AQUATIC ECOSYSTEM RESEARCH
A Freshwater Conservation Company

February 10, 2021

Senator Cohen and Representative Borer
Environment Committee, Co-Chairs
Legislative Office Building, Room 3200
Hartford, CT 06106

RE: In Support of H.B. 6384 – An Act Concerning Aquatic Invasive Species' Effects on Lakes and Related Funding.

Dear Chairman Cohen, Chairman Borer, and Committee Members:

Section 22a-339h of the Connecticut General Statutes states that water level drawdowns are to be performed annually at Beseck Lake in Middlefield, CT using the following criteria:

- On even-numbered years (e.g. 2018, 2020, 2022) the lake is to be lowered by three feet by December 1st of that year and maintained until March 1st of the following year.

- On odd-numbered years (e.g. 2019, 2021, 2013) the lake is to be lowered by six feet by November 1st of that year and maintained until December 31st. The lake is then to be raised to the level of a three-foot drawdown level and then maintained until March 1st of the following year.

The purposes of the annual drawdown at Beseck Lake, as described in the Statute, are to balance recreational needs, preservation of lakefront infrastructure, fisheries habitat and other natural resource concerns. Important recreational amenities provided by Beseck Lake include boating and swimming which are often impaired due to dense communities of invasive nonnative and native aquatic plant species during the summer.

Winter lake drawdowns are effective for managing aquatic plant populations (Siver et.al. 1986). The efficacy of winter drawdowns is dependent on several factors including timing and duration. It is imperative that a drawdown is conducted in a manner that allows the lake bottom sediments to drain and dewater prior to being exposed to winter conditions for an extended period of time (Bugbee & Fanzutti 2017).

Several years ago, researchers in faculty researchers at Western Connecticut State University examined and published on the abiotic factors contributing to effective

203.794.4395 lmarsicano@aerlimnology.com www.aerlimnology.com

management of aquatic plants by winter water level drawdowns (Lonergan et.al. 2014). This research concluded that killing of root cells of the nonnative invasive plant *Myriophyllum spicatum* (Eurasian watermilfoil which is a plant found in Beseck Lake) occurred when exposed to -5°C (23°F) for as little as 24 hours followed by a slow thaw. Furthermore, exposure of roots to 0°C (32°F) did not damage roots enough to prevent regrowth and that desiccation at 4°C (39.2°F) for 48 hours also prevent regrowth. Finally, standing water and snow cover also prevented damage sufficient to prevent regrowth after thawing.

To understand when temperature conditions during a drawdown might result in sufficient root damage to prevent regrowth in Connecticut, we compiled temperature data from November 1st to February 28th from 2016 through 2019 from Bradley Airport in Windsor Locks, CT and from Tweed Airport in New Haven, CT. Using those data, we identified days when maximum temperatures were ≤23°F. We also averaged the daily temperatures from the two airports and identified days when the averages were ≤23°F (Table 1). This was done to approximate conditions between the two locations (i.e. conditions at Beseck Lake). Those analyses suggest that many of the days with temperatures of ≤23°F occurred in January. Most occurred between late December to late January.

Table 1. Days in which maximum temperature was ≤23°F at Tweed Airport (New Haven, CT) and Bradley International Airport (Windsor Locks, CT). Also presented on the right were the days of temperatures ≤23°F based on average daily temperatures from both airports.

Winter Season	Tweed	Bradley	Average
2016 - 2017	---	Dec. 15	
	Jan. 7 – 8	Jan. 7 – 9	Jan. 7 – 9
Winter Season	**Tweed**	**Bradley**	**Average**
2017 - 2018	Dec. 28 – 31	Dec. 27 – Jan. 2	Dec. 27 – 31
		Jan. 5 – 7	
		Jan. 15	
Winter Season	**Tweed**	**Bradley**	**Average**
2018 - 2019	Jan. 21	Jan. 21	Jan. 21
	Jan. 31 – Feb. 1	Jan. 31 – Feb. 1	Jan. 31 – Feb. 1

Based on those analyses we believe the current Statute limits the efficacy of winter lake drawdown, particularly during the odd-numbered years when the lake is to be lowered by 6 feet from November 1st through December 31st. It is probable that areas between the 3- and 6-foot drawdown levels are protected by standing waters if the

lake is brought to the 3-foot level by December 31st. We therefore recommend extending the time when the lake is down 6 feet to January 31st. This would increase the probability of the lake bottom between 3 to 6 foot of depth to be exposed to temperatures shown to effectively manage aquatic plants.

Please contact me with any questions you may have.

Kind regards,

Larry Marsicano
NALMS Certified Lake Manager

References

Bugbee GJ, and Fanzutti JM. 2017. Invasive aquatic plants in Lakes Candlewood, Squantz Pond, Lake Zoar, and Lake Lillinonah 2016. Conn. Agric. Exp. Sta. Bull. Retrieved February 12, 2016. https://portal.ct.gov/-/media/CAES/Invasive-Aquatic-Plant-Program/Publications/Survey-Information/FirstLightBulletin2016Finalpdf.pdf?la=en

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Siver, P.A., A.M. Coleman, J.T. Simpson. 1986. The effects of winter drawdown on macrophytes in Candlewood Lake, Connecticut. Lake Reservoir Management. 2:69-73.