



Mary Lake Beaver Impact Assessment – Supplemental Review Document

The following additional information was provided to NRE by Phyllis Sachs in an email dated September 25, 2024. Ms. Sachs requested that NRE review and respond to this additional information. Ms. Sachs' comments are indicated below in italics.

- 1) *Dam 1 is the youngest dam: 2017/2018. The beaver worked on it for 2 years but because residents found that it impeded navigation on the creek, sticks were pulled each time someone wanted to get down the creek. The beaver last worked on it in 2020.*

NRE Response: Noted. Dam 1 was likely constructed by beaver when Dam 2 was abandoned. Dam 2 appeared to be the primary dam (based on the volume of wood and the width of the channel at the Dam 2 location), with other dams downstream being secondary and tertiary dams. Building a primary dam and additional smaller downstream dams is consistent with typical beaver behavior. If beaver are allowed to return, they will likely rebuild Dams 1 and/or 2 first. NRE recommends pond levelers at Dams 1 and/or 2 if/when beaver return. If beaver rebuild Dam 1, this dam will likely have the most impact to stabilize and modulate surface water elevations on Mary Lake. Pond levelers only function long-term if beaver are allowed to remain to maintain the dams the levelers are installed into. NRE recommends that Mary Lake residents stop trying to manipulate beaver dams by removing woody material from the dams and/or breaching holes into the dams. If beaver dams are manipulated by humans long enough they will often abandon the area and relocate, or they will build dams in different locations on the stream course. NRE recommends that kayakers identify the critical role beavers provide to Mary Lake ecology and adjust their behavior to portage around beaver dams.

- 2) *Dams 2,3,4 are 60 years old or older, and a long-standing reason for the formation of the Lake District: to manage the level and stop the various ways the dams were being destroyed.*

NRE Response: Noted. Dams 2, 3, and 4 are actually very likely much older than 60 years. As the report indicates, evidence suggests that beaver have been active on streams and wetlands associated with Mary Lake for hundreds (if not thousands) of years. Some of this evidence is the advanced successional state of native obligate wetland plant communities and beaver-created wetlands such as lacustrine (associated hydrologically with Mary Lake) sedge meadow wetlands.

- 3) *Dam 2 was abandoned in 2002, before the leveler was installed on Dam 3. Dam 2 was the original target for the leveler. Dam 3 was abandoned in 2004/5, but activity continued on Dam 4. Beaver never returned to Dam 3, even to date.*

NRE Response: Noted. Dam 2 would have been the logical choice to place a pond leveler based on water depth and the width of the channel at this location in the stream. It appears that beaver continued to move further downstream to build/maintain dams as upstream dams were manipulated or removed by humans. Two 20' long single-wall, 15" corrugated PVC pipes were observed on Dam 3 by NRE in June of 2024. It is assumed this is the remains of the pond leveler that was installed in 2002. This pipe is no longer functioning and beaver are no longer present to maintain beaver dams.

- 4) The beaver returned to Dam 2 in 2007 for some reason and were very active there and on Dam 4 through 2010. There was a 3-year break in the beaver action, and then Dams 2 and 4 were active again from 2013 until trapping occurred in April 2022.

NRE Response: Noted. Breaks in "beaver action" can be a result of local trapping, too much human manipulation of dams (removing wood or breaching holes), abnormally dry or wet periods, or dispersal based on limited resources.

- 5) *Dam 2 may give the appearance of having been abandoned for a long period of time, but it was the dam that was being used to adjust the water level by poking holes in any 1 of 7 places over the past 10 years. The apparent height of the dam is not due to the beaver; it's cast-off from years of opening little holes. The beaver never built it higher than a foot or so above water level. Much of the cast-off was ported out, but some left behind.*

NRE Response: We would be curious to know how poking holes in Dam 2 impacted surface water elevations on Mary Lake. Is there any empirical or anecdotal data indicating the effects of this activity? For example, how much did the surface water elevation on Mary Lake change (and for how long) following the hole poking (this is referred to as "hydroperiod"). Our guess is that this activity may have resulted in only short-term impacts to lake surface water elevations. If beaver were present intermittently in the past decade (the period in which Ms. Sachs indicated Dam 2 was manipulated with hole poking), beaver would likely have quickly repaired the holes. If the max height of Dam 2 was 12" above the downstream water elevations, this would have been enough to significantly impact and stabilize surface water elevations on Mary Lake.

- 6) *The last time I personally saw beaver on the creek was 2020 when a beaver slapped at me while I was sitting in the duck pond near Dam 4.*

NRE Response: Noted. This is consistent with field data collected by NRE. No recent beaver activity was documented in 2024. Sticks and beaver stumps observed appeared to be several years old.

- 7) *The pond leveler (the one sunk in the water in 2002) has a full cage around it; it was in place when we picked up the device from the mfg and it was placed in the water without any alterations. The flexible piping had no cage.*

NRE Response: Clarification is needed on device types and timelines regarding what years beaver were present. There may also be confusion here based on terminology. We would like to gain more information on the type/design of pond leveler installed in 2002. We need to understand the difference between the referenced “pond leveler” installed in 2002 and the “flexible piping” (when was the flexible piping installed?). Is there any data (of any kind) that indicates how long these flow devices were functioning and what impacts the leveler had on Mary Lake surface water elevations? Was the “flexible piping” part of the “pond leveler”? A modern pond leveler has a metal intake cage on the upstream end and may or may not have a metal protective cage around the outlet pipe (see designs on Beaver Institute website: <https://www.beaverinstitute.org/get-beaver-help/beaver-dam-flooding/>). Also download the “Pond Leveler Installation Guide” from this website.

- 8) *The DNR is the one that gave us the OHWM and OLWM in 2002 when we sought the permit, but they told us we had to get agreement of Forest Service as to level and suggested something "in between." The USFS (Tom Morris) chose 9.0 as a reasonable level. It was never the intent to maintain at OHWM. Yes, we will reinvestigate the range.*

NRE Response: Noted. The WDNR Water Management Specialists (WMS) are the only agency/individuals who can make official OHWM and OLWM determinations. We would like to learn how the 9.0 level (as stated) related to the official OHWM determination and how it relates to the surface water elevation that is most agreeable/livable for Mary Lake riparian owners. Did WDNR indicate an elevational benchmark for OHWM/OLWM? This means the elevation would have been tied to a local survey datum. This is valuable data if it exists.

- 9) *To my knowledge, the USFS hasn't trapped on Mary Creek between Sawyer Lake Rd and the lake itself. In fact, they refused to do so and said they would only interfere in the lake level if it stayed at or above the OHWM for a period of time, in which case they would take out ALL the dams and ALL the beaver. Since we absolutely did NOT want that, we agreed that we would use manual effort as/if necessary and only if water level was causing visible erosion.*

NRE Response: Even if trapping occurred at or downstream from Sawyer Lake Road, beaver colonies on Mary Lake and lower/upper Mark Lake Creeks would have been impacted. Beaver can have home ranges that extend several miles up and downstream from their lodges. A much more sustainable solution is to place proper culvert protection devices on the culvert(s) under Sawyer Lake Road and modern designs of pond levelers on dams in lower Mary Lake Creek. We would be curious to know if “visible erosion” occurred as a result of beaver dams on the lower creek and if there was any documentation of this erosion. We assume “manual effort” means breaching dams or poking holes in dams? These actions actually tend to result in more bank and floodplain erosion rather than leaving the dams completely intact.

- 10) *The USDA's trappers worked on behalf of Trout Unlimited to trap beaver below Sawyer Lake Road but -- in 3 different conversations -- insisted they had no interest or mandate to trap up creek. They did remove dams from the culvert on Sawyer Lake Road and Mary Creek twice (postings referred us to USDA); the Town of Wolf River removed a dam in the same place on one occasion.*

NRE Response: Noted. Refer to response from statement #9. Beaver don't typically build dams on/in culverts. They will often plug culverts with mud and sticks (on the upstream side). Culverts are perceived as holes in dams and beaver are compelled to plug holes in dams when they sense water moving through the holes (or in this case through the culvert). Plugging culverts is an easy way for beaver to create the water depths they prefer, which is usually a minimum of two feet. Ironically, Trout Unlimited (TU) is starting to change their position on beaver in light of more modern and robust science. TU is engaged in partnership studies with WDNR Research Fisheries Biologists in Wisconsin to better understand the complex (and very old) relationships between trout and beaver.

- 11) *We know of 2 instances where individuals conducted trapping, but not at behest of USFS or USDA.*

NRE Response: Noted. If legal trapping occurred, trappers would have had to gain permission from private landowners anywhere they stepped foot on private land, but they would not need permission to legally trap on USFS land as this is public land.