

## Stormwater Ponds

A stormwater pond is a constructed, shallow stormwater retention basin or landscaped area with a permanent pool of water. Stormwater runoff collected in the pool is treated through settling. In addition, the aquatic bench (fringe wetlands), safety bench, side slopes, and shallow areas of the pond include plants to aid in the filtration and infiltration of the stormwater runoff flowing through the practice.



There are some common problems to be aware of when maintaining a stormwater pond. They include, but are not limited to, the following:

- Sediment build-up
- Clogging in the inlet and outlet structure
- Establishing vegetation within the stormwater pond
- Pruning and weeding to maintain appearance
- Eutrophic conditions indicated by excessive algae growth or fish kills
- Creating a mosquito habitat

Routine inspection and maintenance should be performed on stormwater ponds to ensure that the structure is functioning properly. Note that during the first year the stormwater pond is built, maintenance may be required at a higher frequency to ensure the proper establishment of vegetation in the practice. For more information on vegetation in stormwater ponds, see Appendix D: Planting and Soil Guidance.

In addition to routine maintenance, stormwater ponds have seasonal and intermittent maintenance requirements. During the winter months, the stormwater pond should be inspected after a snow event (this is specific to northern areas of Georgia) to make sure that the materials used to de-ice the surrounding areas stay out of the practice to avoid further pollution. In addition, planting material should be trimmed during the winter, when the plants are dormant.

Inspect the stormwater pond after a large rainstorm. Keep drainage paths (both to and from the BMP) clean so that the water can properly flow into the stormwater pond. If the stormwater pond is not draining properly, check for clogging in the inflow and outflow structures.

If the forebay or stormwater pond has received a significant amount of sediment over a period of time, then the sediment at the bottom of the forebay or pond may need to be removed. Accumulated sediment in the practice decreases the available storage volume and affects the pond's ability to function as it was designed. A sediment marker should be placed in the forebay to determine when sediment removal is required. It is important to note that sediment excavated from stormwater ponds

that does not receive stormwater runoff from stormwater hotspots are typically not considered to be toxic and can be safely disposed through either land application or landfilling. Stormwater hotspots are areas that produce higher concentrations of metals, hydrocarbons, or other pollutants than normally found in urban runoff. Examples of operations performed in potential stormwater hotspots include vehicle maintenance and repair, vehicle washing, landscaping/grounds care, and outdoor material and product storage. Check with the local development review authority to identify any additional constraints on the disposal of sediments excavated from stormwater ponds.

Periodic mowing of the pond buffer is only required along maintenance right-of-way and the embankment. The remaining buffer can be managed as a meadow (mowing every other year) or a forest.

In order to keep the water that exits the stormwater pond clean, fertilizers should be used sparingly during establishment. Once the vegetation in the practice has been established, fertilizers should not be used. While vegetation in the stormwater pond is important, the primary purpose of a stormwater pond is to act as a water quantity and quality device, and introducing fertilizers into the stormwater pond introduces nutrients such as phosphorus and nitrogen that can pollute downstream waters. In addition, stormwater ponds should already be nutrient rich environments that do not require fertilization. To control animal nuisances and invasive species, pesticides (including herbicides, fungicides, insecticides, or nematode control agents) should be used sparingly and only if necessary.

Stormwater ponds create a challenge for controlling mosquitos, because some types of vegetation, such as cattails, can create an environment that allows mosquitoes to breed both in the pond and along the shoreline. Keeping the practice free of trash will help the practice from becoming a mosquito habitat. Another method to control mosquitoes is to place fish, such as the mosquitofish (*Gambusia affinis*), in the pond to help with controlling the mosquitoes. Animals such as dragonflies, diving beetles, birds, and bats may aid on controlling mosquitoes, however it is likely that additional measures, such as chemicals, may be required to control the mosquitoes (using chemicals should be a last resort). Keeping the pond at a depth of four feet or greater can aid in mosquito control by limiting vegetation growing around the pond. If mosquitoes begin to pose a problem, consult a qualified professional.

Pond dam inspection and maintenance is also very important. The pond dam should be inspected for seepage and structural integrity. Look for saturated soil, sediment deposits, and flowing water at the base of an earthen dam and on the rear face of the dam. On concrete dams, look for seepage, cracks, leaks and rust stains, or bulges. If any signs of seepage are found, consult a Professional Engineer. Pests such as burrowing animals and fire ants can pose a major threat to dam safety. Fire ant tunnels and animal burrows can weaken the dam structure and create an undesired water pathway through the dam. In addition, tree roots are another source of potential damage and failure. Woody vegetation may not be planted on the embankment or allowed to grow within 15 feet of the toe of the embankment and 25 feet from the principal spillway structure. If you have a large dam that is subject to regulations by the state, other maintenance items may be required. Please consult a Professional Engineer for additional guidance.

Ponds can be an attractive nuisance, so security and safety should be taken into consideration. Fencing requirements are at the discretion of the local government. If security measures such as a fence and gate are present, ensure that they are functional and locked.

It is important that the embankment for a pond be inspected regularly for trees and animal activity. Trees growing on the top or sides of the embankment should be removed. The roots of trees grow into the embankment and will weaken the structure of the embankment by creating passage ways that allow water to flow through the embankment. Trees that are blown over or damaged by storms can loosen or remove soil which weakens the strength of the embankment. In the same way animals can burrow holes weakening the structure of the embankment. These holes act as a passage way for the water to travel through the embankment, increasing the potential for the embankment to fail.

Geese are attracted to open water, clean lines of sight, and grass. They can become a nuisance to stormwater ponds if they are causing damage to plants or the banks, or if they are 'loading' the pond with nutrients and bacteria. Geese can be discouraged from using a stormwater pond by planting the buffer with shrubs and native ground covers or installing an aquatic shelf, but ensure that access points are maintained.

The table below shows a schedule for when different maintenance activities should be performed on a stormwater pond.

**Stormwater Ponds Typical Routine Maintenance Activities and Schedule**

Activity	Schedule
<ul style="list-style-type: none"> <li>• Inspect inlets, outlets and overflow spillway to ensure good condition and no evidence of erosion.</li> <li>• Clean and remove debris from inlet and outlet structures.</li> <li>• Mow side slopes.</li> <li>• Inspect pond dam for structural integrity.</li> <li>• Remove trash from the area around the pond.</li> </ul>	Monthly
<ul style="list-style-type: none"> <li>• If wetland components are included, inspect for invasive vegetation.</li> </ul>	Semiannual Inspection
<ul style="list-style-type: none"> <li>• Inspect for damage, paying particular attention to the control structure.</li> <li>• Check for signs of eutrophic conditions (e.g., algal blooms and fish kills).</li> <li>• Note signs of hydrocarbon build-up (e.g., an oil sheen), and remove appropriately.</li> <li>• Monitor for sediment accumulation in the facility and forebay.</li> <li>• Check all control gates, valves, or other mechanical devices.</li> </ul>	Annual Inspection
<ul style="list-style-type: none"> <li>• Repair undercut or eroded areas.</li> </ul>	As Needed
<ul style="list-style-type: none"> <li>• Perform wetland plant management and harvesting.</li> </ul>	Annually (if needed)
<ul style="list-style-type: none"> <li>• Remove sediment from the forebay.</li> </ul>	5 to 7 years or after 50% of the total forebay capacity has been lost

<b>Activity</b>	<b>Schedule</b>
<ul style="list-style-type: none"><li>• Monitor sediment accumulations, and remove sediment when the pool volume has become reduced significantly, or the pond becomes eutrophic.</li></ul>	10 to 20 years or after 25% of the permanent pool volume has been lost

(Source: WMI, 1997)