

West Harbor Pond Watershed Association Kicks Off Campaign to Repair Siphon (Joe Charpentier, *Boothbay Register*, June 28, 2018)

Last week, the West Harbor Pond Watershed Association kicked off its Campaign to Save West Harbor Pond, marking a major milestone in its efforts to replace the broken siphon and begin the restoration of the water quality of the Pond. Last year, after four years of work, the WHPWA obtained a Coastal Communities grant that allowed it to hire Dirigo Engineering of Fairfield to prepare engineering plans to replace the broken siphon that has been causing the degradation of the Pond's water quality for more than ten years.

Last month, Dirigo's drawings were submitted for permitting and the first permits are in hand. The WHPWA expects to have the remaining permits before the end of the summer. Contributions of labor and materials by the Boothbay Region Water District and Pat Farrin & Sons will make it possible to perform the work at a substantial savings. Work to install the new siphon could begin during the first two weeks of November.

For this reason, the WHPWA has elected to raise the needed amount – \$53,000 – through private donations rather than seeking State or Federal grant monies, which would extend the completion date by 2 years. Fundraising began June 20th, and already the Campaign has raised more than a third of the required funds.

In 1880, with the Maine ice industry in full vigor, Captain Eben Haley placed a dam across the mouth of Campbell Creek at the point where it emptied into the inner harbor. In so doing, he transformed what had been a tidal estuary into an impounded lake. His purpose was to create a source from which natural ice could be cut and loaded directly onto ships for transport to markets on the Eastern Seaboard and as far away as India. By placing his ice manufactory immediately adjacent to a year-round deepwater anchorage, he hoped to gain an advantage over his competitors on the Kennebec River, until then, the center of the Maine ice industry, who could not ship their product to market until spring ice-out. Captain Haley's West Harbor Ice Company built a large icehouse on the east side of what was now West Harbor Pond, where the BHYC tennis courts stand today. The ice was transported across the narrow neck of land to a long dock on the harbor side, where it was loaded onto ships like the ones shown above.

Haley installed a 10" diameter siphon to remove from the bottom of the Pond the salt water trapped by his dam. So effective was this siphon that the *Boothbay Register* reported that "in fifty-four days the pipe was discharging only fresh water, with which the streams from the land had entirely replaced the ocean brine."

Long after the Maine ice industry had vanished, rendered obsolete by the "mechanical ice" that we use today, the siphon continued to operate, removing from the bottom of the Pond the salt water that infiltrates through the body of the dam and that flows into the Pond through the box culvert at extreme high tides.

In about 2008, the siphon began to fail. Last year, the Boothbay Harbor Sewer District inserted a video camera into the pipe and discovered that the nineteenth-century cast iron had sheared at about the mid-point of the dam, a break that is impossible to repair in place. The

siphon no longer performs its function of removing salt water from the bottom of the Pond, and the fresh water-salt water interface has risen to the 12' to 15' level.

Under normal conditions, freshwater lakes turn over in the fall when the surface water becomes cooler than the deep water, causing the upper and lower levels to invert. This inversion reoxygenates the water at the bottom of the lake that had gradually become deoxygenated during the summer. This vital seasonal turnover, however, no longer occurs in West Harbor Pond. The reason is simple: salt water is heavier than fresh water. The high concentration of the denser salt water at the lower levels of the Pond prevents the fresh and salt layers from mixing and seasonal turnover from occurring.

In consequence, the salt water in the bottom half of the Pond – below the 12' to 15' level (depending on the season) – has become oxygen-depleted and will not support most aquatic life. Above this 12'-15' level, there is sufficient oxygen for many species. But in this oxygen-rich upper zone, the water temperature rises in summer, and the Pond has lost some species of fish – brown trout, for example – that require lower water temperatures.

For nearly four years, the West Harbor Pond Watershed Association has been working to repair or replace the old 1880 siphon. WHPWA volunteers have been taking regular water samples and meeting with State agencies to explore all possibilities for a solution. In 2017, WHPWA received a grant to evaluate the options for restoring the broken siphon and to commission engineering plans for the selected option. Thanks to this grant, the WHPWA now has Dirigo Engineering's plans for a replacement siphon that would run through the existing box culvert at the west end of the Highway 27 dam. The plans, drawn up in consultation with the Maine Department of Marine Resources, ensure that the replacement siphon will not interfere with DMR's fish ladder.

In time, the new siphon will evacuate the accumulated salt water, and the Pond may again be able to support more diverse populations of fish species. It will ensure that the seasonal migration of alewives and glass eels through West Harbor Pond to Knickerbocker Lake continues. By restoring the siphon, West Harbor Pond, which is a vital part of our local economic history, will continue to contribute to our local economy as tourists are drawn to its shores while vacationing at the hotel and vacation cottages along its shore.

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