



OUTLET CREEK DAM HEIGHT ANALYSIS – Summer 2024

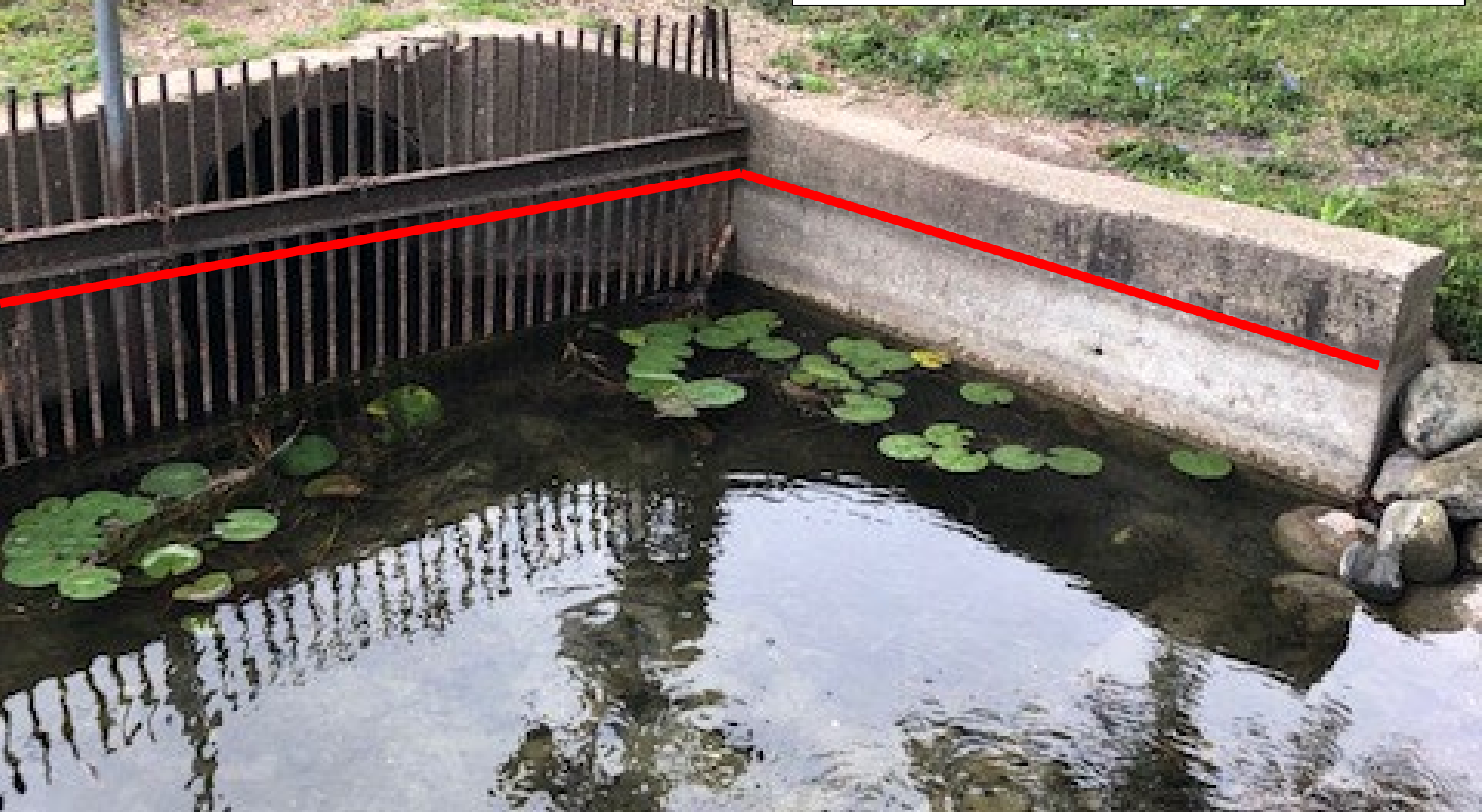
1. In summer 2024, the Silver Lake Management District reviewed the height of the top of the dam vs authorized lake levels.
 - In 1944, the Wisconsin Public Service Commission (prior to formation of the WDNR) authorized the installation of the dam with a “summer elevation” of about 6-1/2” below the top of the horizontal I-beam going across the highway culvert. The weathering/staining of the concrete caused by the historic water levels approximates this elevation.
 - The level authorized by the WPSC is approximate because there are no physical benchmarks.
 - The top of the dam has been determined to be about 6” below the stained concrete.
 - See the attached pictures and graphics.
2. The Board of the Silver Lake Management District discussed the findings at its meeting on September 25, 2004.
 - The conclusion of the field study shows that the current top of the dam is below the “summer elevation” and could conceivably be raised maybe 4 to 6 inches.
 - What’s required to increase the height of the dam?
 - i. Raising the top of the dam will probably require significant reconstruction of the existing dam at considerable expense. Funding could come from private contributions, district reserve funds, and/or state grants.
 - ii. In any case, the WDNR would have to approve any changes to the existing dam.
 - What are the benefits of raising the height of the dam (e.g., would a higher dam have kept the lake level higher during the low water period 2020-2023)?
 - i. Per observations over the past few summers, the dam keeps the lake level about 6” higher than the outflow during low water periods.
 - ii. The dam does NOT keep the lake level at the top of the dam. The lake level drops below the top of the dam during dry periods when lake evaporation exceeds rainfall. As a general rule, the lake needs about 1” of rain per week during the heat of summer to balance the loss from evaporation.
 - What are the drawbacks of raising the height of the dam (e.g., would there be a negative impact during the most recent high-water period 2017-2019)?
 - i. Once the water level exceeds the dam height, it flows freely out of the lake over the top of the dam.
 - ii. Current regulations require that the dam boards be removed during extreme high-water periods.

- iii. If the dam is made permanent without the ability to take out the boards during high-water periods, the volume of the flow would be marginally reduced, the result being a slight slowing of the lowering of the lake during periods of high rainfall.
- What's WDNR's position concerning potentially raising the top of the dam?
 - i. There will be an authorization and permitting process.
 - ii. Ultimately, the WDNR will need to approve any changes in the height of the dam and its construction and operation.
 - iii. The first step should be to discuss the dam's height and other issues with the WDNR.
- Should ownership of the dam be changed prior to the next dam reconstruction project?
 - i. The dam is currently privately owned.
 - ii. Public ownership of the dam would seem to be more appropriate.
 - iii. Should it be owned by the lake district, the Village of Salem Lakes, or some other entity?

3. The Board concluded the following:

- The potential 4" to 6" increase in the height of the dam needs to be further studied and discussed among stakeholders. The cost/benefit of increasing the dam height needs to be ascertained.
- It is prudent to wait until the existing dam requires significant repairs / reconstruction before addressing the various issues concerning dam height, reconstruction configuration, and ownership.
- Creating a permanent dam structure, as has been done on other nearby lakes, is probably a better long-run solution as it avoids the requirement for active management throughout each year (pulling and placing the boards based on season and lake levels).
- Prior to the dam requiring significant reconstruction, the lake district should take the lead, working with the WDNR and lakefront owners, to determine the appropriate dam height, determine preferred ownership of the dam, prepare dam reconstruction plans, and secure WDNR approvals and project funding.

1944 WPSC "Summer Elevation"
~6-1/2" Below Top of I-Beam
Approx. at Bottom of Concrete Stain





1944 WPSC "Summer Elevation"
~6-1/2" Below Top of I-Beam
Approx. at Bottom of Concrete Stain

The image shows a vertical concrete dam structure. A red horizontal line is drawn across the middle of the frame, and a blue horizontal line is drawn near the bottom. A yellow double-headed vertical arrow is positioned between these two lines. Handwritten markings in dark ink are visible on the concrete surface, including 'CT' at the top, 'H.M.' in the middle, and 'BL' near the bottom. The background shows water with lily pads on the left and some vegetation on the right.

CAN TOP OF DAM
HEIGHT BE RAISED?
MAYBE 4" to 6"?

Top of Dam

RAISING HEIGHT OF DAM
WOULD BE A SIGNIFICANT
CONSTRUCTION PROJECT



If Top of Dam
Increased 4"
To ~7.93

