

Stormwater Detention Basin Maintenance

Homeowners' Associations / Businesses / Land Owners



In many situations Homeowners' Associations and business owners are entirely responsible for maintaining stormwater detention basins located on their property. Stormwater detention basins require maintenance to ensure that they function properly. Poorly maintained basins, regardless of their design, lose their ability to control flooding and to prevent pollutants (sediment, fertilizers and pesticides) from entering our creeks and streams.

Stormwater detention basins are typically required when new residential, commercial, and industrial centers are developed. New development replaces open land (grass and forest) with impervious surfaces such as parking lots, roads and roof tops. As stormwater runs off these impervious surfaces it enters streams and rivers at a much faster rate than from open land, potentially causing streambank erosion and flooding downstream. Stormwater detention basins help to control potential flooding and improve water quality.



Wet Stormwater Detention

Are There Different Types of Stormwater Detention Basins?

Yes, in general there are three types of stormwater detention basins:

- ✦ Dry Stormwater Detention Basins
- ✦ Wet Stormwater Detention Basins
- ✦ Stormwater Marsh Basins

Dry stormwater detention basins are intended to be dry depressions most of the time except after a major rain storm when they temporarily fill with stormwater. These basins slow the rate at which stormwater from new developments enters streams and rivers and thus help prevent flooding. However, dry stormwater detention basins are not very effective at removing pollutants because the stormwater from smaller storms passes through quickly. The side slopes of these basins are generally vegetated with short, turf grass.

Like dry stormwater detention basins, **wet stormwater detention** basins also help control flooding, but they are more effective at removing pollutants from stormwater. Wet stormwater detention basins typically have a permanent pool of water and may have wetland plant life. The permanent pool of water allows pollutants to settle to the bottom of the basin. In addition, wetland vegetation helps filter out pollutants as the stormwater passes through the basin.

Stormwater marsh basins are similar to wet stormwater detention basins, but contain more wetland plants such as cattails, bulrush and sedges. The wetland vegetation absorbs fertilizers that run off neighboring lawns and filters out other pollutants, which otherwise might enter nearby creeks and streams. They also provide fish and wildlife habitat.

GETTING HELP

City of St. Charles Development
Engineering Office
(630) 443-3677

The ideal stormwater detention basin provides the greatest number of benefits including flood control and water quality improvements. This typically consists of a wet stormwater detention basin combined with a stormwater marsh basin.

What Type of Maintenance is Required?

Stormwater detention basins require regular inspection and maintenance to ensure that they are functioning properly to control flooding and improve water quality. At a **minimum**, the Homeowners' Association, business owner, or land owner should conduct an **annual inspection and an inspection after major storms**.

1.) Obtain a Copy of Your Stormwater Detention Basin Plan

Obtain a copy of the stormwater detention basin plan from The City of St. Charles Engineering Office to determine the type of your stormwater detention basin **www.stcharlesil.org**.

2.) Inspect Inlet and Outlet Pipes

Inlet Pipes direct stormwater from developments into stormwater detention basins, including stormwater from residential yards, driveways and roads. Typically, there are two to three inlet pipes in a stormwater detention basin. Check the following:

- ✦ Structural integrity—Inspect the pipe to make sure it isn't crumbling or broken
- ✦ Rip rap—Rip rap (typically pieces of stone) is placed around the pipe where it enters the basin to prevent erosion. Check for erosion around the pipe or missing rip rap.
- ✦ Obstructions—Inspect the pipe end to determine if sediment, dirt, or debris is obstructing the flow of water from the pipe into the basin. Minor amounts of sediment around pipe openings can be removed with a shovel and wheelbarrow, spread evenly on upland areas and seeded with turf grass.



If any of these problems are occurring, or if you have questions, contact the Engineering Office for assistance. This office can provide you with a list of contractors to assist you in correcting stormwater detention basin problems.

Outlet Pipes direct stormwater from a stormwater detention basin to a nearby creek or stream. Typically, there is only one outlet associated with a basin. The outlet may consist of a single pipe or a riser pipe. Often times flow is restricted through a small hole or orifice in a wall or plate at the outlet. Flow restricting devices should not be removed and should remain. Downstream flooding and associated liabilities could result. Check the following:

- ✦ Structural integrity - Check the pipe to ensure that it isn't crumbling or broken.
- ✦ Obstructions—Inspect the pipe end to determine if sediment, dirt, or debris is obstructing the flow of water into the pipe and prevent water from leaving the basin. Stone around the outlet pipe may need to be replaced if it becomes clogged with sediment.
- ✦ Inspect the flow restricting device for proper operation each spring and fall.



3.) Inspect for Litter and Debris

Twice each year (spring and fall) and after a major storm, check for debris in the basin. Debris located anywhere in the basin will eventually end up near the outlet and may clog it. Remove and dispose of debris or litter with your household trash.

4.) Examine the Side Slopes for Erosion

Twice each year (spring and fall) and after a major storm, check for gullies or sloughing of the banks and other disturbances from animals or vehicles. Any damage observed should be repaired immediately by filling any eroded areas with topsoil and seeding with turf grass. It is also important to place an erosion blanket, mulch, or straw over the seed to prevent it from being washed into the basin. If problems continue contact the Engineering Office for additional guidance.

5.) *Inspect Vegetation*



In the spring and fall, inspect the vegetation on the banks and in the basin. Maintenance activities will vary depending on the type of basin. If you have a stormwater marsh basin, dead cattails and other decomposing vegetation in the basin should be removed if they are clogging pipe openings. Living vegetation greatly improves the water quality by filtering out pollutants such as fertilizers, pesticides, oils and grease, etc., from the stormwater.

Late fall is a good time to cut down cattails. This will minimize clogging in the spring by dead vegetation. Cut cattails should be disposed of with other compost materials. Algaecides and other chemicals should only be applied in compliance with all applicable laws and regulations. Contact the Sewer Division (630) 377-4405 for further information.

Repair bare spots along banks with turf grass seed, meadow grass or wildflowers. Most of the pre-mixed wildflower seed packages at local nurseries contain a mix of short-lived, brightly colored annuals and long-lived, less showy perennials. Meadow grasses and wildflowers grown along the banks of the detention basin will reduce long-term landscape maintenance. Consult with professional landscape architects and nurseries to learn more about meadow plantings.

6.) *Mowing / Burning*

The amount of mowing required depends on the type of stormwater detention basin and the desired appearance. Typically, basins with turf grass only need to be mowed two or three times a year. Basins with native grasses and wildflower plantings should be mowed only once a year in the late fall or early spring. More frequent mowing will prevent wildflowers from blooming and producing seed. Pathways through wildflower plantings can be mowed more frequently. Do not fertilize the grass in the stormwater detention basin. If you wish to minimize cattail growth in your basin use low phosphorus fertilizers. Some native vegetation perform better if they are burned once a year. This is a controlled process performed by professionals that simulates natural conditions/processes. It does require a permit from the Fire Department. A landscape architect and/or contractor should be contacted to see if burning is appropriate for your basin.

7.) *Adding Vegetation to the Banks*

You can add more color and visual interest, as well as improve bird habitat by planting a variety of shrubs and wildflowers along the banks of stormwater detention basins. Shrubs such as red-osier dogwood, silky dogwood, meadowsweet, common elder, buttonbush and highbush-cranberry typically grow well where the ground is often damp. Wildflowers like swamp milkweed, joe-pye-weed, cardinal flower, beggartick, marsh blazing star, aster, great blue lobelia, New England aster, sawtooth sunflower, ironweed and goldenrod are good choices for damp areas.



As an alternative to cattails, wetland plants such as softstem bulrush, blue flag iris, woolgrass, water plantain, pickerelweed, river bulrush,

bur-reed and arrowhead can be planted in year-round ponded areas.

When increasing vegetation around your stormwater detention basin, remember that it's best to add plants in a 15 to 20-foot zone next to the water's edge. In addition, remember that pesticides and fertilizers usually applied to grass and planting beds should not be applied within this "edge" zone. Nurseries which specialize in wetland plants are increasing in number.

8.) *Record Keeping*

Keep records of all inspections including the date, name of inspector, what was observed, and maintenance activities performed. Keep records of all costs for inspections, such as consulting with professional engineers, and repair costs. Good records will help you make adjustments to the maintenance program as needed.



Detention Basin Maintenance Tasks and Schedule								
Tasks	Components							
	Detention Basin	Slope	Slopes	Bottom	Inlets	Outlet or Control Structures	Inlets	
Inspect for sediment accumulation		•	•	•	•	•	•	Annually
Remove sediment accumulation		•	•	•	•	•	•	Every 5-10 years as needed
Inspect for debris (dead vegetation and trash)	•	•	•	•	•	•	•	Early spring, fall and after major storms
Clean debris	•	•	•	•	•	•	•	As needed
Inspect for erosion on banks and bottom	•	•	•	•				Early spring, fall and after major storms
Re-establish permanent vegetation on eroded slopes	•	•						As needed
Rake out dead vegetation			•	•				Annually - early spring
Replace stone rip-rap			•	•				Every 3 to 5 years as needed
Mowing	•	•						0 to 2 times per year
Inspect structural elements during wet weather and compare to as-built plans (by professional engineer reporting to Homeowners' Association)			•	•			•	Annually
Make adjustments or replacements as determined by annual wet weather inspection		•	•	•			•	As needed
Keep records of all inspections and maintenance activities and report to Homeowners' Association	•	•	•	•	•	•	•	Annually
Keep records of all costs for inspections, maintenance and repairs. Report to Homeowners' Association	•	•	•	•	•	•	•	Annually
Homeowners' Association to have a professional engineer carry out emergency inspections upon identification of severe problems	•	•	•	•	•	•	•	As needed

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