

TERAS Report (Fall 2022)

By Peter Healy, TERAS Secretary

Temagami Environmental Research and Stewardship (TERAS) was incorporated as a charitable organization in 2013. Prior to this, the TLA's water-quality testing initiative was funded by donations from TLA members who contributed to the "Water-Quality Fund" when renewing memberships. By establishing a registered charity with the Canadian Revenue Agency, we are now able to accept bequests and donations, as well as issue tax receipts to Canadians for donations. Furthermore, we established a partnership with the Nature Conservancy of Canada, whereby donations in excess of \$250 from Americans are eligible for tax receipts that are acceptable to the IRS.

TERAS donations have funded the annual water-testing program undertaken by volunteers, and supported by scientists, using increasingly-sophisticated equipment. Water samples have been sent to laboratories for testing, with results analyzed and added to our growing database.

During the month of September 2022, after a two-year, pandemic-induced hiatus, Tim Richardson and his son, Dr. Murray Richardson, completed the TERAS-sponsored water-testing on Lake Temagami. Over two days, they traveled more than 75 km to all arms of the Lake to complete the testing. Fortunately, the weather cooperated, and it was neither too cold nor too windy.

A total of 17 locations were tested, including one in the deepest location of each arm. Two samples of water were taken from each site to be sent to a lab for phosphorus analysis (an indication of the productivity and cleanliness of the lake water). At each site, a research sonde was dropped in the water. This is an expensive piece of equipment (worth about \$30,000) that measures physical properties of the water, including temperature, pH, dissolved oxygen, chlorophyll, conductivity, and depth in real time. At all sites, the water clarity was measured by dropping a Secchi disk (which has alternating black and white quadrants) to its imperceptible level. Data collected will then be analyzed and graphed to compare it with historical data acquired since the water-testing program began in 2011. These results will be posted on the TLA website when complete.

Particular attention was directed to the NE Arm close to the townsite, where there have been reports of algae blooms in recent summers. Of note, the deepest part of the Lake was found to be the middle of the South Arm – where it measured just over 81 meters (266’)! Clarity was lowest in the NE Arm about 90 meters (100 yards) south of the Temagami Town docks.

For the first years of the TLA-initiated monitoring program, all phosphorus samples were tested gratis as part of the Ontario Lake Partner Program out of the provincially-owned Dorset laboratory. This service was unavailable to TERAS this year, as testing could not be completed in both the early spring AND the autumn. As a result, Dr. Richardson found a reliable private lab in Lakefield, which has equipment that is sensitive enough to measure the low levels of phosphorus found in Lake Temagami. The downside is that the testing fee is \$25 per sample plus tax, and there are 34 samples to be analyzed (two from each testing location). He also prepared two specimens of lake water for chlorophyll analysis at the lab. Though we have not yet been invoiced for all of the testing, costs to TERAS for this year's monitoring will be approximately \$3,500 CAD.

Looking ahead, we have an opportunity to sponsor research by a university graduate student that involves lake-bottom sediment core-sampling – to study the paleo-environmental history of our Lake. Instead of measuring current physical parameters via water testing, this bottom-sediment sampling endeavors to investigate several hundred years of lake history. Issues such as the effects of acidification, forest fires, and/or anthropogenic (human-induced) factors are examples of what might be studied. This type of sampling is best done in the winter (under the ice), so that wind cannot misdirect the dropping of the sampling tube that extends to the bottom of the lake. If core samples are obtained, they would be analyzed in an Ontario university laboratory. As these core specimens are VERY expensive to analyze (\$3,000 to \$4,000 CAD per sample), only a couple of samples will be collected. Other costs to TERAS for this project will include travel, accommodations, snowmobile rentals, and guide services for the scientists involved.

As always, we continue to appreciate the support of our donors who, with their tax-deductible donations directly to TERAS (via e-transfer, cheque, or through CanadaHelps), are ensuring that we know the present quality of our lake waters, how these conditions have changed over time, and how susceptible they are to change in the future.

For further information or comments, please contact Tim Richardson, Chair, TERAS Board of Directors, at rictidoc@yahoo.ca.