



Do It Yourself – Vegetated Swale

Tools

- Measuring Tape
- Shovel

Materials (available from hardware or landscaping supply stores)

- Grass Sod or other vegetation – native grasses and sedges, seedlings etc. Ideal native grass types are: Bermuda grass, Kentucky 31 Tall, Red Fescue and a grass- legume mix.
- Soil Mix (depending on existing soil types)
- Stones or gravel (optional)
- Downspout extension (optional)
- Splash pad (optional)

Before creating a vegetated swale, consult the Homeowner's Guide to Rainfall Do-It-Yourself section to ensure that you have the right location, soil and size to manage stormwater on your property. See *Calculate Your Runoff*, *Choose a Location*, *Infiltration Rates of Soil*, and *Sizing your Stormwater Management System* before each of the steps in this guide.

Site Selection

Swales can be located close to roads or driveways as they are ideal for purifying stormwater, and can be used to manage snowmelt and hold cleared snow.

Design

A swale can be any size or length and will depend on the infiltration rate of the soil in the base. The width and length of the base should be equal to the Required Infiltration Area, but can be slightly smaller (depending on the infiltration rate of the sides), as water will also infiltrate the sides of the swale.

$$\text{Required Infiltration Area (m}^2\text{)} = \text{Width (m)} \times \text{Length (m) of base}$$

Example: 14.2 m² = 1m x 14.2m

This area is quite large and reflects the poor infiltration rate of Toronto's clay soils. Increasing the infiltration rate of soil at the base will drastically reduce the size needed.

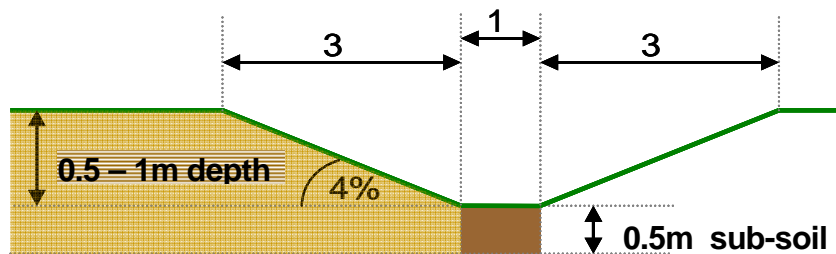
- Increase the infiltration rate as necessary to reduce the size of the swale, or direct the water to another landscape solution (using a slope), such as a rain garden or trench.
- The most common shape of swale is a trapezoid, and the sides should be three times wider than the width of the base. The slope of each side should not be more than 4%.
- Select hardy plant species that produce uniform, dense cover and can withstand flood and drought conditions. Choose salt-tolerant plants if the swale will be close to areas with road salts, or used to store cleared snow.



Installation

Once you have done a site evaluation and designed and sized your swale, you are ready to begin digging.

1. With your shovel dig out the shape of the swale to your design. Be careful not to compact the soil while digging, as this reduces the soil's ability to infiltrate stormwater.



2. *If sub soil isn't adequate:* Dig an additional depth in the base of 0.5 – 1m for the sub soil bed. Create a loamy sand mix and re-fill the hole.
3. Dig the swale at a slight slope downhill to move the water away from sensitive areas. A slope of about 2.5 cm for every meter in length is enough to move water.
4. Vegetate the soil with seedlings, seeds or sod. Check the Evergreen Native Plant Database for a list of native grasses suitable to your water and light conditions. Choose hardy plants that are drought and flood resistant.
5. At the inflow end of the swale, where water will be entering (e.g. from a downspout), consider using a splash pad and/or piling up stones or gravel to reduce erosion from high speed water flows, especially in the first few years.

Maintenance

- Your swale may take many months of growth to function at full capacity. If plants are not growing as they should, replace vegetation with more drought or flood resistant varieties.
- Check after a heavy rainfall to ensure that water does not pond for longer than 48 hours. If infiltration slows, till or aerate the soil at the base of the swale.
- Regularly remove leaf and other debris from the swale to prevent clogging. In spring, clear the swale of de-icing debris (sand and gravel), and restore the health of the soil with organic matter (compost).
- Check the swale a few times a year for erosion of the sides.

*Was this guide helpful? Send your comments to rainguide@riversides.org.
Did you build a swale? Share your experiences on the RiverSides "Talk about Water" discussion forum.*