

**Highland Lake Leadership Team (HLLT)**  
**2024 HLLT Report to the Windham Town Council**  
**5/27/2025**

The Highland Lake Leadership Team (HLLT) is a partnership between the Town of Falmouth, the Town of Windham, and the Highland Lake Association to improve the overall health of Highland Lake. These partners, along with support from Cumberland County Soil & Water Conservation District, Maine Department of Environmental Protection, residents, road associations, and other stakeholders have been working to protect and improve Highland Lake for over 30 years from declining water quality. Collaborative efforts have resulted in the lake becoming delisted as a State designated impaired water body to currently meet its designated State classification standards. However, increasing trends in water quality decline and the observance of bacterial blooms led to the establishment of the HLLT in 2018, a formalized partnership overseeing ongoing water quality protection efforts.

Through HLLT with heavy input from stakeholders, an updated Highland Lake Watershed Management Plan was created listing a timeline for specific and prioritized actions to be implemented to protect and improve the lake's water quality with the primary goal being a reduction in phosphorus loading into the Highland Lake. This Plan is overseen by HLLT and implemented through specialized HLLT committees which currently focus on water quality, on-the-ground project implementations, ordinance updates, and education and outreach.

**The charge of the HLLT includes:**

1. To oversee and assist with the implementation of the 2020-30 Highland Lake Watershed Management Plan – an EPA and DEP approved Plan endorsed by the Town of Falmouth, Town of Windham and the Highland Lake Association.
2. To establish and conduct committees to assist with the implementation of the 2020-30 Highland Lake Watershed Management Plan's tasks. <https://tinyurl.com/2p8bakfx>
3. To monitor, assist, and coordinate, as deemed appropriate and necessary, scientific efforts to further understanding of watershed and water quality issues affecting Highland Lake.
4. To seek input and recommendations from experts and other stakeholders when needed.
5. To amend the 2020-30 Highland Lake Watershed Management Plan as necessary based on the new information gathered and/or changing situations and conditions.
6. To provide information on lake water quality status and remediation efforts to the Highland Lake watershed landowners and the local community.

**Executive Summary**

1. **Rainfall and Lake Levels:** The year 2024 started with significant rainfall, which tapered off by summer, keeping lake levels near the dam height until a noticeable drop occurred in late August.
2. **Water Clarity and Quality:** Secchi disk measurements mirrored those of 2023 until late summer when clarity improved, showing a more typical "clear water phase." This improvement is likely due to reduced rainfall and less nutrient runoff during late summer. The lake's phosphorus levels have been gradually declining in recent years, suggesting that preliminary implementation efforts may be helping.
3. **Education and Outreach:** Throughout 2024, we actively engaged with property owners and road associations by distributing Best Management Practices (BMP) documents,

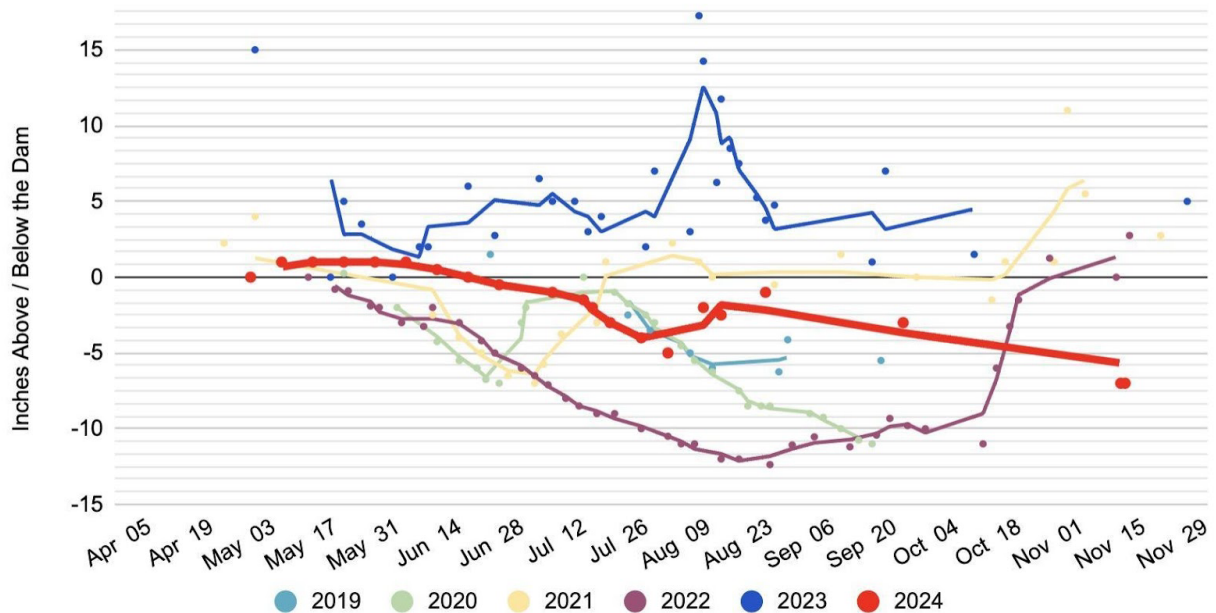
social media content, and videos. Feedback from our communications survey indicates these efforts are well-received.

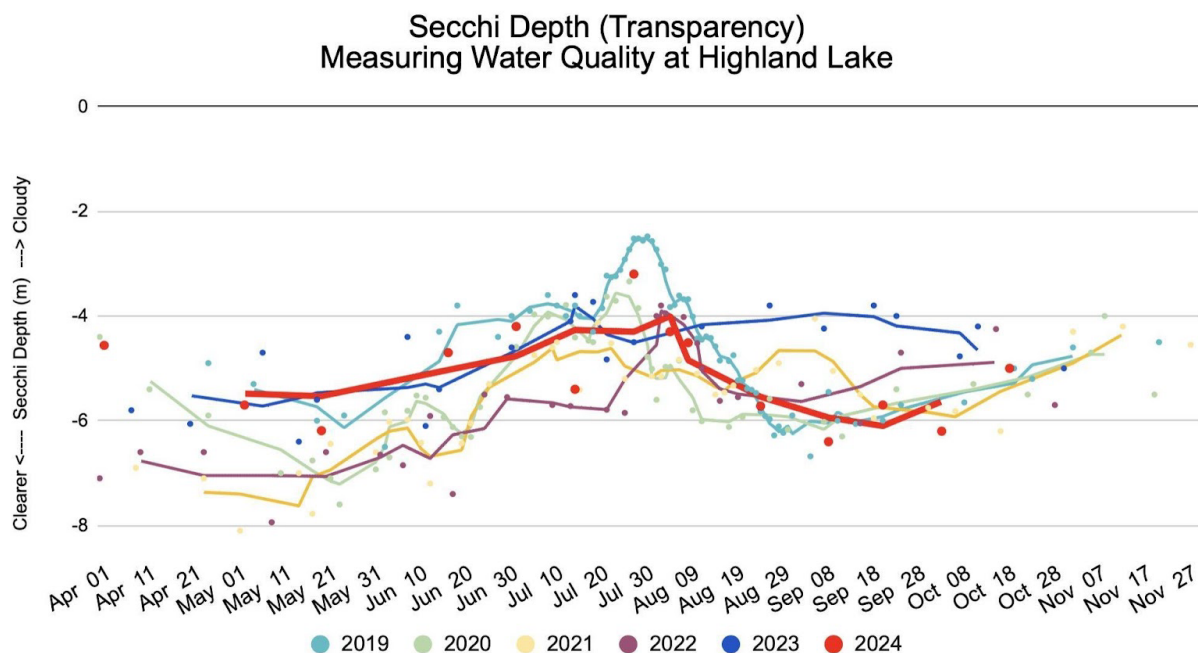
4. **Road Association Leadership:** In October we brought together leaders of 30 Road Associations representing neighborhoods around the lake to discuss best practices and joint efforts to protect the lake while maintaining our neighborhood's private roads.
5. **Grant Work:** Windham funded four Highland Lake projects, including a major \$30,000 initiative for runoff control. Additionally, a 319 Clean Water Act grant has been awarded to tackle road runoff into the lake starting in 2025
6. **Notable:** Highland Lake saw the successful fledging of two more loon chicks in 2024, marking a recovery after a drought in loon chick success from 2016 to 2023. Following the loss of one eagle from a mating pair and their nest in 2023, a new nest was established, and a new pair successfully raised an eaglet in spring 2024.

### Lake Water Quality in 2024

In 2024, Highland Lake experienced a stabilization of water levels following initial heavy rainfall, which led to generally consistent lake levels early in the summer. Water clarity, as measured by Secchi disk readings, mirrored the previous year until late summer when it improved, indicating a more typical "clear water phase" likely due to late season decreased rainfall and reduced nutrient runoff.

### Highland Lake Water Level Trends

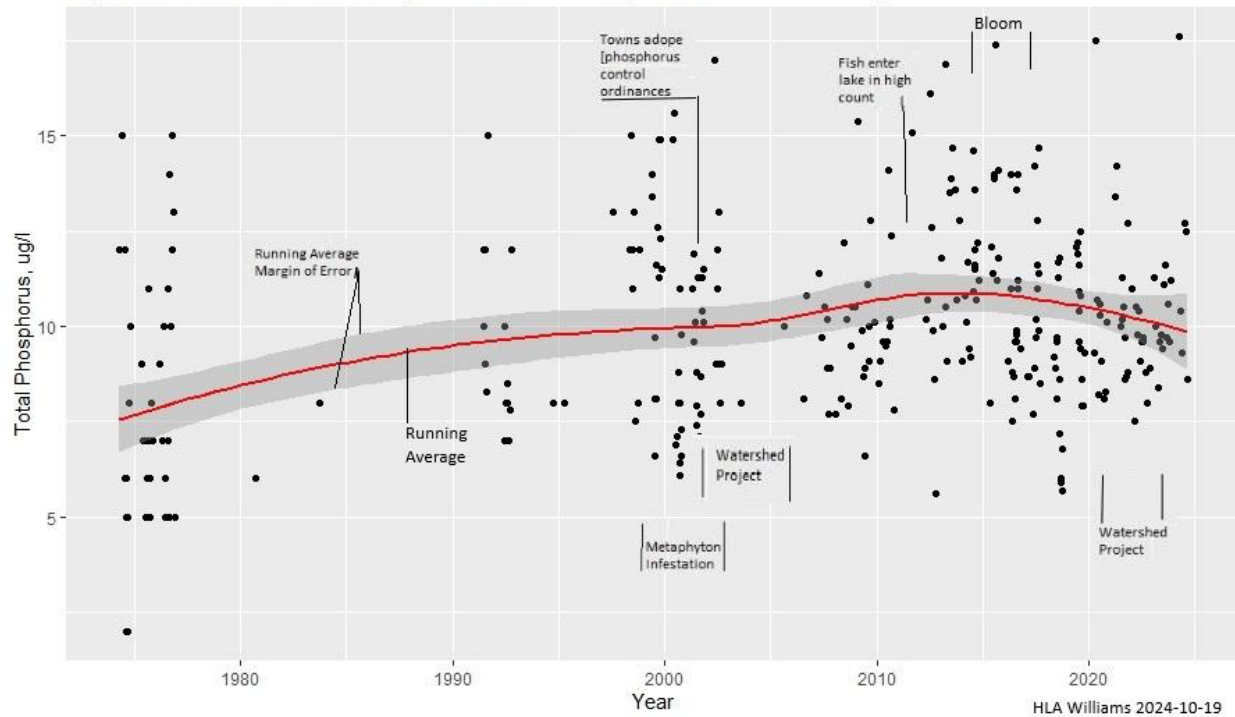




The Phosphorus chart below illustrates a consistent trend in reduced levels, indicating steady improvement over the past decade. We do note some outliers in 2023 due to heavy rainfall, but we maintain our belief that the long-term positive trends are, in part, a result of ongoing nutrient mitigation initiatives, Education and Outreach programs, and the implementation of town zoning ordinances.

NOTE: This year, we did notice an increase in **metaphyton algae**—the "green cotton candy" algae often seen near shorelines. This trend was also observed in several Maine lakes in 2024, likely due to an early ice-out, along with a warm and calm start to summer. A similar increase occurred on Highland Lake about 25 years ago, and we'll be monitoring this closely through 2025.

Highland Lake MIDAS 3734, Epilimnion Total Phosphorus 1974 - 2024 August



## Education and Outreach

Significant enhancements and expansions have been made to our [HLA Guide to Lake-Friendly Living](#), which is utilized year-round in newsletters and social media campaigns. This guide serves not only the Highland Lake community but also acts as a template for several other Maine lakes, providing them with a rich source of information.

As part of a new engagement effort, thirty of Highland Lake's road association leaders met in the fall of 2024 to share best practices (erosion control, stormwater runoff, road maintenance) and explore state and local grant options for significant projects aimed at lake preservation. This collaborative meeting highlighted the shared commitment around the lake to protect our waters and local neighborhoods. We plan to hold a follow-up gathering in the spring, bringing in engineers and technical experts to expand these efforts.



## **2024 Watershed Grants**

**Windham:** The Town of Windham reinvests revenue from boat registrations into the community through offering annual Watershed Protection Grants. In 2024, seven grants were awarded, with four directed towards Highland Lake projects. The largest of these, amounting to \$30,000, was allocated for relocating a section of a private road to better manage runoff where previously there was no drainage ditch. This initiative exemplifies the collaborative efforts of the Highland Lake Leadership Team (HLLT) and the Highland Lake Association (HLA) and local residents to reduce topsoil erosion and bonded phosphorus into Highland Lake, enhancing water quality and protecting the lake's ecosystem.

**DEP 319 Grant:** In partnership with the Cumberland County Soil and Water Conservation District (CCSWCD), the Highland Lake Association (HLA) collaborated with various road associations to secure a U.S. Environmental Protection Agency Clean Water Act Section 319 Grant. These projects are scheduled for 2025 and will extend through December 2026. This aims to mitigate the flow of gravel and nutrients from multiple private road sites into Highland Lake. The next steps include finalizing the work plan with the Maine Department of Environmental Protection (DEP), obtaining matching funds and signing a contract to initiate the work. This initiative will be managed by the Highland Lake Leadership Team's Watershed Management Committee.

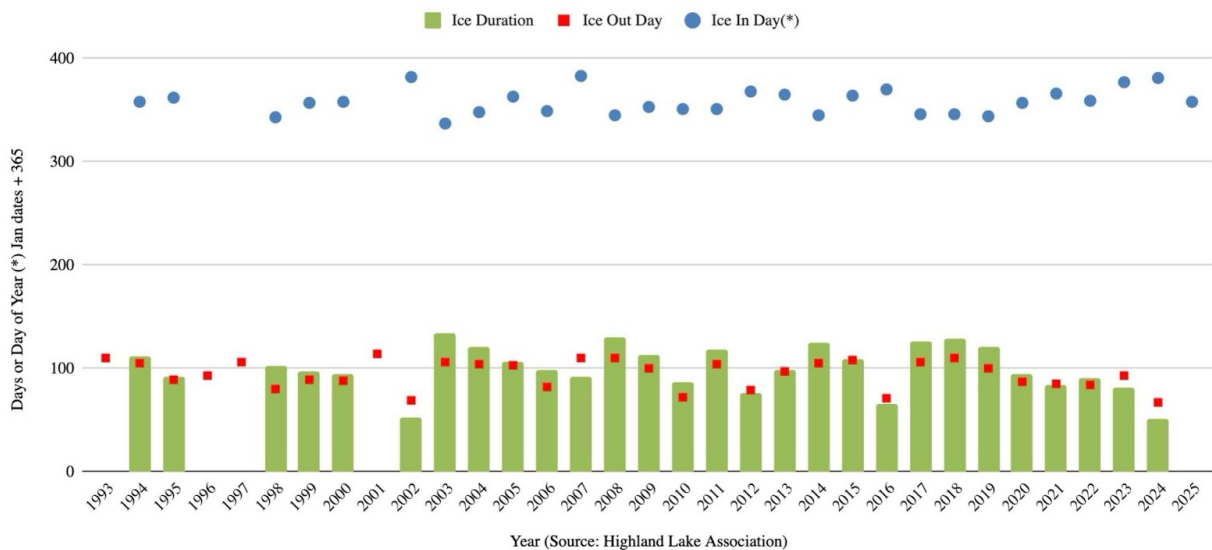
## **2024 Notables**

**Birth of two Loon Chicks** – In early July, HLA celebrated the arrival of the second and third viable loon chicks since 2016, thanks to a new mating pair formed after losing one adult three years ago. HLA partnered with the Biodiversity Research Institute (BRI) again, successfully tagging and testing one of the chicks for conservation research. This effort is part of HLA's ongoing commitment to understand and protect these magnificent birds and their habitats.

**Bald Eagles** – In 2023 we faced a setback when one eagle succumbed to illness and the nest, which had stood for over a decade, was destroyed in a December storm. However, in a testament to resilience, another pair of eagles was observed rebuilding the nest shortly after the storm. Their efforts paid off as they successfully hatched a new eaglet in the spring. This young eagle was then captured, tested, and tagged by the Biodiversity Research Institute (BRI), who have proven to be invaluable partners in our conservation efforts with the HLA. This collaboration not only aids in the monitoring and health assessment of these majestic birds but also underscores our commitment to eagle conservation in the face of natural adversities.

**Ice-in / Ice-out** - The 2024 season ice-out date was notably earlier than average, occurring on March 7th. Conversely, the ice-in date was early on December 23rd, marking the earliest in the last five years. Shortly after ice-in we had high winds and a brief warm spell, unexpectedly causing a section of the north basin to temporarily open up for over a week. It finally froze over and for most of January, there was excellent ice skating, before the snow arrived. The ice grew to over a foot thick, providing enjoyment for ice fishers and snowmobilers alike. Additionally, the HLA water quality samplers have been actively testing the lake through the ice, with plans to take several more measurements throughout the winter to monitor water quality under these unique conditions.

## Highland Lake Ice History



## Goals for 2025:

**Ordinance Committee** - HLLT is discussing and will likely be advocating for two potential modifications to the Falmouth ordinance to match the protective measures established by Windham, ensuring uniform safeguards for the lake.

1. **Trigger for Surface Water Permit:** Proposal to revising the threshold for when a surface water permit is required due to ground disturbance. This change would ensure that all activities with potential for significant runoff and sedimentation are more consistent across the entire shoreland zone.
2. **Sizing of Best Management Practices (BMPs):** The current ordinance doesn't provide a basis for sizing BMPs according to rainfall volumes, which complicates the implementation of effective stormwater control.

These concepts have been discussed with Code Enforcement and appropriate town processes will be followed for any HLLT recommended changes.

**Education and Outreach:** Continue engagement with road association leadership through a spring meeting, fostering direct dialogue and expanding member involvement. We plan to schedule a "road walk" with road associations, a CCSWCD engineer and other technical experts to discuss best practices in private road maintenance. Additionally, several BMP videos have been created that will be distributed through newsletter and social media campaigns.

**Watershed Management:** Execute projects funded by Windham and the DEP 319 Grant. Key actions include finalizing the work plan, securing matching funds, and signing contracts to start work on time. The Highland Lake Leadership Team's Watershed Management Committee will help assist with and oversee progress of grant project goals.

**Water Quality Committee** - Continue monitoring and tracking water quality statistics to ensure the health of Highland lake. In addition, this year HLA will conduct a biannual comprehensive survey for invasive aquatic plant species, aiming to detect, manage, and prevent the spread of these potential ecological threats. Highland Lake is one of the few lakes in Southern Maine currently without invasive aquatic plant species (i.e. variable-leaf milfoil).