



Summer Water Quality Monitoring Detailed Instructions

Instructions

1. Before leaving for site, ensure all new volunteers have completed the SLA liability form and have acknowledged receipt of the volunteer handbook.
 2. Turn on YSI 15 minutes prior to calibrate. Leave meter on in between sites.
 3. Calibrate YSI (just once)—see below.
 4. Using Secchi disk, measure the total depth of the site, and confirm that it is similar to the known site depth.
 5. Get Secchi measurement.
 - Using view scope on the shady side of the boat, lower Secchi to the point where you can no longer see the disk. Slowly pull Secchi up until it is just visible. Mark depth at water's edge.
 - Repeat three times and record average on data sheet.
 - If you decide to do the optional View Scope Comparison Study, continue, otherwise skip to step 6.
 - **View Scope Comparison Study- Optional:** We invite interested persons to take part in a study assessing the usefulness of the View Scope when collecting water clarity (Secchi Disk) data. In addition to the weekly water clarity readings that you collect (using the view scope), we are interested in obtaining monthly water clarity data using the four methods described below. Make sure you report weather or lake conditions on front page. Please take two readings under each condition (Sunny/Shady Side, With/Without View Scope) and record each value on the data sheet.
- ***If you can see the Secchi disk at the bottom, make a note of this on the data sheet and repeat with the black Secchi disk and record that data.
6. Determine where the thermocline is with the ClineFinder or the YSI.
 - The thermocline is characterized by a change in temperature of 1°C or more over the depth of one meter or less.
 7. Record the temperature (blue, #4 on data sheet) profile at the surface, then every half meter until you reach the thermocline, then every meter until you reach 0.5 to 1 meter above the bottom, or end of the probe. If you're using the YSI, also record the value for dissolved oxygen (in red, #1), percent saturation (in black, #2) and specific conductance (in green, #3). Colors and numbers on YSI meter correspond with the color and number on the data sheet.
 8. Collect the first sample
 - Rinse the sample bottle three times from the opposite side of the boat where you'll take the sample.
 - Ensure that the tube sampler has no air bubbles or kinks in it when it is lowered into the water. The idea is to collect water from the entire depth.
 - If the lake is stratified (that is, if there is a thermocline), collect your sample from the lake surface to 0.5 meters above the thermocline.



- If the lake is stratified, but the thermocline is deeper than the length of your integrated tube sampler, use the full depth of the tube sampler to collect your sample.
 - If the lake is not stratified (constant temperature at any depth), collect your sample from 0.5 meters above the lake bottom.
 - Record the sample depth on the data sheet.
9. Cyanobacteria water sample (optional)
- After you collect the water sample from the thermocline, you will need to collect a separate sample for cyanobacteria analysis; this sample bottle should be labelled to include: date, time, body of water, sample location/site/depth, and weather conditions.
 - Collect water by lowering the integrated tube sampler to a depth of 3 meters, and repeating until you fill the 500 mL bottle. Take care not to sample close to bottom sediments.
 - Put the sample on ice and in the dark, this is to prevent any further photosynthesis occurring.
 - Freeze this sample as soon as you get back to the Water Quality Lab at the SLA (no processing necessary).
10. Remember to process samples as soon as you return. Fill out the back of the data sheet with sample processing information. Required fields are starred and have a red box around them, they include the integrated chlorophyll sample, the integrated color sample, and the integrated total phosphorous sample. At the end you need to sign the sheet & fill in your total hours volunteered (driving, prep, sampling, & processing time).
- **If you are not able to process your sample, make arrangements beforehand with the SLA.
11. Let the SLA know that you monitored at the site.

Using YSI:

- **REMEMBER, NEVER BEND OR KINK CORD!!!**
- When using YSI make sure to turn it on 15 minutes prior to calibrating.
- Calibration:
 - Press and hold 'Cal' button for three seconds.
 - Highlight 'Dissolved Oxygen' and press enter (instrument will indicate 'Calibrating DO%')
 - Calibration is complete once display shows 'Calibration Successful'
 - If you receive error message, return to start screen and try again.
- Once calibrated, remove grey plastic cover from sensor and place in water.
- Lower to depth of 0.1m and allow sensor to equilibrate while gently shaking or jiggling sensor. Ideally, sensor will move at rate of 6 inches per second.
- When values on display stop changing, equilibrium is reached. Record these values on the YSI data collection sheet. Record the values at the surface, then every half meter until you reach the thermocline, then every meter until you reach 0.5 to 1 meter above the bottom.



Water Quality Monitoring Site Location and Depth

Site #	Site Name	lat, long (Deg min sec)	Lat-Decimal degrees	Long-Decimal degrees	Approximate Depth (m)
2	Cotton Cove	43°44'09.7", -71°35'00.5"	43.73602	-71.58347	8
5	Livermore Cove	43°44'31.8362", -71°33'18.8065"	43.74217	-71.55522	10
8	Rattlesnake Cove	43°46'27.943", -71°30'59.8458"	43.77442	-71.51662	8
10	Sandwich Bay	43°46'51.300", -71°28'52.1000"	43.78091	-71.48113	22
11	Kent Island	43°46'09.5", -71°29'00"	43.7693	-71.48333	11
12	Moultonborough	43°45'3.1861", -71°30'15.2161"	43.75088	-71.50422	18
14	Sturtevant Bay	43°44'35.7128", -71°30'46.0059"	43.74325	-71.51277	18
16	Dog Cove	43°43'13.7", -71°30'44.0"	43.72047	-71.51222	9
18	Piper Cove	43°43'49.7", -71°33'40.9"	43.73047	-71.56136	14
1A	Little Squam West	43°43'6.5", -71°36'39.4"	43.71847	-71.61094	22
1B	Little Squam East	43°43'39.0", -71°35'25.2"	43.7275	-71.59033	14
9A	Inner Squaw Cove	43°46'59.1043", -71°30'57.8161"	43.78308	-71.51606	6
9B	Outer Squaw Cove	43°46'55.3", -71°30'29.8"	43.78202	-71.50827	5
16A	Inner Dog Cove	43°42'23.64", -71°30'19.76"	43.70656	-71.50548	6
DH	Deephaven Reef	43°45'47.9", -71°32'13.5"	43.7633	-71.53708	30
LR	Loon Reef	43°46'1.8", -71°30'37.3"	43.76716	-71.51036	27