

6.0 PROTOCOL FOR GENERAL SAMPLING METHODS

Overview

Water samples can be taken by wading into the water, from a boat during open water seasons, or through the ice. Samples can also be taken from docks, bridges and the floats of an airplane. Some water samples can be analyzed in the field at the time they are collected, while other samples are collected for later analysis in a laboratory. When possible take samples from the same location, regardless of whether it is open water or ice covered. The use of a global positioning system (GPS) to identify geographic co-ordinates will ensure that the sampling site is precisely located. If applicable, document the change from the original sampling location, and the particular reason for the location change.

Samples near the surface can be taken by holding the collection bottle and lowering it into the water until covered. This hand-held method of sampling, commonly called ‘grab sampling’, is the simplest way of collecting a water sample. The sample bottle should be held as show in Figure 2.

It is beneficial to be prepared before heading out to sample with all necessary equipment; this may include meters for field measurements and field log books, QA/QC sample bottles, and field bottles. Samples can be collected in the most efficient and safe manner if a methodical approach is taken. This may involve tethering the sampler to a second individual or ensuring applicable testing is completed before entering an enclosed space to collect samples. Ensure that safety comes first before beginning the sampling process.

Sources

Environment Canada and B.C. WLAP (2005 c), Alberta Environment (2006 a), EMAN-N (2005)

At a glance

*order of
grab
samples*

1 When sampling streams, unless otherwise specified, aim for the mid-stream. When specified samples may need to be collected near one or both shores. The sample location will be determined in the study design component. A reconnaissance of the site will determine the coordinates (via GPS unit), or specific landmarks that identify the sample site.

2 When collecting grab samples, there is a particular order that should be followed during collection. First grabs samples taken should be any blanks that are needed at the site. These are followed by “clean” samples such as those used to measure bacteriology (including any such replicates). Then samples from which field measurements are measured (if these are not being calculated in the source water itself). Finally, any remaining samples, which would include any related replicates.

carry samples in cooler with ice packs

3 Ideally, sample bottles should be carried to and from the sampling vehicle in a cooler that has ice packs. Sample bottles should be packed in the cooler and field notes added to the laboratory requisition sheet. Once sampling has been completed on site, meters should be returned to their carrying cases, additional sampling and safety gear collected and stored in the vehicle for transit to the next site.

4 A sampler's responsibility is to:

- collect samples as directed in the study design,
- note unusual conditions at a site where he/she repeatedly sample,
- minimize field error to the greatest amount possible, and
- ensure that the best possible sample is collected to produce the most representative results.

5 Tightly cap all the bottles and place them upright in the shipping container for transport. Return the bottle for trace metals to the Ziploc-type bag. Be sure that any glass bottles are not in contact with each other by placing plastic bottles between them.

samples must arrive at the laboratory as close as possible to the 4°C ideal temperature

6 Place the ice pack(s) in the sampling kit immediately. Bottles that are most temperature-sensitive should be arranged at the bottom of the shipping container as close as possible to the ice pack(s). During the warmer summer months, shipping coolers must be kept out of the sun and away from any other heat sources. Loose or bagged ice should never be used in the shipping containers because of the possibility of contamination. As a general guideline, the volume of sealed ice should be equivalent to the volume of sample water included in each cooler sent to the laboratory. Ice packs must be included in every kit because of short-term storage of the shipped coolers in heated buildings, courier trucks, etc. If necessary, use additional ice packs during the summer months. . In the winter months with below freezing temperatures, collapsible jugs of warm water should be packed in the cooler to prevent freezing of the samples. Extra caution should be taken packing individual samples in bubble wrap in extreme cold conditions since glassware and plastic sampling bottles may shatter in transit. Samples must arrive at the laboratory as close as possible to the ideal temperature of 4°C, and within the 48-hour time limit.

Other sources

BC WLAP (2003), ISO 2003 (a), ISO (2008 a), Environment Canada (2008 draft), Ontario Ministry of the Environment (2006), Newfoundland and Labrador Environment and Conservation (1999), NB 2000, Saskatchewan (Undated), Environment Canada (2009), Nova Scotia Department of Environment and Labour 1996

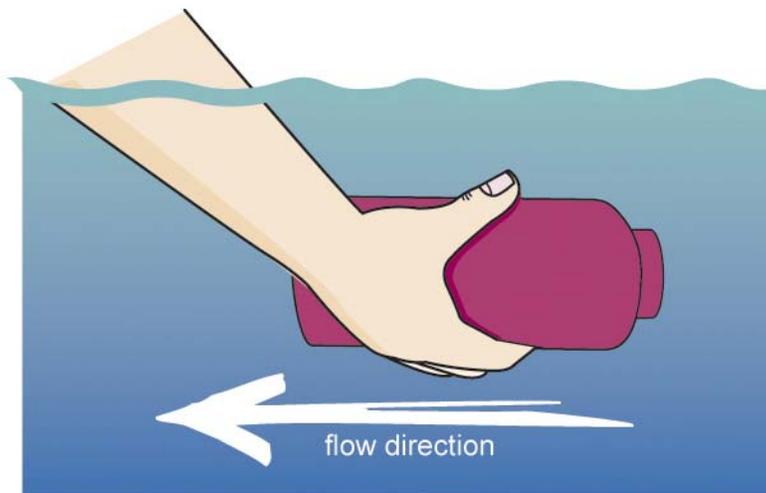


Figure 2. Technique for taking hand-held grab samples (Source: EMAN-N (2005))