

Lake Monitoring at FortWhyte Alive

Methods and Equipment

Sampling Frequency: Occurs 1 x monthly, ice conditions permitting.

Safety

- This is a 2 person job. Always tell someone else where/when you are going and when you plan to be back.
- Start after sunrise (7:30am in Sept should be fine). Sampling in the morning reduces wind problems.
- If too windy or there is an electrical storm, postpone!! Do not go out on the water.
- Winter sampling: avoid days below -20 (air or windchill). Ice thickness must be at least 25cm thickness in order to proceed. Take care in spring as ice weakens when it is rotted by snowmelt and sun.

Equipment List

- Canoe and Boat Anchor, Pfd's and paddles
- Kemmerer water sampler (orange hard sided case)
- YSI Pro Odo meter, calibrated with new electrolyte solution and membrane
- GPS unit – “deepest” point for sampling in each lake is marked in.
- Write in the Rain notebook for Secchi readings and ice, snow measurements
- Pencil
- Secchi disk (summer only)
- Ice fishing sled, Ice auger, Ice scoop, shovel, metre stick, insulated gloves (winter)
- Bison buggy key and buggy
- ALS Environmental cooler with nutrient bottles
- Sharpie
- 2 backpacks with Nalgene bottles for chlorophyll samples (10)
- Depth measurement tape (weighted line) – this has not been consistently measured but will be for 2018 data.

Oxygen and Temperature, Conductivity profiles

Use the YSI Pro Odo to take readings in all 5 lakes at each 1m interval, at the sampling location marked in the GPS. Begin with surface measurement (probe is just immersed to where cord begins), then 1m up to max depth. Intervals are marked on the cord with electrical tape. Staff has changed the electrolyte 24 hours ahead and calibrate the dissolved oxygen (%) on the unit before heading out.

Use anchor to keep canoe in place in summer. Winds can cause inconsistencies in interval monitoring.

Nutrient tests

Sampling at surface and max depth with Kemmerer sampler (different depth in each lake), and one sample from Constructed Wetland (use hip waders, in summer only), at sampling site selected at deep

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points in lakes marked in GPS. If max depth differs, mark new depth on bottle. Make sure no sediment is included in the water sample from depth.

There are some sample sets where we obtain water samples at each 1 metre interval.

- Devonian: 6m
- Lake 3: 5m
- Lake 2: 7m
- Muir: 7m
- Cargill: 7m

Nutrient samples are fixed with Sulfuric Acid fixative and couriered in cooler to ALS Environmental within 24-48 hours of sampling.

Chlorophyll water samples

Take 0m and max depth samples in each lake into Nalgene (1L) bottles. Store bottles in dark backpack and keep out of direct sun. Place in fridge when done (either staff area or Vol. lounge). Transported to University of Manitoba for filtration within 1-2 days. Filter papers are stored in freezer and processed annually using spectrophotometry.