



Protocols for Collecting Water Grab Samples in Rivers, Streams, and Freshwater Wetlands



Beth Connors
Maine Department of Environmental Protection
312 Canco Road, Portland, ME, 04103
(207) 441-6139 beth.connors@maine.gov

Last updated April 2019
DEPLW0637A-2014



**Bureau of Water Quality
Division of Environmental Assessment
Biomonitoring Program**

**Standard Operating Procedure
Methods for Collecting Water Grab Samples**

- 1. Applicability.** This standard operating procedure (SOP) applies to the collection of water grab samples for water chemistry analysis [generally for nutrients and metals, see section C (1), below] from wadeable rivers, streams, and freshwater wetlands in Maine.
- 2. Purpose.** The purpose of this SOP is to provide standardized methods for collecting water grab samples from wadeable rivers, streams, and freshwater wetlands in Maine.
- 3. Definition.** A water grab sample is a sample of river, stream or freshwater wetland water collected for the purpose of analyzing its constituent water chemistry.
- 4. Responsibilities**
 - A. Program Leader (variable, depending on project collecting samples):
 - (1) Coordinate with laboratory performing analyses.
 - (2) Manage grant funds.
 - (3) Purchase and maintain supplies not provided by laboratory performing analyses.
 - (4) Update applicable SOPs.
 - (5) Coordinate with other DEP programs and partners during selection of sampling locations and scheduling of field teams.
 - (6) Coordinate and provide training opportunities for field study teams.
 - (7) Participate as a member the project team, including field studies.
 - (8) Ensure data is loaded into EGAD (Environmental and Geographic Analysis Database).
 - (9) Analyze and disseminate data.
 - B. Others (as appropriate):
 - (1) Assist in procurement of programmatic funds.
 - (2) Provide technical guidance in regards to sample methods, data analysis, and selection of sampling locations.
 - (3) Participate as a member of a field study team as time allows.

5. Guidelines and Procedures

- A. Sampling period and location. Variable with program for which samples are collected.
- B. Supplies



- (1) Water samples
 - (a) Water quality kits from lab performing analyses, which include containers for all sample parameters to be analyzed and preservatives as required
 - (b) Disposable gloves (for sampling trace metals)
 - (c) Long-handled plastic dipper (for wetland sampling)
 - (d) Large sampling container or wide-mouth plastic mixing jug with lid
 - (e) Lab chain of custody sheets
- (2) Miscellaneous supplies
 - (a) Permanent marker
 - (b) Pencil
 - (c) Cooler with ice

C. Collecting Water Grab Samples in Field

- (1) Water samples collected from rivers, streams and wetlands are analyzed for a variety of parameters which may vary from year to year depending on current program needs and resources. The laboratory performing the analyses may require additional special collection procedures for some parameters.
- (2) Using a sharpie, label each sample container with the date, time, and site number/name.
- (3) Collect water samples before stirring up the stream or wetland bottom, or collect samples upstream of agitated water. For rivers and streams, collect samples (choosing OPTION 1 or 2, below, as appropriate) while standing on edge of water or on a rock. If this is not possible, reach upstream as far as possible to avoid collecting stirred up water. For wetlands, collect samples (using OPTION 3, below) by canoeing or carefully wading into the wetland.
- (4) If sampling trace metals, wear disposable gloves.
- (5) Avoid touching the inside or lip of the sample bottles or caps.
- (6) OPTION 1 (recommended for hard-substrate and regular-flow streams)
 - (a) Hold uncapped bottle upside down and submerge it.
 - (b) Tip bottle upright and allow water to fill bottle.
 - (c) Remove bottle from water and screw on cap.
- (7) OPTION 2 (recommended for soft-sediment and low-flow streams)
 - (a) Use large, clean container to collect water.
 - (b) Rinse container in stream water three times.
 - (c) Collect stream water.
 - (d) Fill smaller containers with water from large container. To ensure even mixing of sample water, gently swirl water in large container each time before water is decanted into smaller container.
- (8) OPTION 3 (wetlands)



- (a) Use a clean long-handled plastic dipper and wide-mouth plastic mixing jug(s) to collect water from a standing position or from canoe.
 - (b) Thoroughly rinse mixing jug(s) and dipper three times with sample water.
 - (c) Fill mixing jug(s) using long-handled dipper to collect water from just below the surface. In well-mixed open water areas having sufficient depth, water may be collected by directly submersing the mixing jug. Avoid collecting floating organic material by carefully clearing an opening in any surface film using the closed end of the dipper. Replace cover of mixing jug and transport back to truck in upright position.
 - (d) Fill smaller containers with water from mixing jug(s). To ensure even mixing of sample water, gently swirl water in mixing jug each time before water is decanted into smaller container.
- (9) If sampling trace metals, dispose of gloves in regular garbage.
 - (10) Store and transport samples in cooler with ice.
 - (11) Complete lab chain of custody sheet.
 - (12) Drop off samples at lab at end of day or early the next morning (store samples in refrigerator overnight) with lab chain of custody sheet. If any parameters have a short (e.g. 24 hour) holding time, make sure to deliver the samples within that time frame.

D. Quality Control

- (1) At the beginning of each field season, all MDEP staff and field personnel who will collect water grab samples will have a training/refresher session to (re)familiarize themselves with the contents of this SOP.
- (2) Laboratory: quality control samples analyzed are specified in the current RFP and/or the applicable laboratory method and generally include duplicate, spiked, and blank samples.