

GAP EnviroMicrobial Services Ltd.

**APPROVAL FORM FOR RELEASE OF
ANALYTICAL STANDARD OPERATING PROCEDURE (SOP) FOR ROUTINE USE**

SOP #17: SAMPLE COLLECTION FOR CLIENTS

COMPUTER FILE NAME: 14-SOP-Sample Collection-10

DATE OF LAST REVISION: REVISION 10, March 15, 2010

NUMBER OF PAGES IN DOCUMENT: 5

QUALITY MANAGER

APPROVAL: Jessica Patterson

DATE: March 10, 2015

LABORATORY MANAGER OR PRESIDENT

APPROVAL: Conrad Odegaard

DATE: March 10, 2015

Reviewed: March 15, 2010, April 30, 2012, March 26, 2013, April 3, 2014, Mar 10, 2015, Jan 28, 2016

- ❖ **The approval of this document is valid for one year at which time it will be subject to review to determine if any updates or modifications are warranted.**

STANDARD OPERATING PROCEDURE FOR SAMPLE COLLECTION

1.0 PURPOSE

- 1.1. This procedure ensures proper collection of samples for microbial analysis. Refer to Ontario Ministry of Environment's, Practices for the Collection and Handling of Drinking-Water Samples. See also GAP SOP#73, Collection of Bulk, Swab, Tape, and Liquid Samples for Fungi and Bacterial Analyses.

2.0 GENERAL INFORMATION

Note: *Aseptic techniques must be followed when handling sterile sample bottles used for microbiological sample collection. Failure to do so will compromise the results.*

2.1. Sample Volume

- 2.1.1. 250 mL per sampling site provides sufficient volume for all the regulated analyses. However, additional samples may be required if the bacterial levels are expected to be very low or additional tests are requested. It is advisable to consult with the Laboratory Management Team. Soil, sediment or bio-solid samples have a minimum requirement of 50 grams per sample.

2.2. Sample Containers

- 2.2.1. Containers, for microbial analyses, are sterile and contain sodium thiosulphate (pellet or liquid) to neutralize the disinfecting properties of any chlorine present in the water. Examples of the bottle requirements are as follows.

Parameter	Container and volume required
Water analyses	250 mL plastic bottles
<i>Legionella</i>	1 litre plastic bottles or swabs
Soil, sediment and biosolids	Sterile Whirlpak bags or other sterile sample bottles e.g. PET jars

3.0 SAMPLING PROCEDURES

Note: *All samples bottle, containers or bags are labeled just prior to or just after the samples are collected.*

3.1. General Considerations

3.1.1. Aseptic Bottle Handling

- 3.1.1.1. Wash your hands prior to sampling
- 3.1.1.2. Always use a sterile sample bottle
- 3.1.1.3. Do not touch the inside of the bottle
- 3.1.1.4. Never rinse the bottle
- 3.1.1.5. Do not put the bottle cap down on any working surface while sampling – always hold in one hand
- 3.1.1.6. Do not touch the interior cap surface with your fingertips

3.1.2. Always

3.1.2.1. Label the bottle prior to sampling

3.1.2.2. Take bacteriological water samples first

Note: *If the sample bottle receives any unwanted contamination before or during sample collection, discard the bottle and re-sample with a fresh, sterile bottle.*

3.2. Tap Water Samples

3.2.1. Before collecting a drinking water sample, ensure that there is a clear pathway to the distribution line.

3.2.2. Remove aerators, screens, hoses, filters, etc. from the tap.

3.2.3. Strong flow will clean out residual contamination around the orifice of the tap and replace stagnant water in the line with fresh water, ensuring a representative sample of water from the distribution system.

3.2.4. Turn the tap on full, and allow the water to run to waste for at least 2 minutes.

3.2.5. Adjust the tap to deliver a gentle stream

3.2.6. Collect from the midstream of the water flow and fill the bottle to the top of the label.

3.2.7. Do not allow the mouth of the bottle to touch the tap or any other surface.

3.2.8. Handle the cap aseptically, as described previously.

3.3. Surface Water (Lake, River, Stream) Samples

3.3.1. Secure bottle into clamp on a sampling pole.

3.3.2. Remove the bottle cap aseptically, as described previously.

3.3.3. With the other hand, hold the sampling pole and reach out upstream over the water.

3.3.4. Quickly lower the sample bottle into the water approximately one meter below the surface, or in shallow water, to about half way between the water surface and sediment.

3.3.5. Turn the mouth of the bottle into the current.

3.3.6. When sampling near shore, take care not to contaminate the water sample with sediment.

3.3.7. Remove the bottle from the water when bubbles stop rising from the bottle.

3.3.8. Adjust the water level to the top of the label, and immediately cap the bottle before removing it from the clamp.

3.4. Soil, Sediment and Biosolid Samples

- 3.4.1. Recommend to the client
 - 3.4.1.1. Produce a sample representative of the entire sample area.
 - 3.4.1.2. Minimize possible contamination. Secure the sample container as best as possible. If using a PET jar, loosen the cap slightly. When using a Whirlpak, break the perforations of the bag but do not open it up.
- 3.4.2. Sterile scoops are used. Unwrap the scoop and collect the sample aseptically.
- 3.4.3. Open the jar or bag the rest of the way and deposit the sample inside. Retighten the jar cap or close the Whirlpak bag with the attached twist ties.
- 3.4.4. Disinfect your hands or gloves between sample collections, and disinfected the scoop with 90% ethanol in between samples, if reusing.

4.0 SAMPLE TRANSPORT:

- 4.1. Samples should be shipped to the laboratory as soon as possible. **Under no circumstances should the sample be allowed to freeze.** In addition, samples should not become warm (due to the potential for biological growth between sample collection and sample analysis). Samples should be transported chilled (but not frozen) between 1°C and 10°C. During the spring, summer, and fall months, transport the samples with ice packs to keep them chilled. In the winter, pack the samples in an insulated container, to keep them cold but not frozen.
- 4.2. Samples must be analyzed within 48 hours after collection.

5.0 HISTORY OF CHANGES:

- 5.1. Revision 8 – October 22, 2007
 - 5.1.1. Removed reference to *Clostridium perfringens* and *Cryptosporidium* and *Giardia* from section **2.2 Sample Containers**.
 - 5.1.2. Added History of Changes and Reference section to SOP.
 - 5.1.3. Minor formatting changes.
 - 5.1.4. Revised to reflect company name change.
 - 5.1.5. Revised section 4.1 to allow samples to be transported chilled between 1°C and 10°C instead of between 1°C and 4°C. This change is referenced by Standard Methods and is more practical, especially during warm weather.
- 5.2. Revision 9 – May 28, 2008
 - 5.2.1. Revision 9, was reviewed and no changes were required.
- 5.3. Revision 10 – March 15, 2010
 - 5.3.1. Section 3.4.1 was revised to include recommendations to clients.

REFERENCE:

- 5.2. Ontario Ministry of Environment's, Practices for the Collection and Handling of Drinking-Water Samples, April 2009.
- 5.3. GAP SOP#73, Collection of Bulk, Swab, Tape, and Liquid Samples for Fungi and Bacterial Analyses.
- 5.4. Standard Methods American Public Health Association; 2005. Standard Methods for the Examination of Water and Wastewater, 21st ed., Amer. Pub. Health Assoc., Washington, D.C., Section 9060B. Preservation and Storage.