LPC - Targeted Dredging Program Overview

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Background: Weed Harvesting and Targeted Dredging Services

Lake weed growth and muck accumulation are the result of lake aging (eutrophication). Weeds thrive on the biomass deposits that have accumulated over the past 45 years.

Our weed harvesting program is removing eight times (8x) more nutrients from the lake than man and Mother Nature are putting into it each year. Mathematically, we can predict that we will be able to see a marked improvement in the overall lake ecosystem (reduced muck and weed growth) in just 5–6 years. We are now at the end of year three.

Weed growth in 2026 was less of a barrier to pontoon boat navigation than in 2024 and 2025. Most of our weeds stayed below prop levels. We view this as a sign of our weed harvesting program's success and hope that the trend will continue.

Weed harvesting is a very slow, methodical, and eco-friendly technique for lake nutrient reduction. Targeted dredging removes weeds and accumulated biomass down to a hard-packed sand lake bottom within a period of weeks.

Physically removing high volumes of muck and silt biomass with hydraulic dredging costs (5x-10x) more than weed harvesting, but the results are dramatic, immediate, and long-lasting. The geologic clock for the treated area will be turned back (45 years) to its infancy. Repeat dredging in the same area may not be justifiable for several generations.

Targeted dredging projects last 1–3 months, depending on the service target area and service provider selection (equipment used). Only the areas with the thickest muck deposits are cleared. The competitive service bids sought for Targeted Dredging Programs are based on detailed site maps and biomass volume calculations.

Targeted Dredging Service Project Elements:

- Identify the thickest muck and silt deposits (target areas)
- Develop detailed service area site maps and biomass volume estimates
- Obtain competing bids from area dredging service providers
- Obtain budget/planning and expenditure approvals
- Award the service contracts and proceed

After killing all of the weeds in the target area with herbicides, the weed detritus, muck, and silt (biomass) deposits are sucked up and pumped out of the lake through 4-8 inch hoses. Dewatering (deposition) basins are constructed for silt collection before each project begins.

Dredging would be performed one bay (target area) at a time to minimize the impact on fish habitats. Work would be performed in the spring, starting before Memorial Day, to minimize navigation barriers for local shoreline residents.

Timing and the scope for each dredging project will be guided by the Association's budgetary constraints. Association Member approval is required for each project.

Building cash reserves for targeted dredging began in 2024. The Lake Board initiated multi-year income and expense forecasting at that time, increased the annual dues, and forecasted continuing 15% per year dues increases to fund Lake Preservation Plan activities. The initial estimate given for Targeted Dredging (on Diome Bay) was for $250–300K, and to take place in 2029/2030.

After program initiation, there might be one dredging service project every three to five (3-5) years. There are far too many unknown environmental and economic cost factors to predict and present a realistic schedule for a decades-long targeted dredging program.

The First Targeted Dredging Project - Dome Bay:

Based on a lake-wide muck-thickness probing study (biomass mapping) performed in 2023, muck and silt deposits were shown to be the thickest near the inlet stream on Dome Bay. This is also the most troubled area for boat navigation, due to weed growth/prop fouling and heavy silt deposition (shallow water).

The first phase (PI) of work to be done for this program is to define the target area. Several suppliers have provided service quotes for bathymetric, hydrographic, silt probing, and biomass volume determination. Data from this work is used to map the service area and calculate the volume of biomass to be removed. (See Appendix Table 1)

The total surface area of Dome Bay is six (6) acres. The muck deposition thickness throughout the bay varies from zero to three (0–3) feet.

The site mapping and biomass volume study service fees collected by dredging service providers are returned as a rebate-credit toward actual dredging service fees.

The dredging companies do not include dewatering basin construction (or biomass transport) in their up-front project cost estimates. Collection basins are sized according to the (currently unknown) biomass volume to be extracted. Mr. Hemmerich has agreed in principle to allow the Association to utilize an area on his farmland for this purpose.

For rough dredging program cost estimation, and to understand the cost basis for various dredging service equipment and techniques, we have asked each service provider to indicate pricing for an area of 3–5 acres, with 2–3 feet of deposited muck & silt.
(See Appendix Table 2)

Association funding approval is needed for Targeted Dredging PI site study work. Bathymetric studies are performed in the early spring, before weed growth begins. This expenditure is not in the 2026/2027 Budget.

Approving the expense for comprehensive muck thickness mapping (probing) throughout Dome Bay may be feasible for this coming spring.

The Lake Board will begin its consideration of the LPC's recommendations for PI site mapping and biomass volume determination services at the October 14th Board Meeting. Pricing received to date is presented in Appendix Table 1 and Table 2. Phase I funding will be for Site Mapping and Biomass Volume Determination Services.

Phase II funding is for dredging services. Competitive bids for dredging will be sought after the completion of Phase I. Each service provider will bid for the removal of biomass from a precisely mapped target area. Each provider will define their needs for the dewatering (settling) basin, provide service warrants, and estimate the amount of time (weeks) that they would be operating on our lake to reach the stated target.

The Membership-approved Phase II Dredging Project service award would be based on the best perceived overall value, and the final target area on Dome Bay would be maximized to utilize authorized and available funding.

Project timing and target area scope/definition will not be known until competitive bids are received for the Phase II services.

LPC members speculate that:

- Preliminary muck probing will take place in the spring of 2027
- Budget approval for additional Phase I - Site Mapping Services will take place at the Association's 2027 Annual Meeting
- Phase I service bids and contracts will be sought and awarded in 2027, for work to be conducted in the spring of 2028
- With Phase I service area target maps and biomass volume data in hand, Phase II service bids will be sought in 2028, for work to be conducted in 2029 or 2030
- Budget planning and pre-approval for Phase II work, 2029/2030 dredging services, will take place at the Association's 2028 Annual Meeting
- Phase II service contracts will be awarded in 2028, for work to be conducted in the spring of 2029 or 2030, based on funding authorization and availability.

Note: Accurate Phase II service quotes can only be obtained and equalized for settling basin requirements (provided by the respective dredge operators) after Phase I Site Planning is complete.

The LPC Members recommend approving a detailed probing study of Dome Bay, to pre-define the target area and calculate the associated biomass volume. This work is within the 2026/2027 Lake Preservation Program budget for New Projects. It will reduce the need for additional Phase I work performed by the individual dredging service providers.

Respectfully submitted by David Lester
Lake Board Secretary and Lake Preservation Committee Liaison