



Summer LakeKeepers Methodology:

Participants in the Summer LakeKeepers program were provided with a field manual and sheets in their probe kits, with an online version available at www.alms.ca/summer-lakekeepers. A Summer LakeKeepers [training video](#) was also released to guide participants through the sampling procedures and equipment use. Lakes were sampled up to three times during the open water season, from May 28 to October 6. The sampling design allows participants to choose their lake of interest and select sampling site(s), which may include historical locations, the deepest point of the lake, or areas of personal or community concern. Sampling was conducted by boat at the selected site.

Each participant received a sampling kit containing field sheets, a Secchi disk, a YSI ProSolo water quality probe (used to measure dissolved oxygen and temperature), sample bottles for total phosphorus (TP), chlorophyll-a (Chl-a), microcystin, and isotopes. Nitrile gloves were included to protect volunteers from the sulfuric acid preservative and to maintain sample integrity during Chl-a filtration. The Secchi disk was used to measure Secchi depth as a proxy for lake water clarity.

Profile measurements for Temperature, Dissolved Oxygen, and Conductivity (if available on probe) were taken using the YSI probe at 0.1 m, 0.5 m, and then at 1-meter intervals to the lake bottom. Surface grab samples for TP, Chl-a, microcystin, and isotopes were collected at 0.5 m depth. TP samples were preserved with 2 mL of sulfuric acid and submitted for laboratory analysis. Chl-a samples were filtered onshore, with three filters submitted for analysis to assess algal and cyanobacterial levels. A microcystin grab sample was also collected at 0.5 m depth. Microcystin is a toxin produced by some cyanobacteria; its presence indicates potential health risks during blooms. In Canada, the recreational water quality guideline for total microcystins is 10 µg/L.

In addition to water quality sampling, participants recorded environmental observations including air temperature, wind speed and direction, 24-hour rainfall, cloud cover, water colour, and the presence or absence of visible cyanobacteria blooms. GPS coordinates were recorded for each sampling site to ensure spatial consistency across events. ALMS coordinated the shipment of sampling kits to participants and the delivery of collected samples to analytical laboratories.

Data collected from each sampling event was compiled and formatted for upload to the Gordon Foundation's DataStream platform (<https://mackenziedatastream.ca/explore/#/dataset/f24cde0d-c5d6-4286-921c-6d12cf8e53b7/?r ef=search&tab=map>), and it was used for ALMS data visualization and reporting. Data analysis was performed using the R programming language.