

Sampling Methods: Volunteer Manual¹

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I. **Volunteer Time Commitment**

Volunteers without prior sampling experience must attend a one-hour training prior to beginning participation in this monitoring project. Once trained, most volunteers will monitor one site monthly from April to October. Once at the monitoring site, it takes about five minutes to conduct the sampling. Volunteers must commit to delivering up to **seven water samples** on ice to Madison Metropolitan Sewerage District (MMSD) as soon as possible after sampling. In all, we estimate the time commitment per volunteer to be approximately 6 to 8 hours per year (including travel time to/from their monitoring site) if one site is sampled.

II. **Volunteer Duties**

Volunteers will collect “grab” samples in streams to monitor total phosphorus, as well as total suspended solids, total Kjeldahl nitrogen, ammonia, nitrate, nitrite, and ortho-phosphorus as potential causes of biological impairment.

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Water samples should be collected once per month, for seven months from April through October. Each sample should be collected approximately 30 days apart, with no samples collected within 15 days of one another.

	Annual Monitoring Schedule											
	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Grab samples	One sample per site collected per month (approximately 30 days apart, with no samples collected within 15 days of one another)							Optional to collect monthly samples, stream conditions permitting				

III. Field Sampling

A. Overview

The following water sampling requirements have been adapted from the Wisconsin State Lab of Hygiene protocols to meet Madison Metropolitan Sewerage District protocols. All water samples collected for analysis need to comply with the equipment and procedures that follow.

B. Equipment

- Waders (or shoes that can get wet)
- 500 mL polyethylene bottle
- Sampling equipment such as extension poles (PVC pipes or sticks) with bottle fastener (rubber bands) may be warranted depending on site conditions – *Optional*
- Waterproof pen or pencil
- MMSD Chain of Custody (to be delivered with each sampling event)
- Sample Bottle Labels

C. Sampling Instructions

To avoid bias, the monitoring should be conducted at a sampling location as follows:

1. **Avoid disturbing the sample.** If the sample is collected by wading in the stream, walk upstream to the sample location and take the sample facing upstream. Also avoid surface water and your hands from touching the rim of the bottle or inside of the cap.
2. **3 to 6 inches below surface, rinse sample bottles three times and completely fill them the fourth time.** Surface samples tend to have debris and other things floating on the surface and should be avoided.
3. **Not immediately downstream of a wastewater or storm sewer outfall pipe.**
4. **Representative of the upstream conditions.** Stream reaches with major springs or major sediment deposits, such as former millpond beds, may create much localized conditions that aren't reflective of the upstream conditions and should be avoided. Also avoid reaches downstream of where cattle are in the stream.

5. **Has thorough mixing of the stream water.** Stream reaches immediately downstream from tributaries or major springs may not have complete mixing and should be avoided.
6. **In portion of stream with greatest or strongest flow.** This may or may not be in the middle of the stream. In general, relatively straight reaches of the stream are preferred. However, if a meander section of the stream is selected for sampling, the sample should be collected in the portion with greatest flow at the outside of the meander. Slow flow areas along the banks, in eddies or immediately downstream of islands should be avoided. Note: If sampling with an extension pole, reaching out from shore to an area of flow with some movement (and not necessarily to an area of strongest flow) is sufficient. Your safety is most important!
7. **Don't trespass on private lands to collect sample.** Use a public access point, such as a road right of way, or seek permission from the landowner or operator to cross land for the purpose of collecting the samples.

D. Collection method

1. If not sampling from a bridge, locate a sampling location that is at least 10 to 20 feet away from a bridge crossing, in the middle of the stream channel, and is at least knee deep*. **Walk upstream** to the sampling location. This ensures the sample is not contaminated by sediment that has been dislodged from the substrate.
2. If sampling from a bridge using a PVC extension pole, sample from the middle of the bridge crossing on the downstream side of the bridge.
3. **On a 500 mL bottle: affix your sample bottle label that will have the field number and sample location** (provided at the training).
4. Facing upstream, **rinse the bottle three times with water 3 to 6 inches below the water surface. On the fourth time, fill the bottle completely and cap.** If the site is not easily accessible or water levels are too high, fasten the bottle to an extension pole (i.e., PVC pipe or stick) and sample water that is well mixed.
5. Avoid touching or allowing water at the surface/scum on the surface to touch the rim of the bottle or inside of the cap. One way to prevent this is to uncap and recap the bottle underwater. If you uncap the bottle above the water's surface, always place the cap top side down to avoid contamination.
6. **Securely cap the bottle.**
7. Transport the sample **on ice** to the MMSD lab **within 8 hours if possible.** The sample must be kept on ice for the full length of time. **AVOID USING BLUE ICE IF POSSIBLE.**

* In some instances water depth may be very shallow. When sampling during low flow conditions, take extreme care to ensure that the sample is not contaminated with sediment dislodged from the substrate.

E. Documentation

Complete the Chain of Custody to accompany the sample(s). Be sure to fill in the following:

- Sample ID – See attached list of sites with associated ID
- Sample Type = G - grab sample
- Begin Date (mm/dd/yyyy)
- Begin Time
- End Date
- End Time
- Number of bottles
- Preservative Used = X for NONE
- Analysis Requests/ Comments = Sampler's name

F. Considerations/ Precautions-Delivery

1. **Samples should be delivered as soon as possible, ideally within half a day.** For example, if you collect a sample at night, you will need to have the sample at the lab in the morning. There is a 12 to 48 hour hold time. Samples should be delivered **Monday through Wednesday, 8:30 AM – 2:30 PM.**
2. **Refrigerate the samples or keep them on ice until they are delivered. AVOID USING BLUE ICE IF POSSIBLE.**
3. Call the MMSD lab when you arrive (609-222-1201 ext. 273) to let them know that you are dropping off a sample.

IV. Questions? Contact

Volunteers should feel free to contact Addie Schlusel (addie@rockrivercoalition.org) with questions or concerns about any aspect of the project.

At A Glance
Guidance for Collection and Delivery of Samples

- One sample per site collected once per month.
- Samples collected approximately 30 days apart, with no samples collected within 15 days of one another.
- Samples should be delivered as soon as possible after collection -- ideally within half a day. For example, if you collect a sample at night, you will need to have the sample at the lab in the morning.
- Samples have limited hold time—which means that after a certain period of time samples will not be useable for analysis. Please make every effort to deliver samples within eight (8) hours after sampling.
- Sample bottles should be delivered to
 - Madison Metropolitan Sewerage District: 1610 Moorland Road, Madison, WI 53713)
 - Mondays through Wednesdays, 8:30 AM - 2:30 PM
- Keep all samples on ice until they are delivered. **PLEASE AVOID USING BLUE ICE.**
- Chain of Custody Forms must accompany the samples to the laboratory. Chain of Custody Form should indicate the MMSD lab code for each site, date and time of collection, date of delivery to MMSD, and volunteer name.
- Please use a pencil to fill out the sample bottle labels.
- Replacement bottles are to be obtained at MMSD – just exchange your sample bottle with an empty bottle. Bottles will be cleaned and prepared for use by MMSD laboratory personnel.
- Call the MMSD lab when you arrive (609-222-1201 ext. 273) to let them know that you are dropping off a sample.

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