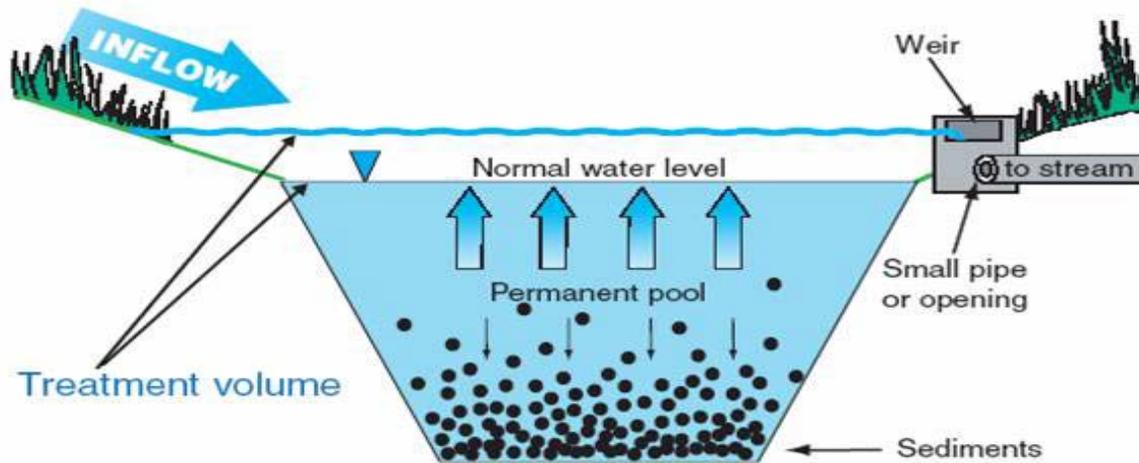




PLANNING
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Tips for Maintaining and Enhancing Stormwater Management Areas

Non-Structural Maintenance for Stormwater Management Areas

Maintenance		STORMWATER AREA TYPE			
Type	Schedule	Dry Ponds	Wet Ponds	Sand Filters	Infiltration Trenches
Grass Cutting and Mowing	Perform at least twice a year	<ul style="list-style-type: none"> Mow downstream slope of dam to toe Mow top of dam Mow upstream slope of dam and remove all cut vegetation Cut grass 25-feet around the control structure and remove all cut vegetation Mow inlet channels in pond and remove all cut vegetation Mow channels, headwalls, and cut around pipes into the pond area Mow outlet channel and remove all cut vegetation 	<ul style="list-style-type: none"> Mow downstream slope of dam to toe Mow top of the dam Mow upstream slope of dam and remove all cut vegetation Mow outlet channel and remove all cut vegetation Mow channels, headwalls, and cut around pipes within pond area 	<ul style="list-style-type: none"> Mow and cut in and around the sand filter and remove all cut vegetation Prevent cut grass from blowing onto sand filter during mowing Prevent grass from growing in sand filter 	<ul style="list-style-type: none"> Mow around the trench and remove cut vegetation from the trench Prevent cut grass from blowing onto the trench during mowing Prevent grass from growing in the trench – <i>or if designed with stones</i>
Woody Vegetation Cutting and Removal	Perform at least twice a year	<ul style="list-style-type: none"> Remove all trees and woody vegetation from the upstream and downstream dam slopes Remove all trees and woody vegetation from the top of the dam Remove all trees and woody vegetation from inlet and outlet channels Remove all trees and woody vegetation within 25-feet of controls structure Prevent trees and woody vegetation from growing in or around the flow channel 	<ul style="list-style-type: none"> Remove all trees and woody vegetation from the upstream and downstream dam slopes Remove all trees and woody vegetation from the top of the dam Remove all trees and woody vegetation from inlet and outlet channels Remove all trees and woody vegetation within 25-feet of controls structure Prevent trees and woody vegetation from growing in or around the flow channel 	<ul style="list-style-type: none"> Remove all trees and woody vegetation in sand filter Prevent trees and woody vegetation from growing in sand filter 	<ul style="list-style-type: none"> Remove all trees and woody vegetation in the trench Prevent trees and woody vegetation from growing in trench
Debris Removal	Monthly	<ul style="list-style-type: none"> Remove debris from all areas in and around the pond 	<ul style="list-style-type: none"> Remove debris from all areas in and around the pond 	<ul style="list-style-type: none"> Remove debris from all areas in and around the sand filter 	<ul style="list-style-type: none"> Remove debris from all areas in and around the trench
Other	As required		<ul style="list-style-type: none"> Verify that all pond safety signs are in place 	<ul style="list-style-type: none"> Discourage children from playing with the sand and damaging and removing the plastic caps 	<ul style="list-style-type: none"> Discourage children from playing with the stones and damaging and removing the plastic caps

Non-Structural Maintenance for Stormwater Management Areas

Maintenance		STORMWATER AREA TYPE			
Type	Schedule	Constructed Wetlands	Vegetated Pools or Plunge Pools	Bioretention	Infiltration Basin or Pond/Sand Filter
Grass Cutting and Mowing	Perform at least twice a year	<ul style="list-style-type: none"> Mow downstream slope of dam to toe Mow top of dam Mow upstream slope of dam and remove all cut vegetation Cut grass 25-feet around the outlet channel and remove all cut vegetation Mow channels, headwalls, and cut around pipes into the pond area <p>DO NOT CUT OR TRIM SPECIAL WETLAND VEGETATION</p>	<ul style="list-style-type: none"> Mow all areas of the vegetated pool and remove all cut vegetation 	<i>Not Applicable</i>	<ul style="list-style-type: none"> Mow downstream slope of dam to toe Mow top of dam Mow upstream slope of dam and remove all cut vegetation Cut grass 25-feet around the outlet channel and remove all cut vegetation Cut around outlet channel and remove all cut vegetation Cut around the sand filter or trench and remove all cut vegetation Prevent cut grass from blowing onto sand filter or trench during mowing Prevent grass from growing in the sand filter or trench – <i>or if designed with stones</i>
Woody Vegetation Cutting and Removal	Perform at least twice a year	<ul style="list-style-type: none"> Remove all trees and woody vegetation not part of the wetland design Remove all trees and woody vegetation from channels, headwalls, and pipes into the pond area Prevent trees and woody vegetation from growing on or around the structure 	<ul style="list-style-type: none"> Remove woody vegetation from within the structure Prevent trees and woody vegetation from growing on or around the structure 	<i>Not Applicable</i>	<ul style="list-style-type: none"> Remove all trees and woody vegetation from the upstream and downstream dam slopes Remove all trees and woody vegetation from outlet channels Remove all trees and woody vegetation within 25-feet of controls structure Remove all trees and woody vegetation from sand filter or trench Prevent trees and woody vegetation from growing in or around the flow control
Debris Removal	Monthly	<ul style="list-style-type: none"> Remove debris from all areas of the wetland 	<ul style="list-style-type: none"> Remove debris from all areas of the vegetated pool 	<ul style="list-style-type: none"> Remove debris from all areas of the Bioretention facility 	<ul style="list-style-type: none"> Remove debris from all areas of the structure
Other	As Required	<ul style="list-style-type: none"> Verify that all pond safety signs are in place <p>DO NOT CUT OR TRIM SPECIAL WETLAND VEGETATION</p>		<ul style="list-style-type: none"> Prevent snow and ice piles from accumulating on top of the Bioretention area and killing plants Re-mulch every 2 to 3 years Do not remove, cut, or trim special woody and herbaceous Bioretention vegetation 	<ul style="list-style-type: none"> Discourage children from playing with the sand filter sand and trench stones Discourage children from damaging and removing plastic caps

Stormwater management areas are designed to imitate Nature: stormwater facilities, structural features and landscaping, slow, filter, or infiltrate stormwater runoff on your property. These facilities are important in removing pollutants and reducing volume of stormwater that flows into our rivers and streams.

Property owners are legally responsible for inspecting and maintaining any stormwater management areas on their sites. Proper maintenance is critical to ensure that the system performs as designed. Without proper maintenance, the performance and purpose will be greatly diminished.

Your Connection to the Chesapeake Bay

Managing Stormwater Runoff

Stormwater means stormwater runoff, snow melt runoff, and surface runoff and drainage. Rain and snow in urban areas produces stormwater that washes over streets, parking lots, roofs, and other impermeable surfaces picking up dirt and pollutants, such as chemicals and oil, along the way. Traditionally, stormwater runoff was piped and drained directly into rivers and streams that feed into the Chesapeake Bay. The State of Maryland has committed to moving away from the 'out-of-sight-out-of-mind' method in dealing with stormwater and adopted new methods for onsite stormwater management.

Onsite stormwater management imitates nature's methods. Onsite facilities allow runoff to soak into the ground, filter pollutants, and slow the rate of runoff leaving your site.

Many new onsite measures also benefit property owners. For example, vegetated stormwater facilities can improve appearance of your property, provide habitat for native wildlife, and decrease landscape maintenance and water use.

Inspecting and Maintaining Your System

It is important to make sure your stormwater management system is functioning properly. You are legally required to inspect your system regularly and maintain it.

It is good idea to inspect the components of your stormwater management system at least twice a year and after heavy rainfall. The Town Code requires you to keep inspection and maintenance logs. Logs should note all inspection dates, the facility components that were inspected, and any maintenance or repairs made.

What To Look For and What To Do

Performing Maintenance

When performing maintenance inspection, watch for slopes, slick surfaces, obstacles, and vegetation debris that may cause slips and falls. Avoid maintenance work in wet weather. Always wash your hands after maintaining a facility.

Trash, Debris, and Sediment

Stormwater facilities collect a variety of trash, debris, and sediment-inspect once a month. Remove trash and debris. Sediment removal is easier during dry weather. Try to minimize damage to the underlying vegetation. Re-seed and mulch exposed soil. Reuse removed sediment onsite. *Never dump sediment into the street or in a storm drain.*

Erosion

Inlets, flow channels, and berms are susceptible to erosion. The erosion can add sediment to the runoff and cause some facilities to fail. Look for cuts or channels in the surface. Any area where more than 1-inch of erosion has occurred needs maintenance. Fill any eroded areas with soil, compact it lightly, then cover with mulch, compost, seed, or sod. Planting deep or heavily rooted plants will help stabilize the soil.



NASA Satellite image: the brown shows mud, fertilizers, and chemicals flushed off of farm fields, construction sites, parking lots, and roads by the heavy rainfall in January 2010.

Courtesy of NASA and Bav Daily

What To Look For and What To Do

Vegetation

Vegetation is an important part of your facility. Maintain desired vegetation and control unwanted and nuisance vegetation. Inspect twice a year, in the Fall and Spring.

Nuisance, Unwanted, or Dead Vegetation

- Immediately remove nuisance and invasive vegetation, before it can go to seed and spread.
- Immediately remove dropped leaves, dead plants, grass, and other plant clippings.
- Avoid using herbicides to remove unwanted vegetation.

Sediment Buildup

- Remove sediment before it reaches a height that kills vegetation.

Mowing

- Most grass in the stormwater management areas can be mowed or weed wacked. Keep grass between 6-10 inches tall.
- Consider replacing grass with shrubs or wetland plants that need little to no maintenance.

Structural Deficiencies

Structural components of stormwater management systems include plates, grates, pipes, berms, and other concrete, metal, or plastic parts. Look for cracks, scratches, dents, rust, loose fittings, broken or missing components, and insufficient lubrication of moving parts. Repair or replace any major damage. Many components will need to be repaired or replaced during the life of the system as result of age, wear, or vandalism. The commonly include:

- Inflow and outflow pipes
- Concrete, metal, and plastic components.

Ponding Water

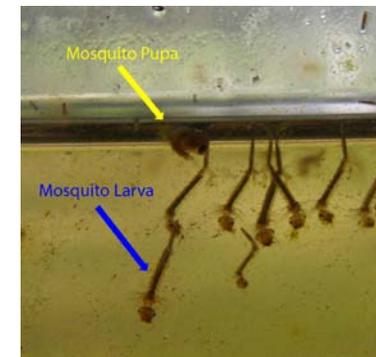
Ponding water usually means the system is clogged. You should always inspect the stormwater management areas after major rain events, typically, when rainfalls are 1/2-inch or greater in a 24-hour period. Watch for water that has ponded for more than 48-hours. Clogging is usually caused by debris or sediment. Remove any debris from pipes and rake the soil to restore water flow. If raking is insufficient, try removing the top few inches of soil.

Pests

Standing water can be a breeding ground for mosquitoes and vegetated areas can attract wildlife, including rodents. Look for mosquito larvae in standing water, especially during warmer weather. Larvae look like small wiggling sticks floating perpendicular to the water surface. Look for rodent burrows. Remove the cause of the standing water to control mosquitoes. Backfill rodent burrows and set traps.

Odors

Plants decaying under sediment can cause odors. Remove sediment to control odors.





Other Ways You Can Help Our Rivers and Streams

In Your Home or Business

- Use nontoxic cleaners
- Properly dispose of hazardous materials.
- Conserve energy. Switch to compact fluorescent bulbs, turn down the heat, do the laundry with cold water, purchase energy-efficient appliances.
- Use water wisely. Fix leaks, use only the water you need.

In Your Yard

- Plant native vegetation and trees.
- Modern landscaping and landscape maintenance practices may meet human needs and aesthetics, but often are harmful to the environment. For example, fertilizer on lawns is a significant cause of algae blooms in stormwater wet ponds. Instead, try:
 1. Reducing roof runoffs by providing rainbarrels at downspouts.
 2. Plant a rain garden or other bioretention areas.
 3. For lawns not in use, plant native grasses and allow to grow to at least 6-inches to help filter pollutants out of runoff before the runoff reaches the nearest waterway.
 4. Ask more about other BMP's (*Best Management Practices*: time-tested techniques for reducing or filtering runoffs.
- Avoid using chemicals on your lawn.
- Sweep instead of hose.
- Cover bare soil with mulch or plants.
- Compost yard debris.
- Use drip irrigation.

In and Out of Your Car

- Properly maintain vehicles.
- Wash vehicles where water is recycled.
- Drive less. Carpool, bike, or walk.
- Recycle motor oil.
- Clean up spills or leaks.
- Remove your paved driveway and install porous pavement.

In Your Community

- Volunteer. Join tree planting, stream restoration, or ivy removal projects.
- Report spills and illegal dumping.
- Don't litter. Pickup your pet's waste and put it in the garbage or toilet. **DO NOT NOT COMPOSTE PET WASTE.**

In Parks and Natural Areas

- Keep pet waste away from waterways, or pick up and dispose pet waste in the proper receptacle.

Additional Information Available:

If you have additional questions, or would like additional information on the *Best Management Practices* (BMP's), or a **Stormwater Pond Maintenance and Management Inspection Checklist**, please contact (410) 479-3625.