

The agency's Industrial Stormwater Multi-sector General Permit requires all permittees to conduct stormwater monitoring. To do that, a facility needs to collect stormwater samples and follow a specific procedure from preparing to collect each sample through submitting the sample's lab results to the agency. This fact sheet, and its companion video (link), offer helpful guidance and tips about how to correctly collect a sheet flow sample. Read the program's *Monitoring Guidance Manual for Minnesota's Industrial Stormwater Multi-Sector General Permit* (www.pca.state.mn.us/index.php/view-document.html?gid=15415) for comprehensive guidance about the permit's monitoring requirements.

Sheet flow sampling uses the same basic collection procedures as well as others specific to this sampling type. The basic sampling process contains six steps:

1. Preparing for sampling
2. Assembling the proper equipment
3. Selecting the best sampling location
4. Collecting the sample
5. Sending the samples to a laboratory
6. Submitting the results to the Minnesota Pollution Control Agency

What is unique to sheet flow sampling is surface material of the sampling location and the collection containers / materials.

For your information - the sampling manual referenced above offers alternatives (excavating a small basin and installing a barrier to intercept stormwater flow. See the manual for more detail.

Step 1. Preparing for sampling

Choose a time when the stormwater is flowing – not still water – so you will get a more representative sample of your facility's conditions. Be sure to collect your sample within 30 minutes of a runoff event. Visit www.weather.gov for a forecast of upcoming weather events that could produce rainfall and a possible stormwater sample collection in your area.



Step 2. Assembling the proper equipment

For each monitoring location, you'll need:

- One new, 2-gallon plastic storage bag
- Two, 2-gallon re-sealable plastic bags
- One new, 1-gallon re-sealable plastic bag
- One pair powder-free, disposable nitrile or latex gloves
- One straight piece of metal or wood examples include a 2" x 2" x 18" piece of lumber, a similar sized pipe, a shovel handle, or similar item
- One small quantity of wet or dry sand material
- One pair of scissors
- One clean bottle for collecting the sample
- One container of preservative (if provided by your lab)
- One cooler for shipping the sample
- Ice

Suggested:

- Camera for a visual record of sampling conditions
- Field notebook, waterproof pens



Step 3. Selecting the best sampling location

Though it is not always feasible to collect discernable stormwater flows (discharges may be too shallow to collect a sample with a sample bottle, for example), sheet flow sampling becomes an invaluable tool, especially on impervious surfaces.

One approach is to install a temporary barrier device, trough, or gutter to intercept stormwater flow. Industrial stormwater program staff strongly recommends that these devices be lined to prevent inadvertent sample contamination. Straight edged metal, wood, or berms, such as speed bumps or funnels, can be employed as temporary barriers to achieve collection success.

Step 4. Collecting the sample

- Cut off the top of the clean, plastic storage bag.



- Next, slit both sides of the bag so if it was unfolded you would have an oblong piece of plastic. Leave it folded together for now.
- Fill the two, 2-gallon, bags about one-quarter full with wet or dry sand.



- Squeeze out the air in each bag and seal.
- Take your collection materials to your monitoring location.
- Put on the clean gloves. This prevents the possibility of your fingers or hands accidentally contaminating the sample.
- Unfold the plastic bag that you cut into an oblong sheet, in Step 4 above, and lay it in the flowing stormwater in the direction the water is flowing.



- Place the bags of sand, as shown, to help direct the stormwater flow into a narrow channel.



- Place the straight piece of wood or metal (or the shovel handle) underneath the plastic bag on the ground and in front of the bags of sand (the downstream side of the bags) where you created a narrow channel. This should help control the stormwater flow and make it easier to guide the stormwater from the channel between the sand bags and into your collection bag.



- Unscrew the cap from the clean stormwater sample collection bottle you received from your lab. Place the cap in your pocket or on a clean, uncontaminated surface. Be sure you do **not** place the cap on the ground!
- Hold the 1-gallon collection bag so the opening is facing upstream.



- You will probably have to fill the bags several times in order to fill the bottle to within one half inch of the opening (unless your lab has instructed you otherwise).



- Add the sample preservative if your lab has provided one. Be sure to handle the preservative carefully; most are acids or bases and can cause skin or eye irritation if not handled correctly.



- Once filled, cap the sample bottle and place it inside a re-sealable plastic bag.
- Place the bag into a cooler and prepare the cooler for pickup or shipment to the lab. This will likely include packing the sample with ice.





For more information on the best sampling method for your facility, visit the agency's website www.pca.state.mn.us/industrialstormwater. Among the many resources, you will find the monitoring guidance manual, view other training videos, and sign up for the program's electronic newsletter.