Maintaining Your Neighborhood Stormwater Facilities

How to identify stormwater facilities and keep them working

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Getting to Know Your Stormwater Facilities

Neighborhood stormwater facilities play a key role in preventing flooding, pollution and erosion. The phrase "stormwater facility" refers to any landscaped or structural feature that slows, filters, or infiltrates runoff from your property after rainfall. Stormwater facilities come in many shapes and forms – from simple swales to more complex stormwater ponds.

Ponds, ditches and depressions may actually be neighborhood stormwater facilities. Without them, polluted stormwater runoff flows into rivers and streams or enters groundwater aquifers (our source of drinking water).

Stormwater facilities also help prevent neighborhood flooding.

Pierce County requires property owners to inspect and maintain stormwater facilities on their private property, including facilities located on commonly owned land within a housing development.

This publication provides simple tips for maintaining stormwater facilities. For further assistance, contact Pierce County Public Works and Utilities, Surface Water Management division.

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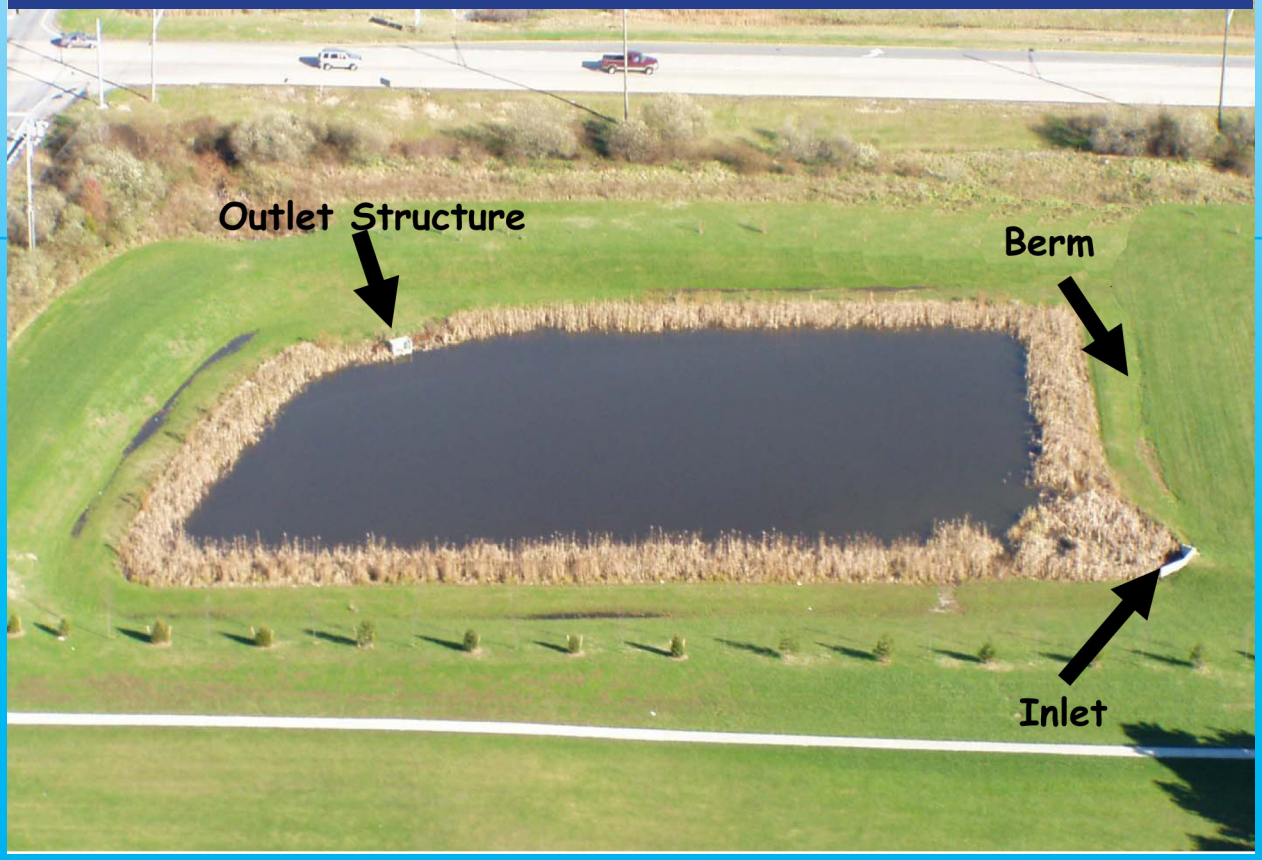


A stormwater pond is a type of stormwater facility. Photo courtesy of Delaware Dept. of Natural Resources and Environmental Control.

What's the Problem with Runoff?

Whenever it rains, runoff flows over hard surfaces, picking up pet waste, oils, fertilizers, pesticides and other pollutants. This runoff flows into street drains and ditches. Eventually, the runoff ends up in rivers, streams and Puget Sound, or in the soil where it can seep into ground water (our source of drinking water).

Did you know?

In Pierce County, runoff is not sent to a wastewater treatment facility before it is released to local waterways.

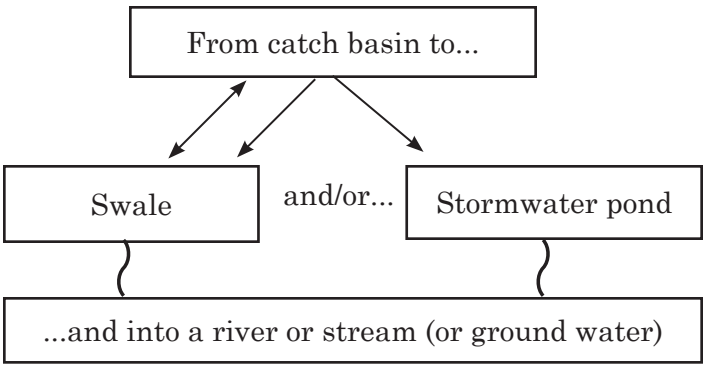
Runoff is the leading cause of pollution in our state's waterways.

Catch Basins: Usually The First Destination

Runoff typically flows into "catch basins" (sometimes called "storm drains"). A catch basin is an underground concrete tank with a slotted grate that collects runoff. There is usually a pipe about 2/3 of the way up the tank that carries water away. This allows runoff to collect in the tank and solid materials and some pollutants settle to the bottom. The cleaner water on top then flows through pipes to a variety of destinations: into a swale, a stormwater pond, or directly into a river or stream. Catch basins are usually found in streets and parking lots.

Catch basins in private roads and on private property are required to be maintained by property owners. Catch basins in the county or city road right-of-ways are maintained by the county or city.

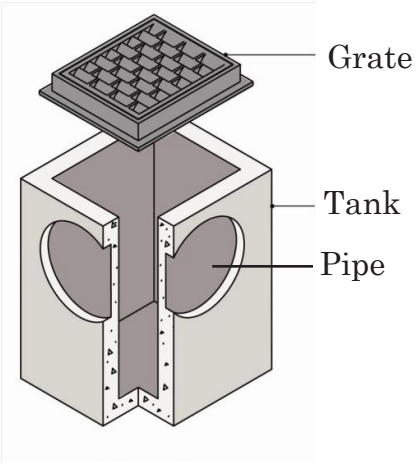
How stormwater flows through your neighborhood



ACTION ITEMS: Keep the area surrounding storm drains clear of litter, leaves and other debris to prevent clogs and flooding. Hire a professional to remove sediment build-up.

Functioning catch basin

Catch basin clogged with sediment and debris



Sediment should not exceed 60 percent of the depth between the bottom of the tank and the bottom of the pipe.

Bioswales

Bioswales are wide, shallow ditches with gently-sloping sides and a flat bottom where runoff either soaks into the ground or flows to another destination. Bioswales are planted with grass to filter out sediment and pollution. Grass should be maintained at a height of 4-10 inches. Bioswales should never be filled in, not even with pipes, gravel or decorative rocks (and, especially not beauty bark). Some bioswales include rock dams to slow the flow of water into a stormwater pond (see "Rock Baffle and Dam").

A well-maintained bioswale

This bioswale, designed for grass, should not have been filled with rock. Homeowners who alter stormwater swales may be required to restore swales to their original design.

ACTION ITEMS: Mow the bioswale to a height of 3-4 inches and remove grass clippings and leaves. Do not use herbicides or pesticides. Aerate soils to preserve percolation rate.

The Role of Stormwater Ponds

Stormwater ponds are engineered depressions in the land that store rainwater until it can either infiltrate into the ground, or flow through conveyance pipes into streams, lakes, wetlands, or Puget Sound. Most neighborhoods have either a dry pond, a wet pond, or a combination of both.

Your stormwater pond might be located in your back yard or, if you live in a housing development, down the street or on nearby property.

Over time, materials can build up in a pond, requiring the pond to be excavated and restored to its designed depth and shape to ensure proper function and prevent flooding.

Dry ponds may be used for light or casual recreation during the summer.

Dry and Wet Stormwater Ponds

Dry Ponds (Infiltration Ponds): Dry ponds look like shallow bowls or depressions in the land. The ponds store runoff and gradually allow the water to soak into the ground. Dry ponds are designed to dry up within a short period of time, typically two to six days.

The ponds are usually seeded with grass to absorb pollutants before the water infiltrates into the ground, which helps protect drinking water aquifers.

A well-maintained dry pond

Alders and blackberry bushes have taken over this dry pond, hindering the infiltration of water.

Wet Ponds (Detention Ponds): Wet ponds are are often lined with clay or plastic to allow the water to pool. Pollutants settle to the bottom of the standing water, or are absorbed by vegetation in the pond. The cleaner water on top is then sent into a dry pond (where it soaks into the ground) or flows to a nearby body of water.

A well-maintained wet pond

This wet pond is overgrown with cattails. Cattails can cause build-up and reduce pond capacity and should be thinned regularly.

ACTION ITEMS: Maintain stormwater pond. Remove trash, yard debris and problem vegetation. Check your pond before and after the rainy season (October and May).

Stormwater Pond "Parts" and How to Maintain Them

➤ Berm

A berm is a sloping, earthen sidewall of a stormwater pond, including the flat, top surface of the sidewall.

A well-vegetated berm

This berm is experiencing erosion.

ACTION ITEMS: Maintain vegetation on berms to reduce erosion. Do not drive vehicles on berms.

➤ Inlet Pipe and Trash Rack

Inlet pipes carry water into bioswales and stormwater ponds. The water that flows through the inlet pipe should land on a splash pad (see "Energy Dissipator").

A well-maintained inlet pipe

This inlet is loaded with sediment.

ACTION ITEMS: Keep inlet structures free of trash and debris, and remove sediment. Also remove plants, such as alder and willow, that tend to grow near the end of the pipe.

➤ Energy Dissipator or "Splash Pad"

Energy dissipators slow the flow of water to prevent erosion at inlet pipes.

This energy dissipator is in good condition.

Erosion damages this dissipator.

ACTION ITEMS: Replace scattered rocks and remove weeds and excessive sediment.

➤ Outlet Pipe/Structure

Outlet pipes and structures carry water away from a pond. Sometimes the pipe is a small "overflow device" that moves overflow water aways from the pond in large storm events. Other times, the outlet is a horizontal pipe placed at a higher elevation than the inlet pipe.

ACTION ITEMS: Keep the trash rack and outlet area free of sediment, trash and problem vegetation. Hire a professional if the structure is damaged.

A typical outlet pipe

➤ Metering Device (Control Structure)

Metering devices slowly release water from a pond to another location once the water rises to a certain height. These devices help prevent erosion and provide time for pollutants and solids to settle out of the water.

ACTION ITEMS: Remove vegetation and debris. Hire a professional for repairs.

A typical metering device

An inside view

➤ Rock Baffles and Dams

Rock baffles slow or redirect the flow of water.

This well-maintained rock baffle slows the flow of water from one area of a stormwater pond to another area.

The rock check dams in this bioswale intentionally slow the flow of water. Rock check dams are beneficial, unlike bioswales that have been filled with rock by homeowners.

ACTION ITEMS: Replace scattered rocks and remove weeds and excessive sediment.

➤ Emergency Spillway

Every pond must have an emergency spillway. Water can overflow at this location if the pond becomes overly full due to a significant rain event.

ACTION ITEMS: Keep free of trees and other vegetation. Remove trash and yard debris.

A rip rap spillway. Photo courtesy of Delaware Dept. of Natural Resources and Environmental Control.

➤ Fences and Access Roads

If your stormwater pond has slopes steeper than three horizontal feet to one vertical foot (3:1), you must place barriers adjacent to the steep areas and provide a 15-foot wide access corridor.

ACTION ITEMS: Keep fences in good repair. Keep access road clear and prune landscaped trees and shrubs along the road.

Fencing and access road in a housing development.