



# Chlorophyll-a Procedure Checklist



## Equipment Checklist - \* provided by volunteer

### Chlorophyll Sampling Equipment

- Boating safety equipment\* and anchor\*
- Copy of full procedures or this quick reference procedure checklist
- Secchi disk
- Chlorophyll data sheets (2)
- Pencil\* or indelible ink pen\*
- Zip-lock freezer bag\*
- Composite sampler with measured line\*
- Clothespin\*
- Rectangular sample storage bottles (2)
- Magnesium carbonate (1% MgCO<sub>3</sub>) solution
- Insulated cooler bag
- Freezer ice pack\*

### Chlorophyll Filtering Equipment

- 60 cc plastic syringe
- Flexible plastic tube
- Filter holder
- Membrane filter disks (2)
- Tweezers and large safety pin\*
- Coffee filter\* or paper towel\*
- Sample storage vials and caps (2)
- Chlorophyll sample labels (2)
- Aluminum foil\*
- Fine tip permanent black marker

## Data Collection

### Sampling location, frequency, and timing

- 1. Chlorophyll samples are taken at the deepest basin in the lake.
- 1. Chlorophyll samples need to be taken once a month from May through September, but exact dates differ depending on the lake's latitude. For lakes in the Upper Peninsula, the last chlorophyll samples are taken place at the end of August. Refer to chlorophyll sampling schedule for specific dates.
- 2. Collect the chlorophyll sample between 10:00 a.m. and 4:00 p.m. on a sunny, calm day.
- 3. At a minimum, volunteers must collect samples for four of the five sampling events.

### A. Proceed to your monitoring location over the deepest point in your lake

- 1. Approach the sampling location from the upwind direction. Turn off your boat motor, lower the anchor, and allow the boat to drift over the sampling station (deepest point) before securing the anchor line. This allows you to sample the water column outside the area where sediments may have re-suspended when the anchor hit bottom.
- 2. When in position, fill out the data sheet (Lake Name, County, Date, Field ID #, etc.).

### B. Measure Secchi disk transparency

- 1. Take a Secchi measurement and record the depth.
- 2. Double the Secchi measurement and record this as your composite sample depth.
- 3. If the lake depth is less than twice the Secchi, use three feet above the bottom of the lake as your composite sample depth.

### C. Collect composite water sample

1. Disassemble the sampler, rinse the bottle with lake water, and reassemble the sampler.
2. Clip a clothespin on the measured line at your calculated composite sample depth.
3. Place all of the line into lake so it does not get tangled.
4. Release sampler into the lake, allowing it to free fall until the clothespin is at the water surface.
5. Immediately pull the sampler up at a slow, steady, rate.
6. Upon retrieval, sampler bottle should be more than half full, but not completely full. If it does not meet these criteria, empty bottle and repeat steps 1-6.
7. Gently mix the sampler bottle and rinse both of the rectangular brown bottles with a small amount of sample.
8. Gently mix the sampler bottle again and fill both of the rectangular brown bottles.
9. Vigorously shake the magnesium carbonate ( $\text{MgCO}_3$ ) bottle.
10. Add five drops of the magnesium carbonate ( $\text{MgCO}_3$ ) solution to each rectangular brown bottle.
11. Replace caps and gently shake the bottles to mix.
12. Store the bottles in the cooler bag with freezer ice pack and return to shore.

D10. 5 drops of  $\text{MgCO}_3$ 

### D. Prepare filtering apparatus

NOTE: Algae cells are removed from the composite sample by filtering the sample through a membrane filter disk. The filter disk is then stored frozen in the dark until analyzed at the laboratory.

1. All filtering must take place out of the sun. An indoor location by a sink is ideal.
2. Unscrew and open the filter holder.
3. Using tweezers, place a filter on the metal screen. Never touch filter with hands.
4. Place the rubber o-ring on the filter.
5. Screw the filter holder closed until it is moderately tight.
6. Slip the short flexible tube onto the Luer-Lok tip of the syringe.

### E. Filter the samples.

1. Gently shake one of the brown rectangular sample bottles to mix.
2. Use the syringe to draw up sample water until it is full, and then empty into sink (to rinse).
3. Use the syringe to draw up sample water until it reaches the 60-cc line.
4. With the syringe pointing up, tap it to force bubbles to the top.
5. Slowly push in plunger until the water is at the 50 cc line.
6. Remove the flexible tube and put on the filter holder.
7. With the syringe tip facing down, slowly push the water sample through the filter (adjust pressure to achieve steady rapid drops).



F7. Adjust pressure to achieve steady drops (drop drop drop drop)

- NOTE: Check for leaks along the side of the filter holder. If leaking, tighten assembly. Also do not filter too fast as this will tear your filter. If your filter is damaged, you will have to repeat the filtering step with a new filter.
8. If it is not possible to push all 50 cc through the filter, stop and record the amount of water you did use on the data sheet.

- 9. Unscrew the filter holder and using a tweezer and pin, fold the filter into quarters with the algae on the inside of the folds.
- 10. Using the tweezer, put the filter into a small vial and cap it.
- 11. Repeat the process with the second brown rectangular bottle.



**F. Label and freeze your samples**

- 1. Fill out the chlorophyll vial labels with a **fine tip permanent black marker**, following the example shown.
- 3. Fill out "CA" in the parameter code.
- 2. Fill out "MgCO<sub>3</sub>" in chemicals added.
- 4. Write "-REP" on the second label by the lake name.
- 5. Attach the labels to the vials lengthwise so that none of the label overlaps itself.
- 6. Fully cover both vials with aluminum foil (wrap them together).
- 7. Write lake name and month on the foil.
- 8. Put the samples into a zip-lock bag labeled with lake name, County, and Field ID #.
- 9. Fold the data sheet, place in separate zip-lock bag, and place that in the other zip-lock bag with your samples.
- 10. Store in freezer.
- 11. Rinse all filtering equipment with tap water (no soap) and allow to air dry.

Collector's Initials <b>PS</b>	DEQ	Date <b>7/15/13</b>
Field ID <b>555432</b>	Location <b>DEAD SPIDER</b>	
Analysis or Parameter Code <b>CA</b>	Chemicals Added <b>MgCO<sub>3</sub></b>	
Collector's Initials <b>PS</b>	DEQ	Date <b>7/15/13</b>
Field ID <b>555432</b>	Location <b>-REP DEAD SPIDER</b>	
Analysis or Parameter Code <b>CA</b>	Chemicals Added <b>MgCO<sub>3</sub></b>	

**G. Turn in your sample**

- 1. Deliver the frozen samples and data sheet to the proper turn-in location on the designated turn-in date (according to the chlorophyll-a schedule).



Failure to use foil will result in your sample being rejected.

**Reporting Your Data**

**Deadline: October 31.**

If you can, enter your data (i.e. lake name, sample date, composite sample depth, etc.) into the MiCorps Data Exchange soon after collecting your samples.

After the EGLE lab processes your sample, the chlorophyll-a result will be added to your data in the Data Exchange by MiCorps staff.

If you are unable to enter your own data into the MiCorps Data Exchange, program staff will enter your data for you after receiving your datasheet with your frozen chlorophyll sample; however, this may cause delays in sample processing.

**Questions?**

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