system pumping if many homes in a neighborhood sign up together to get their systems pumped on the same day or getting discounts on phosphorus-free fertilizers.

Andrea said that some people do not need to have an incentive to participate in certification programs, and that NH LAKES and New Hampshire Rivers Council would be overwhelmed if every property needed to get certified. Don suggested that the level of participation in LakeSmart from a lake community could be part of the scoring criteria for section 319 implementation grants. Doug said it could similarly be considered in the scoring criteria from any new funding source for watershed-based plans. The committee supported that idea.

V. **Research Needs:** Nisa presented an introduction to the list of research needs generated by staff. The proposed focus for research items in the plan includes questions of immediate relevance to bloom prevention, management, or public health risk, or topics for which there is little New Hampshire-specific information.

Michele said her suspicion was that blooms in rivers are more common than currently known. She asked that there be monitoring for bloom occurrences in rivers, and that there be research about the conditions under which blooms occur in New Hampshire rivers and what can be done to address them. Amanda asked what type of bacteria bloomed on the Blackwater River. Kate said it was a picocyanobacteria species.

Amanda pointed out that picocyanobacteria are not included in most monitoring efforts because they are difficult to monitor, and that little is known about their toxicity. Don suggested that national research is needed about bloom toxicity dynamics and why toxicity comes and goes. Amanda emphasized that it is important to be careful when communicating about toxicity because sampling is a snapshot in time, usually for one toxin. Doug asked what a picocyanobacteria bloom looks like. Amanda said the water usually looks more turbid, but they are difficult to detect. Testing for picocyanobacteria usually requires a PCR. Picocyanobacterial species and their toxicity are still poorly known.

Andrea said that she gets calls from people observing blooms after weekends of high recreational use. She said that any form of shallow-water recreation has the potential to suspend sediment and make phosphorus available. She asked that an item be added to research the connection, if any, between shallow water recreation and bloom dynamics.

Don said that some blooms, *Gleotrichia* blooms in particular, form on sediment, grow, and then move upwards in the water column. As they do, they take phosphorus from the sediment towards the surface. What is not known is if that phosphorus is then available for other cyanobacteria groups to use. He would like to see research into this bloom dynamic. Amanda said that more needs to be done generally to understand the conditions under which blooms rise to the surface.

Ted asked if there is a national association of cyanobacteria researchers or something similar. Amanda said ITRC largely serves this role in compiling information needed for lake associations and state agencies. She also said that New Zealand does a good job with communication and investigating what types of cyanobacteria occur in what locations. Nisa asked that members email her any additional ideas for research needs.

VI. **Overview of the “Needs Assessment Ideas” and NHDES Progress towards a Draft Report:** Nisa described that NHDES staff have compiled ideas from many sources, including the committee, other states, and scientific literature. Staff are now approaching the end of data collection and pivoting towards making decisions and writing the plan. She asked for feedback on a table of all ideas. All ideas in the table will be considered when drafting the plan, but not all ideas will make it into the draft plan.

Nisa said that the table follows the same organization as the outline presented to the committee in meeting one, with the exception of adding a chapter specific to drinking water. Drinking water has separate stakeholders, funding sources, and regulation, and a separate program at NHDES. As such, it made more sense as a stand-alone chapter. The committee supported that decision.

Amanda said that one area for discussion in the plan is whether cell counts are the appropriate method to use to determine advisories. Amanda did not recommend an alternative approach but suggested that NHDES discuss in the plan why a cell count is used and potentially revisit that in the future as technology and scientific understanding evolve. She said that some states use cell counts and others use toxicity. She said that toxicity can vary substantially across species or across time within a bloom. She said research is needed into the relationship between biovolume and toxicity, which may be able to be measured through fluorometry in the future.

Doug said that an increasing number of lake associations will be doing their own monitoring over time. They would struggle to do a biovolume assessment and would want a simple metric to assess risk. Michele asked if it would be possible to have a card that showed different colors and correlated it to risk. Amanda said that is too simple, but that there could be guidelines for visual assessment and risk. Amanda also suggested that a basic photo could be a simpler way to report presence of a bloom that would still convey a magnitude of risk.

Don said that there needs to be a way to pilot and evaluate new in-lake treatment methods as they arise. He said that the treatment at Nippo Lake was a good example of how much can be learned through a pilot treatment. Ted confirmed that NHDES gets sales pitches from many companies and agreed with the need to have a third-party evaluation process. He suggested that NHDES would not be the best party to research techniques but would be well positioned to regulate new techniques. Ted also suggested that the need for third party assessments is not limited to cyanobacteria treatments, but also applies to septic and stormwater treatments.

Dave opened discussion on how to present information in the plan. Nisa expressed a desire for a plan that is easy for different user groups to open and find relevant action items on topics of interest to them. She said she plans to use headings, bullets, and timelines. Doug liked that organization. He said the plan should have items that individuals can use to talk with legislators. Nisa said she was envisioning having both stand-alone policy and funding chapters and a section at the end of each other chapter that listed the policy and funding needs associated with that topic (e.g. policy/funding needs for monitoring, or for watershed planning, etc.). The committee supported that idea.

Laura suggested designating lead parties for each action item. Ted said NHDES has talked extensively about what the appropriate level of recommendation for the plan will be. Ted described the end product will be a strategy laying out the broad needs, not a work plan having the who and when designated for each item. The committee agreed to this direction. Doug said that was part of why the committee focused on broad suggestions for which NHDES would later figure out the details. Laura suggested that there may be a need to identify contingency pathways or orders of operations in the plan. Nisa suggested some of that can be captured by how NHDES describes timeframes for each item.

VII. **Action Items and Next Meeting:** Nisa invited committee members to provide feedback on any subsection of the big list of ideas by March 24, focused on any idea that is missing from the list, anything that is misconstrued, and any key priorities. Doug invited people to share comments with the whole committee. Ted reminded the committee not to discuss the ideas in an email chain, given 91-A public meeting requirements for open meeting. Nisa reminded the committee that the next meeting will be to get feedback on a draft plan, and thanked committee members for their input.

Doug Darling adjourned the meeting at 11:52.