



## Deep Ponds: Tri-season Water Monitoring and Collection

**Before going out on the water go over the checklist at the end of this section** to make sure you have everything you need. In general, you should **plan to fill every bottle in your monitoring supplies**. Have all testing items organized so that you can complete your monitoring as soon as you come off the water.

1. Go out to your sampling location, anchor your boat. Keep your sampler out of direct sunlight in your cooler, especially in the heat of the summer.
2. Make your first set of **Secchi depth transparency** measurements.
3. Do your **bacterial monitoring** in water at arm's depth.
  - Remove "sterile" label just before sampling.
  - Do not touch inside of bottle or cap.
  - Do not put cap on boat seat.
  - Do not use any water-sampling device.
  - Recap bottle immediately after sampling and place in cooler.
4. **Rinse** your water sampler with surface water.
5. **Put your thermometer in the water sampler.**
6. Close the lid on the sampler and plug top with stopper. *Do not put glass dissolved oxygen bottle inside.*
7. **Collect rinse water from 1 meter.** Rapidly lower the sampler to 1 meter depth, pop the stopper, wait until no more bubbles come to the surface, then pull the sampler rapidly to the surface.
8. Use this water to **rinse the all your red labeled bottles** – 1 meter white plastic, 1 meter brown bottles, and your chlorophyll bottles. Discard all the rinse water.
9. **Record the temperature of the 1-meter water before you fill the bottles.**
10. Repeat steps 6 - 7 to **fill the red labeled bottles** (1 meter white plastic, unfiltered-shallow brown bottles), and the chlorophyll sample bottles **with water from 1 meter depth.**
11. Make **second set of Secchi depth transparency** measurements.
12. Put a clear glass **dissolved oxygen** bottle in sampler. Secure lid and stopper, making sure that inlet tube extends into bottle. **Rapidly lower to 1 meter**, pop the stopper to obtain sample for dissolved oxygen. After no more bubbles come to the surface, pull up your sampler. Open the sampler and cap the glass bottle while the bottle is under water. Remove glass bottle and place in cooler bag.

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13. Repeat steps 6 - 10 **sampling at the depth listed in chart below** to fill the **green labeled** bottles.

<b>"Deep" water sampling depths</b>	
if your monitoring location has a	
maximum depth of:	take your "deep" sample at a depth of:
5 to 7 m (16 to 23 ft)	0.5 - 1.0 m from the bottom
7 to 10 m (23 to 33 ft)	7 m from surface
> 10 m (>33 ft)	10 m from surface

14. **Record the temperature of the deep water before you fill the bottles.**
15. **Place a clear glass dissolved oxygen bottle into sampler.** Secure lid on top, making sure that the inlet tube extends into the bottle.
16. **Rapidly lower the sampler to your assigned depth** (see chart above), pop out stopper. After bubbles cease quickly raise sampler. Open sampler, cap glass bottle, remove and place in cooler.
17. Repeat steps 15 - 16 to obtain a **second deep-water dissolved oxygen sample from the same depth.**
18. Record the **water temperature of one of the "deep" water samples.**
19. Check depth to pond bottom.
20. Once on-shore, do the **first three steps of dissolved oxygen analysis immediately** on all three (1 - 1 meter, 2 deep) water samples. *Remember that the dissolved oxygen sample bottle must be filled to the brim with water before you begin the test. The presence of an air bubble will "contaminate" the sample with oxygen from the air*
21. While waiting for the D.O. flocculent to settle, **OUT OF DIRECT SUNLIGHT** do the **chlorophyll filtration two times on each of 2 shallow chlorophyll samples**, taking care to properly label the filters before freezing them. **Save the filtered water in the yellow-labeled brown glass bottle.** There will be more than enough water to rinse and fill this bottle. *Also save the water remaining in the white plastic bottles.*
- CAUTION: You should not have to push with all your strength in order to filter the water. If you see water drops coming out from between the top and bottom of the white plastic filter holder, the filter has become plugged (either with algae or sediment). You must start over with a fresh filter and water sample. Use less water, for example 25 ml, and record the amount used on your postcard and on the filter itself.*
22. **Finish the first set of dissolved oxygen analyses. Make a second set of dissolved oxygen analyses.** This will give you a total of 2 shallow dissolved oxygen measurements and 4 deep dissolved oxygen measurements. Record *all* of them on your postcard.



23. Flush chemicals down the drain with plenty of water. Rinse all apparatus with tap water; air dry on a paper towel.

24. Bring WW postcard, water samples and all frozen filters to URI.

## Triseason Monitoring Checklist - Deep Locations

### On the water:

- personal flotation device
- anchor
- note pad with pencil, **monitoring postcard**
- map of pond with landmarks and sampling site noted
- Secchi disk**, 2 clothespins
- view tube
- water sampler** with weight
- sample bottles**
  - 2 plastic chlorophyll sample bottles
  - bacterial monitoring bottle (labeled "sterile" on top)
  - White plastic bottle, labeled "shallow", (red label)
  - 2-3 brown glass bottles, labeled "unfiltered-shallow" (red label), and "unfiltered-deep" (green label)
  - 3 clear glass dissolved oxygen bottles with caps
- thermometer
- insulated cooler bag with freezer pack**

### On shore:

- Chlorophyll filtration apparatus***
  - syringe
  - 2 round plastic filter holders
  - 4 small filter circles (from 35 mm film canister)
  - blotting paper (supplied by volunteer- coffee filter, paper towel)
  - tweezers
  - squeeze bottle containing magnesium carbonate
  - aluminum foil squares (your own)
  - chlorophyll labels
- brown glass bottle with yellow label for "filtered water"**
- Dissolved oxygen test kit***
  - lots of paper towels
  - goggles or glasses
  - gloves