

# What to Look for When Inspecting a Stormwater Swale

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A stormwater swale (or ditch) is basically a channel, usually earthen but sometimes lined with stone or concrete, used for moving stormwater from a location where it is collected as runoff to a Stormwater Control Measure (SCM, previously called a BMP, Best Management Practice) where it is stored, sometimes treated, and slowly released to a stream or other water body. There are a number of problems that can affect swales. The most common problems are damage to the structure of the swale, usually due to erosion.

## Problems with Stormwater Swales



This is a backyard swale that has become highly eroded. The erosion comes from a combination of too much water flowing too quickly, and vegetation not strongly rooted enough in the swale to prevent the erosion. Possible solutions to this problem include filling in the eroded area, reseeding it and covering it with protective matting. Regrading the swale to reduce the slope of the sides will reduce the water velocity and reduce the erosive forces. In a worst-case situation adding appropriately sized rip-rap to protect the channel may be needed to solve the problem.



Swale carrying a large amount of runoff down a relatively steep slope had been protected by a nylon mesh, however it proved insufficient to prevent the erosion. Addition of rip-rap to the swale to protect it from erosion has worked well and the erosion has not returned.



Shallow swale with a low slope. Water apparently ponds in part of the swale, damaging the grass which is not water tolerant. This can probably be fixed by reseeding with a grass that is more tolerant of wet conditions. Allowing the grass to grow taller (6-12" after mowing) will promote stronger root systems, and increase transpiration (the water a plant releases into the air) helping the soil to dry out between storms.



Small eroded channel in a shallow swale. Erosion features such as this, when not in an area of steep slopes, are often caused by flow from a small spring, possibly an intermittent one that only flows seasonally. This can cause the area to remain too wet to support normal grasses. To prevent erosion like this may require replanting with a wet area tolerant grass. Also, allowing the grass to grow longer along the channel will increase the size of the grass' root system which also helps the plants tolerate the water and to protect the soil from eroding.



Rip-rap at an endwall that has become clogged with sediment. The purpose of the rip-rap is to slow the flow through the swale. Reduced flow velocities decrease the chance of erosion. When rip-rap becomes clogged with sediment, it can no longer function to slow flow rates and should either be cleaned out or replaced.



This is a shallow swale in an older development. During storms it carries a high volume of stormwater resulting in erosion problems. Because of the shallow side-slopes, it can become very wide during storms. Obstructions to the flow, such as this shed, should not be placed in or near a stormwater conveyance because of the potential of water damage to the shed and contents, and also because an obstruction can raise the flood elevation elsewhere causing further damage.

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**[Back to Stormwater Inspection Forms Page](#)**

**[Back to Main Stormwater Page](#)**

**[Back to East Cocalico Township Homepage](#)**