

Silver Springs Lake - 2024 Lake Management Program Elements:

(D. Lester, T. Klaves, November 2024)

Inlet Water Management

Biologists consulted to date agree that the inlet water stream for Silver Springs Lake is likely to be our greatest source of nutrients and sediments. Runoff from fertilized fields and feed lots provide a high level of dissolved Nitrogen and Phosphates, which are key nutrients for weed and algae growth. Heavy rainfall causes soil erosion. Eroded particulate matter simply washes into the lake, where it settles to the bottom. The inlet stream is also a conduit for invasive/undesirable weed species introduction.

Nutrients (from crop field run-off) in the inlet water need to be monitored, to determine if there is a problem. If we see high Nitrogen and Phosphate levels in the water at the lake water inlet, there are commercially available 'bags' of nutrient absorbing material which can be placed in the stream and replaced on a pre-determined schedule. A plan and indicated program costs will be calculated after nutrient monitoring, during 2025.

To limit lake sedimentation at the mouth of the inlet stream, the Association can research, engineer, fund, build, and maintain a state-approved sediment basin, on the lake side of W. Silver Springs Drive. By design, the proper sediment basin will retain most of the sediments entering via the inlet stream. The basin would be emptied periodically (contents removed and dumped), to ensure its continuing effectiveness. The costs associated with this proposal are currently unknown. A settling basin would only be installed after, or coordinated with, sediment dredging at the mouth of the inlet.

Dredging

Data from the latest muck depth survey (May 2023) compared to an earlier survey (June 2016) indicates that the rate of muck accumulation at the Silver Springs Lake inlet stream is not considered 'excessive'. Aquatic biologists and service providers recommend dredging to remove several feet of accumulated muck and silt around the lake-water inlet.

A traditional dredge uses cutter-heads and hydraulic pumps to remove all plants, plant roots, muck, silt, sand and debris in its path. A less intrusive method, Diver Assisted Hydraulic Dredging (DAHD), uses a diver to target accumulated muck and weeds. DAHD dredging equipment (hydraulic pumps and hoses without cutter-heads.) DAHD Programs are slower and more expensive (on a per acre basis) than those using traditional dredging equipment.

Using either dredging technique, slurried debris is suctioned up and pushed out through long lengths of flexible hose to onshore silt bags. Buffer zones around the shoreline 'de-watering fields' prevent nutrient rich water from returning to the lake.

De-watered silt collection bags are transported to approved dump sites for disposal. Dredging rapidly reverses the geologic age of the treated area, leaving the lake bottom in its original 'barren' state. This pristine condition would last for several seasons. Healthy aquatic weeds and sediments will slowly return from the surrounding areas.

While in operation, there are many annoyances and inconveniences. Dredging equipment is noisy. The surrounding water becomes turbid. The pump-out hoses prevent recreational boat navigation.

Many residents would argue that muck accumulation is an issue throughout the lake. Dredging program costs are prohibitive and can only be justified for use in the worst-affected areas. Project durations and costs for dredging our lake are completely unknown and variable. There are multiple dredging equipment designs and service options, but there are only very few regional aquatic dredging service operators.

The estimated cost for dredging just one acre of silt, one foot thick, under five feet of water or less, is roughly \$100,000.00. With the currently proposed Association budget, such a program could not be considered (proposed or planned) until well after 2030. Service quotes should not be sought until the budget supports that level of work.

Aquatic Herbicides

Regardless of herbicide use, when weeds die in the fall, they stop consuming suspended nutrients. Algae take advantage of this increase in suspended nutrients, they multiply, making the water appear hazy or turbid.

Regardless of the time of year, chemically treating weeds with herbicides or cutting weeds without removing them from the lake has the same effect. Without removal, dead weeds simply fall to lake-bottom and decay, adding to nutrient rich muck accumulations. This promotes additional aquatic weed and algae growth. Plant decomposition also consumes oxygen. Oxygen-depletion on the lake bottom and in the open water promotes noxious anaerobic plant algae growth.

Without regard to public sentiment, on an ongoing basis, limited chemical weed treatment is required to eradicate 'invasive' weed species. Eurasian water milfoil (EWM) and Curly-leaf pondweed (CLP) are the two invasive (fast growing and fast spreading) weed species in Silver Springs Lake. The LPC and Board chose to combat them with herbicides, and selective removal (of the treated weed beds) using Diver Assisted Weed harvesting (DASH). First employed in 2024, the effectiveness of the DASH program for EWM & CLP control will be monitored, using weed mapping services in 2025 and 2026. EWM and CLP beds will re-appear, in the same areas and in new areas. The LPC has included funding for additional DASH weed treatments in

the Association's 2026 budget forecast. We anticipate having a continuing DASH weed removal program requirement every second or third year.

Muck Pellets

Lake residents can improve the recreational value of their private swimming areas by using "Muck Pellets" to enzymatically convert solid plant detritus into water soluble nutrients which are then available to be re-incorporated by microbes, aquatic weeds, algae, and fish. Long-term lake health is NOT IMPROVED by muck pellet use.

Each pellet has a limited and variable treatment area - - up to a foot (more or less) surrounding each pellet. Biologists believe that results could be seen by treating target locations three (3) times per year. The near-shore application of Muck Pellets will not be funded by the Association. Shoreline and swimming area maintenance is the responsibility of each individual lot-owner.

Aeration

Although aeration does not slow the lake-aging process, it would be indicated to improve overall lake health if/when other activities create oxygen depletion zones, i.e., after herbicide treatments or weed cutting without removal (harvesting).

Shoreline, Beach, and Swimming Area Management

Your personal efforts have the greatest impact on the recreational value of your shoreline and your residential property value. 'Best practices' for shoreline, and swimming area maintenance will be collected and posted on the Association website. Best practice tools and techniques should always be shared.

Mother nature contributes to lake maturation through soil erosion, land runoff, and the deposition of pollen, dust and leaves. We are responsible for minimizing contributions to lake aging from fertilized lawn runoff, leaking septic systems, and/or improper grass cutting and raked leaf disposal.

Residential septic systems and drainage fields must be properly installed and maintained. Lawns close to the lakeshore should not be treated with high phosphorus or high nitrogen fertilizers. Runoff areas should have 'buffer zones' where nutrients can be consumed by plants or absorbed by other means, before they reach the lake.

To achieve the highest recreational value, homeowners desiring sandy beach and swimming areas are encouraged to cut and remove aquatic weeds and Chara algae, out to the depth and margin of the boat Navigation Lane. Rake out muck and silt below the water surface or use muck pellets to minimize and disburse them.

Lawn clippings and leaves should never be placed in the lake or left on the lakeshore.