



CHLOROPHYLL-A

Quick Reference Procedure Checklist



Please Note

This document is an abbreviated form of the full Chlorophyll-*a* Monitoring Procedures. It is recommended that you read the full procedures at least once at the beginning of each field season. Full procedures are found here:

https://cdn.cloud1.cemah.net/wp-content/uploads/sites/63/2018/03/CLMP_Manual_2018.pdf

Equipment Checklist

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% MgCO₃) 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*

*provided by volunteer

Data Collection

A. Sampling location, frequency, and timing

- 1. Chlorophyll samples need to be taken once a month from May through September, but exact dates differ depending on the lake's latitude. Refer to chlorophyll sampling schedule.
- 2. It is best to 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 (but five is best).

B. Proceed to your monitoring location

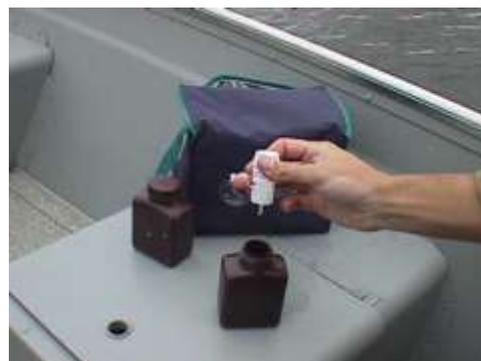
- 1. When in position, fill out the data sheet (Lake Name, County, Date, Field ID #, etc.).

C. 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 lake depth is less than twice the Secchi, use three feet above the bottom of the lake as your composite sample depth.

D. 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 resample.
- 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 ($MgCO_3$) bottle.
- 10. Add five drops of the magnesium carbonate ($MgCO_3$) 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 $MgCO_3$

E. Prepare filtering apparatus

- 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.

F. 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).
- 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.

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



F9. Fold into quarters using pin and tweezers

G. Label and freeze your samples

- 1. Fill out the chlorophyll vial labels with a **fine tip permanent black marker**, following the example shown.
- 2. Fill out "CA" in the chemicals added.
- 3. Fill out "CA" in the parameter code.
- 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 PS	DEQ	Date 7/15/13
Field ID 555432	Location DEAD SPIDER	
Analysis or Parameter Code CA	Chemicals Added MgCO₃	
Collector's Initials PS	DEQ	Date 7/15/13
Field ID 555432	Location -REP DEAD SPIDER	
Analysis or Parameter Code CA	Chemicals Added MgCO₃	



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

H. 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). There are two turn-in dates (one for the May, June, and July samples and one for the August and September samples).

Reporting Your Data

Deadline: October 30.

Enter your data (i.e. lake name, sample date, composite sample depth, etc.) into the MiCorps Data Exchange.

The data entry web address is: <https://data.micorps.net/enter/login.php>

After the DEQ lab processes your sample, the chlorophyll-*a* result will be matched to your data in the Data Exchange.

To enter data you will need your own username and password. To receive your username and password, or to ask any questions about data entry, contact:

Michele Leduc-Lapierre, Great Lakes Commission

Phone: 734-971-9135

Email: MiData@glc.org