

STORMWATER DETENTION

Wet Ponds and Dry Detention Basins



Photo Nilles Associates

Stormwater Detention

Stormwater runoff enters storm sewer inlets to an underground pipe system that drains to a detention feature such as a wet pond or detention basin.

These basins manage stormwater runoff by storing it and releasing it gradually, reducing both downstream erosion and localized flooding and property impacts. While they have similar goals, these two stormwater practices look and function quite differently.

Wet ponds maintain a permanent pool of water, which provides flood control in addition to water quality treatment benefits.

Dry detention basins completely drain between rain events, they will only have a pool of water during or shortly after a rain event. They only provide flood control and no water quality benefit.

Cities and counties often require developers to install stormwater detention ponds or basins in residential subdivisions and commercial/business properties to protect surrounding homes and buildings from flood damage. When construction is complete, the ownership and ongoing maintenance of these ponds/basins is generally transferred to the local jurisdiction, homeowner's association (HOA), residents, or businesses.



Photo C. Druhl

A dry detention basin captures stormwater from the surrounding development.

Wet Ponds and Dry Detention Basins

Features

Sediment Forebay: They are located at the inlet of a pond/basin. These structures allow a place for sediment particles to settle before water flows into the pond/basin.

Removing sediment from the forebay will extend the functional life of the pond/basin.

Inlet: Stormwater is discharged into ponds or basins through an inlet, which is usually a flared-end concrete pipe.



Dam or Embankment:

A dam or vegetated embankment surrounds all or a portion of the pond/basin to detain the water.



Outlet Structures: They are designed to control how quickly stormwater is released. They are often concrete with grates or cages to prevent debris from blocking the pipe.



Auxiliary Spillway: This is a section of the embankment with a lower elevation to allow water to flow out to a designated location during extremely large rainfalls. The flow path from these spillways should be kept clear of obstructions.

Outfall: Water is released through a pipe to a local waterbody.



Inspection and Maintenance Activities

Ponds and basins must be inspected and maintained to ensure they function properly for flood control and pollutant removal. Often this responsibility is transferred from the developer to local jurisdictions, homeowner's associations (HOAs), residents, or businesses once construction is complete.

Jurisdictions may require property owners to conduct inspections and/or make the necessary maintenance and repairs. Property owners should check with the jurisdiction to find out the requirements for inspection and maintenance of these facilities.

Not all of the maintenance items may need to be done each year. However, it is important to keep a regular maintenance schedule to safeguard the functional life of the pond/basin. This reduces the need for expensive measures in the future. Designating a person, group, or contractor that is responsible for maintaining the practice is highly recommended.

Typical Routine Maintenance

- Report dumped yard waste or other wastes that may be placed around or in the basin or pond.
- To prevent plugging, remove litter, tree branches, leaves, and debris around the site perimeter, within the forebay, basin and pond, and inlet and outlet structures.
- Periodically remove sediment accumulations in the forebay.
- Remove trees and saplings at the inlet, outlet, forebay, dam, embankment, and within the basin.
- Where there is bare soil, stabilize the areas using mulch or erosion control blankets and revegetate using seed or sod. Some regrading may need to occur first.
- Riprap may have to be replaced where there is scour erosion at inlets or outlets.
- Repair damage to embankments and spillways from overtopping and burrowing animals.
- Control weeds to maintain desired vegetation by pulling, trimming or by using herbicides. Don't apply chemicals directly near the edge of wet ponds.
- In some cases, dredging of ponds may be required to remove sediment accumulations.



Educate neighbors to prevent dumping of yard and other wastes.



Remove debris and litter from all inlets and outlets.



Repair exposed soils by regrading, then cover with sod or erosion control blankets or mulch and seed.



Trim out tree saplings and treat stumps, pull or trim weeds.

Enhancing Detention Areas & Solving Issues

While these ponds and basins have a practical purpose, they also have an opportunity to be park-like open space amenities with proper design, care, and maintenance. When open to the public, they can potentially be used for fishing, birdwatching, walking trails, and pollinator and wildlife habitat. However, certain issues may periodically arise that need to be addressed to maintain proper function and public acceptance. It is important to understand that ponds and basins can't be managed the same way that yards are and that actions taken on the surrounding landscape can have potentially negative impacts.

Issues



C. Druhl

Geese like turf grass areas around ponds and leave behind a lot of waste. This causes aesthetic issues and contributes excess bacteria and nutrients into the pond, polluting the water and contributing to algal blooms.



C. Druhl

Excess algae is often a result of using phosphorus in fertilizers on yards that drain into ponds. Hire a contractor when extensive algal issues occur.



Unauthorized mowing or structures placed within the practice vicinity can cause many issues including flooding, erosion, damage, and water quality impacts.

Solutions



C. Druhl

Buffer the shoreline with native plantings that will discourage geese from gathering and nesting in the pond because they don't like being in areas where they can't easily see predators. Access areas can still be made for the public.



C. Druhl

Use phosphorus-free fertilizers (On a bag label, the middle number should be 0) on lawns, and apply properly. Don't use fertilizers near the shoreline.



Define the boundaries of the area to protect. Remove firepits, patios, playground equipment, sheds, kennels and other structures that encroach on the pond or basin area.

