

Stormwater Wetland

Stormwater wetlands are constructed wetland systems built for stormwater management purposes. They typically consist of a combination of open water, shallow marsh and semi-wet areas that are located just above the permanent water surface. As stormwater runoff flows through a wetland, it is treated, primarily through gravitational settling and biological uptake.



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

- Sediment build-up
- Clogging in the inlet and outlet structure
- Establishing vegetation within the wetland area
- Maintaining the proper pH levels for plants
- Pruning and weeding to maintain appearance
- Mosquitoes breeding in the practice

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

In addition to routine maintenance, stormwater wetlands 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 wetland after large rainstorm events. Keep drainage paths (both to and from the BMP) clean so that the water can properly flow into the stormwater wetland. If the stormwater wetland is not draining properly, check for clogging in the inflow and outflow structures.

If the forebay or stormwater wetland has received a significant amount of sediment over a period of time, then the sediment at the bottom of the forebay or wetland may need to be removed. Accumulated sediment in the practice decreases the available storage volume and affects the wetland's ability to function as it was designed. It is important to note that sediment excavated from stormwater wetlands that do 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 wetlands.

In order to keep the water that exits the stormwater wetland clean, fertilizers should be used sparingly around the wetland. Once the vegetation in the practice has been established, fertilizers should not be used. While vegetation in the stormwater wetland is important, the primary purpose of a stormwater wetland is to act as a water quantity and quality device and introducing fertilizers into the stormwater wetland introduces nutrients such as phosphorus and nitrogen that can pollute downstream waters. In addition, stormwater wetlands should already be a nutrient rich environment that does 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.

It is important that the embankment for a wetland 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.

Stormwater wetlands 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 wetland 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 wetland at a depth of four feet or greater can aid in controlling mosquitoes by limiting vegetation growing around the wetland. If mosquitoes begin to pose a problem, consult a qualified professional.

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

Stormwater Wetland Typical Routine Maintenance Activities and Schedule

Activity	Schedule
<ul style="list-style-type: none"> • Water side slopes and buffers to promote plant growth and survival. • Inspect wetland, side slopes and buffers following major storm events. Plant replacement vegetation in any eroded areas. 	<p style="text-align: center;">As Needed (Following Construction)</p>

Activity	Schedule
<ul style="list-style-type: none"> • Examine to ensure that inlet and outlet devices are free of sediment and debris and are operational. • Inspect wetland, side slopes and buffers for dead or dying vegetation. Plant replacement vegetation as needed. • Inspect wetland, side slopes and buffers for invasive vegetation and remove as needed. 	<p style="text-align: center;">Monthly</p>
<ul style="list-style-type: none"> • Inspect wetland, side slopes and buffers for erosion. Plant replacement vegetation in any eroded areas. • Monitor wetland vegetation and perform replacement planting as necessary. • Harvest wetland plants that have been “choked out” by sediment build-up. 	<p style="text-align: center;">Semi-Annually (Quarterly During First Year)</p>
<ul style="list-style-type: none"> • Inspect for damage, paying particular attention to the control structure and side slopes. Repair as necessary. • Examine stability of the original depth zones and microtopographical features (i.e., shallow areas with minor ridges that increase water quality, provide flood storage, and enhance the development of a more diverse vegetative community). • Inspect side slopes for erosion and undercutting and repair as needed. • Check for signs of eutrophic conditions (e.g., excessive algal growth). • Check for signs of hydrocarbon accumulation (e.g., oil sheens) and remove appropriately. • Monitor sediment markers for sediment accumulation in forebays and permanent pools. • Check all control gates, valves and other mechanical devices. 	<p style="text-align: center;">Annually</p>
<ul style="list-style-type: none"> • Remove sediment, trash, and debris from inlets/forebay. 	<p style="text-align: center;">5 years or after 50% of the total forebay storage capacity has been lost</p>
<ul style="list-style-type: none"> • Monitor sediment accumulation in the wetland and remove sediment when the permanent pool volume has become reduced significantly, plants are “choked” with sediment, or the wetland becomes eutrophic. 	<p style="text-align: center;">10 plus years or after 25% of the wetland storage volume has been lost</p>