

Stormwater 101:

Information for Property & Facility Managers

WHAT IS STORMWATER MANAGEMENT?

Stormwater management is the science of managing rainwater runoff to prevent adverse impacts on the environment. When stormwater is absorbed into soil, it is filtered and ultimately replenishes aquifers or flows into streams and rivers. Stormwater retention and detention ponds have been the preferred method of managing the runoff in developments to prevent flooding and erosion.

Retention ponds have a permanent pool of water that fluctuates in response to precipitation and runoff from the contributing areas.

Detention ponds are usually dry except during or after rain events; they are designed to hold water for a short period of time to reduce peak runoff rates associated with storms.

WHY MAINTAIN YOUR POND?

Stormwater runoff is a significant source of water pollution in urban areas. Water released at a high flow rate can also cause erosion and sediment issues downstream.

Who's liable? YOU!

Some of the negative impacts of improperly managed stormwater include:

- Road and stream flooding
- Property and habitat damage
- Stream and creek erosion
- Contaminated waterways

In addition to sediment, some of the types of pollutants that can be found in urban stormwater runoff include:

- Chemical nutrients (nitrates, nitrites, ammonia, phosphates)
- Microbes (fecal coliform, E. coli, fecal streptococci viruses, enterococci)
- Organic matter (vegetation, sewage)
- Toxic materials (copper, lead, zinc, hydrocarbons, pesticides)
- Trash & debris



Proper maintenance improves aesthetics as well as function. These photos show a commercial retention pond before and after cleanup, repair and maintenance.



Routine Maintenance should include:

- Inspections: Periodic scheduled inspections with a specified checklist, and inspections after a major rain event.
- Vegetation management: Mowing on a regular basis; limited use of fertilizers and pesticides in and around the ponds.
- Trash and debris removal: Removal of any trash causing obstruction at the inlet, outlet, orifice or trash rack - during periodic inspections and after every runoff-producing rain event.
- Mechanical equipment checks: Inspection of any valves, pumps, fence gates, locks, during periodic inspections and appropriate replacement/repair.
- Structural component checks: Inspection of the outlet works, inlet, orifice, trash rack and low flow channel.

Aquascape Environmental offers annual site inspections, routine maintenance programs, and many other stormwater management services to help managers stay in compliance. More information is available at www.aquascape.net or call Paul Slovisky at (678) 445-0077.

DETENTION/RETENTION POND CHECKLIST

Are there any obstructions of the inlet, outlet, or orifice?	<input type="checkbox"/>
Has trash accumulated in the pond or on the debris screen?	<input type="checkbox"/>
Is there any erosion or instability on the slopes?	<input type="checkbox"/>
Is there any sedimentation in the basin?	<input type="checkbox"/>
Are there any upstream or downstream conditions that could affect pond operation?	<input type="checkbox"/>
Is the low flow channel conveyance in good working order?	<input type="checkbox"/>
Is the outlet channel conveyance in good working order?	<input type="checkbox"/>
Has all relic silt fencing been removed?	<input type="checkbox"/>
Are there trees or other woody vegetation growing on the dam embankment?	<input type="checkbox"/>
Is there visible evidence of erosion on the dam embankment?	<input type="checkbox"/>
Is there visible damage to any of the mechanical equipment?	<input type="checkbox"/>
Are animal burrows or rodent holes present on the dam embankment?	<input type="checkbox"/>
Is there evidence of beaver activity?	<input type="checkbox"/>
Does standing water remain longer than 72 hours after a rain event? (detention ponds only)	<input type="checkbox"/>

NON-ROUTINE MAINTENANCE CONSIDERATIONS

- **Bank erosion/stabilization:** It is critical to keep effective ground cover on all vegetated areas in order to see the benefits of proper filtration of runoff and effective filtering of pollutants. All areas not vegetated should be re-vegetated and stabilized immediately.
- **Sediment removal:** Every six months or so, the accumulated sediment should be removed from the bottom of the outlet structure and the pond depths checked at several points. If the depth of the accumulated sediment is greater than 25% of the original design depth, sediment should be removed.
- **Structural Repair/Replacement:** Eventually outlet structures and other structural components like the low flow channel or trash rack will need to be repaired or replaced.