



## Massachusetts Water Watch Partnership

### Standard Operating Procedure Lakes-8

### For Chlorophyll a

### Revision 0

*MF Walk*

Marie-Françoise Walk, MA Water Watch Partnership  
Blaisdell House UMass Amherst, MA 01003 413.545.5531

*11-13-01*

Date

*Richard Chase*

Richard Chase, MA DEP, Division of Watershed Management  
627 Main St. 2<sup>nd</sup> floor Worcester, MA 01608 508.767.2859

*11/26/01*

Date

*Arthur Screpitis*

Arthur Screpitis, MA DEP, Division of Watershed Management  
627 Main St. 2<sup>nd</sup> floor Worcester, MA 01608 508.767.2875

*12/29/01*

Date

## Overview

This procedure describes how to collect a lake grab sample for chlorophyll *a* and how to filter the sample onto a glass filter for later laboratory analysis.

### 1.0 Field Equipment List

- \_\_\_ 1 or 2 1-liter high density polyethylene sample bottles
- \_\_\_ Field data sheet and pencils
- \_\_\_ Cooler
- \_\_\_ Ice
- \_\_\_ Frozen koolits
- \_\_\_ Zip-loc bags, 1 gallon size

### 2.0 Sampling Protocol

- 2.1 Rinse a 1-liter sample bottle (including cap) three times with surface water at the sampling site. Be sure to empty your rinse water away from your sampling location.
- 2.2 Uncap the sample bottle and dip it upside down in the water to elbow length.
- 2.3 Turn the bottle upside right and wait until there are no more air bubbles coming out of the bottle before removing it from the water.
- 2.4 Cap and place in cooler with ice (or in an ice-filled zip-loc bag within the cooler).
- 2.5 If Secchi depth is greater than 3 meters, fill another sample bottle in the same manner.
- 2.6 On lake field sheet, write sample ID, how many bottles were filled, and check 'Chlorophyll *a*' column.

### 3.0 Filtering Equipment List<sup>1</sup>

- Distilled water
- Graduated cylinder, 500 ml
- Filter Apparatus, magnetic, 47 mm
- Filtering Flask, 1000 ml
- Vacuum pump with gauge, hand operated
- Glass Fiber filters, 47 mm
- Forceps
- Aluminum foil
- Air-drying box

### 4.0 Filtering Protocol

- 4.1 Back on shore and in subdued light, set up the filter apparatus with vacuum flask, filter holder, glass fiber filter, and filling funnel.
- 4.2 Using a clean graduated cylinder, measure a precise volume and record the amount on your field data sheet.
- 4.3 Pour that measured sample in the clean filling funnel and operate the hand vacuum pump until the vacuum is 15" of vacuum units. It may require some patience to filter an adequate amount of water.
- 4.4 Review the field data sheets to learn the Secchi disk depth at the sample site. Use the following chart to determine the appropriate volume to filter (to provide sufficient chlorophyll for analysis and minimize your time in filtering):

<u>Secchi Depth</u>	<u>Volume to filter</u>
Less than .2 meters	100 ml
more than .2 meters; less than 1.0 meter	300 ml
more than 1.0 meter; less than 1.6 meters	500 ml
more than 1.6 meters; less than 3.0 meters	1000 ml
more than 3.0 meters	1500 ml

- 4.6 Despite the seeming certainty of the above table, you should be guided by common sense. The table above is a guide to a reasonable compromise. If you

<sup>1</sup> Filtering samples is required if analysis is done at UMass EAL. If you are using a different lab, obtain that lab's SOPs for sample handling

- can filter more water without seriously increasing the filtering time, do so. If the filter is noticeably green and you haven't filtered the specified amount, you have still probably got enough for EAL to analyze. **It is most important that you record volume filtered to the nearest milliliter, in 'Notes' on the field data sheet.**
- 4.7 The above instructions describe a rule of thumb related to the Secchi disk transparency but an even better guide is a visible quantity of green or greenish brown on the filter. If you don't see more than a tinge, filter more sample. Be sure to keep track of the total amount filtered. Filtering may significantly slow in the later stages as the filter plugs up with material.
  - 4.8 When all the measured sample has been filtered, remove the filling funnel, and carefully remove the filter from the filter holder using forceps.
  - 4.9 Fold the filter in half (green side in), and place in the air drying box.
  - 4.10 Rinse all equipment (cylinder, filtering apparatus, and forceps) with distilled water before processing additional samples.
  - 4.11 Keep the lid on while you're filtering the next sample. Make sure to note which filters are placed where in the air drying box.
  - 4.12 When all samples have been filtered, the drying box is plugged in.
  - 4.13 Air dry the sample filters for at least 45 minutes or until they are dry.
  - 4.14 Remove filters with forceps and place in aluminum foil.
  - 4.15 Label the aluminum foil with sampler name, lake name, date, site and volume of water filtered.
  - 4.16 These may be mailed, first class, to the Environmental Analysis Lab, Blaisdell House, UMass, Amherst, MA 01003 attn: Lab Director