

# CANAAN LAKE ASSOCIATION

## 2023 ANNUAL REPORT

Canaan Street Lake (the Lake) is 303 acres (123ha). It is shallow (average depth of 10 feet, with a 23-foot-maximum depth), largely spring fed, and the water is clear with high oxygen content. The Lake is the major drinking water source for Canaan Village; and it is an important recreational asset with a public beach and boat ramp.

**The purpose of Canaan Lake Association (CLA) is to promote the conservation of Canaan Street Lake and areas immediately surrounding it for the purpose of protecting the Lake's beauty and recreational value.** This includes watershed protection, water quality protection, educational activities, and the support of related conservation groups. Detailed information about Canaan Street Lake and the Canaan Lake Association's efforts to keep it clean and healthy is available on-line at: <https://canaanlakenh.org/>.

The Canaan Lake Association is open to ALL who support maintaining water quality and safe, recreational use of the Lake. Annual dues are \$30.

The Town contributed \$2,000 in 2023 to support Canaan Lake Association's mission of protecting the Lake. Other financial support comes from member dues and donations, the NH Lakes Association and hundreds of volunteer hours that are annually contributed by CLA members.

### **Highlights of 2023 Activities and Accomplishments**

In 2023 the Canaan Lake Association's major activities and accomplishments included:

- Placement of a new sign at the beach providing information to boaters regarding water depths, the location of and restrictions on the water reservoir, and the Lake's rocky bottom. Laws regarding minimum distance for operation of motorboats from shorelines, other boats, and swimmers, were also posted. This activity was completed by donations of material and labor. It was placed with the approval of the Select Board.
- **LOONS!** Canaan Street Lake was home to a nesting pair of Common Loons who produced two chicks and successfully raised and fledged them. In cooperation with the Loon Preservation Committee, we placed signs to protect loon nests from curious lake goers during nesting season ("Loon Nesting Sanctuary – Please Stay Away"). Once chicks hatch, "Caution: Loon Chicks" signs in nursery areas alerted boats to slow down. All signs are placed under the direction of the State Biologist.
- Our Lake Host program performed 695 courtesy boat inspections, including 88 motor-craft, and 607 non-motorized boats. Boats are inspected at the public boat launch and at Crescent Campsites. Paid and volunteer lake hosts were on duty for 315 hours, with 251 of those hours being covered by volunteers.
- The lake remains free of milfoil and other species that threaten its recreational value. Evidence of this was provided by our Weed Watchers who inspected the Lake and lakeshore on a regular basis between June and September. They look for potential invasive species and work with the

NH Department of Environmental Services for accurate identification. The Lake was fully inspected at least once each month from June through September. The Town Beach and Reservoir were inspected more frequently.

- Concentrations of Chlorophyll and Phosphorous remain stable, and the Chlorophyll values are improving. The pH measured is also very stable and close to the median for NH lakes. These values were obtained from samples collected by volunteers through the NH DES-sponsored VLAP (Volunteer Lake Assessment Program).
- Canaan Street Lake became one of the lakes studied and monitored by NHDES for cyanobacteria and other multiple water quality parameters to establish baseline values.
- We hosted the Annual Business Meeting, Dog Show, Photo Contest Results, and Picnic on Saturday July 22nd. The meeting, which included a complimentary lunch provided by Bill VanZandt, was well attended by members and friends, and many dogs took part in the dog show. Caroline Hughes, a Biologist from the Loon Preservation Committee, delivered a lively and informative presentation entitled “A Year in the Life of a Loon”. She described the various stages of their life cycle, along with many facts about their behaviors, their habitats, and threats. Fun fact: Female loons would rather get a new mate than move to a different lake!

We also announced the winners of our Annual Photo Contest and provided them with gift certificates donated by local businesses. Our Annual Meeting and our Annual Photo Contest are open to all. Draft minutes of the 2023 meeting and Photo Contest results are available at our website referenced above.

- We established a presence on social media through our official Facebook page! (<https://www.facebook.com/profile.php?id=100091394480756>). The administrator of the page, Maria Clark, posts photos and information pertaining to the Lake. This includes updates from NH Fish and Game, NH Department of Environmental Services (NH DES), the non-profit NH Lakes and alerts of upcoming NH Legislature bills that support lake health.
- Stephen Freese, Select Board member, joined the Board of Directors! In October the CLA Board invited the Select Board to appoint a member, and they said yes. We welcome this chance to improve communications between the Town and CLA, especially as the Lake is a source of drinking water and has a very popular public beach and need protection.

## **2023 Concerns**

The Canaan Lake Association noted the following concerns in 2023:

- In October, the Lake experienced a cyanobacteria bloom. It was noticed almost immediately because of the diligence of Elizabeth Jutila and the NH DES, who were sampling the water on October 27th. Fortunately, the bloom lasted only a short time, and there was no evidence of it on October 30<sup>th</sup>. (The Lake also experienced a cyanobacteria bloom in 2010.)
- There is an accelerating rate of salt contamination. In the 2022 individual lake report (the 2023 report is not yet available), the NH DES noted that conductivity (a proxy for salt presence) of

the Lake was the highest ever recorded at 102 uS/cm (micro siemens per centimeter). This is more than twice the median value for the State which is 42 uS/cm. Sources of chloride (and conductivity) are road salt, fertilizer, and septic systems, with road salt being the major contributor. Due to this high value, the NH DES recommended that winter maintenance companies and Town road agents be SnowPro certified (<https://www.des.nh.gov/land/roads/road-salt-reduction/green-snowpro-certification>), and for shoreline properties to become certified LakeSmart (<https://nhlakes.org/lakesmart/>).

The Town's 2006 Watershed Development Plan stated (in the Executive Summary):

*“Increasing conductivity levels signify that human induced pollution is degrading Canaan Street Lake. Conductivity levels increased annually from 1998 – 2004, with a total increase of nearly 65% from original levels. Road salt is a probable factor for the increased conductivity levels, as sodium and chloride levels in the Lake have also risen. However, conductivity increases are also known to occur from most pollutants including septic-system effluents, nutrient inputs, erosion, or any other substance that dissolves in water.”*

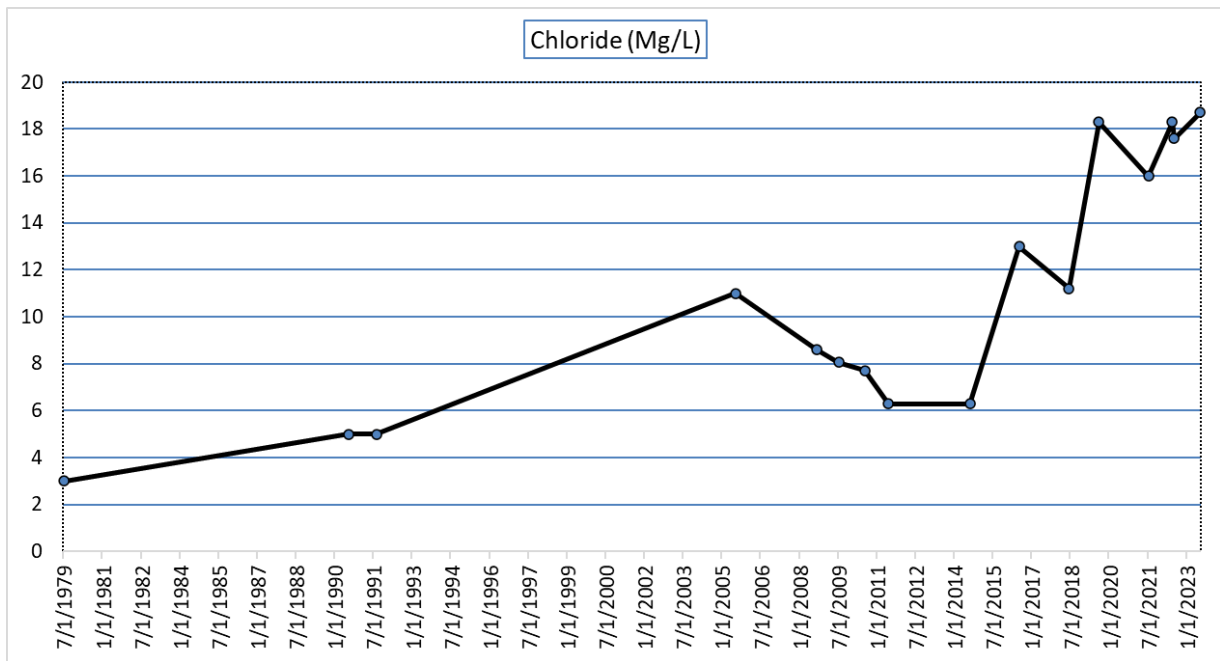
The Watershed Development Plan further states (p. 17):

*“Of primary concern is the portion of Canaan Street, which is in close proximity to Canaan Street Lake. Water quality concerns regarding this portion of the road stem from poor drainage and the application of road salt. While road salt is applied to the road for winter safety, it is extremely soluble in water and can contaminate wells and surface waters.”*

The authors of the Watershed Development Plan also recommended several actions be taken to reduce salt pollution, including working with the NH DOT to reduce the application of road salt in areas close to the Lake. As of 2023, the increase of conductivity and chloride values has grown significantly compared to 2006, the date of the Watershed Development Plan publication.

The current chloride concentration (an indication of dissolved salt) in the Lake is 6 times that of 1979 and is accelerating (see graph below). In the summer of 2023, the Canaan Lake Association Board of Directors began discussing this situation and would like to work with the Town to establish practices that will reduce the amount of salt (and other pollutants) flowing into the Lake. One approach will be for the Town to work with NH DOT to reduce the application of road salt on Canaan Street.

Chloride values measured in 2023 exceeded 20 mg/L, and while values less than 200 mg/L are generally considered safe for freshwater aquatic life, the trend is worrisome (NH DES defines a “chronic condition” by concentrations exceeding 230 mg/L). Note that values less than 500 mg/L are considered safe for drinking water.



**Chloride concentrations of samples taken from Canaan Street Lake between 1979 and 2023. These values are for single dates as close to mid-July as possible and were provided by the NH Department of Environmental Services.**

- Although they have been known to be present for a few years, in the summer of 2023 the Lake experienced an explosive spread of invasive Chinese Mystery Snails. They do not pose a threat to water quality, but they can displace the native snails.

The DES recommends removing snails that are golf ball sized (and larger) and disposing of them away from the water (e.g., in the trash or 50 feet away from the shore). Be careful not to remove the smaller snails that are native and important to cleanse the water. The CLA Board of Directors encourages you to check your shoreline for these snails and remove them.

Below is a photo of Chinese Mystery Snails found in August of 2023:



- A near-shore invasive plant, Purple Loosestrife, is present on several lakefront properties. It does not threaten water quality, and there was less noticeable Purple Loosestrife in 2023 than 2022. However, it crowds drainage ditches, marshes and wetlands, and displaces native species thus reducing plant and animal diversity. The CLA Weed Watchers will help landowners remove these plants upon their request. The removal is done according to guidance provided by NH DES.
- The main challenges at the public beach remain high E. coli counts and cyanobacteria. The Town beach was closed due to high counts of fecal bacteria from June 8 – June 10<sup>th</sup>. The beach was closed twice in 2022 due to high bacteria counts.

We look forward to continuing our work with the Town to help assure that Canaan Street Lake remains the asset that it is today far into the future.

Respectfully submitted,

Canaan Lake Association Board of Directors

President	Karen Henry
Vice-President	Elizabeth Jutila
Secretary/ Treasurer	Elissa Close

Board Members:

Maria Clark  
 Chris Day  
 John Dyer  
 Kim Franks  
 Deborah Hutchinson  
 William Stone  
 Kristi Wilson

Stephen Freese, Select Board Liaison