

Green Infrastructure Fact Sheet

Vegetated Swale



ILLUSTRATION: Jeffery Mathison

A vegetated swale, or bioswale, is a shallow channel with dense vegetation that conveys and slows down stormwater runoff and helps it infiltrate the **ground**. Usually located near a road or a parking lot, swales can be utilized to increase stormwater filtration.

For more information:

Green Infrastructure Primer

www.de.gov/greeninfrastructure



Benefits:

- Reduce stormwater runoff through infiltration
- Reduce the flow velocity of stormwater into the local drainage system
- Trap particulate pollutants from roadways, parking areas, and other paved surfaces
- Provide habitat benefits for native species, including birds and pollinating insects
- Increase urban tree canopy and enhance the aesthetic value for the community



WASHINGTON STREET BIOSWALE, SEAFORD This vegetated swale in Seaford diverts runoff away from the existing storm sewer, reducing flows in the stormwater system and increasing flood protection in the adjacent roads and neighborhoods. The project received funding through Delaware Clean Water State Revolving Fund (CWSRF) Green Project Reserve loan program.

PHOTO CREDIT: Environmental Finance, DNREC

Site and Design Considerations:

- Swales can be placed and modified in many ways alongside roads and paved areas.
- Roads and parking lots should be engineered to have a gradient that allows water to flow into the swale. The swale is then constructed usually with a 6 percent slope to allow the water to flow along the swale and infiltrate as much as possible.
- Dense vegetation must be established and maintained to help retain water and promote infiltration. Plant selection should be based on maintenance, habitat, and pollution control objectives.
- Swales can be incorporated into a site drainage plan, and often work most efficiently in combination with other stormwater practices. For example, swales can provide effective pretreatment of stormwater before it flows to wetlands.
- Sites with very flat or very steep topography, or with poorly drained soils, may not be suitable for vegetated swales. Areas with high-volume or high-velocity runoff will be vulnerable to erosion and may require a more rigorous engineered design.
- Swales located next to a road or pedestrian area should be designed with a culvert or walkway to allow access over the swale. Pedestrians or vehicles can damage the swale by disturbing the vegetation and by compaction of the soils.

Maintenance:

- Check frequently to remove any trash or debris accumulating in the swale.
- Monitor vegetation for decline or mortality.
- Monitor and control invasive species and unwanted vegetation.
- Periodically mow or trim vegetation as needed to protect plant health and maintain safety and visibility. Mowing should be timed to avoid impacts to habitat and wildlife; recommended timing for mowing is late winter or very early spring (February – March).
- Add mulch and soil to damaged or eroded areas and replace dead or declining trees or shrubs.

Resources:

Delaware Department of Natural Resources and Environmental Control Fact sheet – How to maintain private roadside swales
<http://www.dnrec.delaware.gov/swc/SiteCollectionDocuments/Soil/Sediment%20Stormwater/SwaleBrochure.pdf>