BIORETENTION AREA MAINTENANCE AND RESPONSIBILITY AGREEMENT

The Permanent *Stormwater System Maintenance and Responsibility Agreement* requires adequate maintenance for stormwater management/Best Management Practices (BMP) facilities including Bioretention Areas. Document Bioretention Area deficiencies during **annual** inspections. Complete any necessary repairs and/or preventive maintenance procedures in a timely manner to ensure proper functioning as a Bioretention Area.

Important maintenance procedures:

- Immediately after installing Bioretention Areas, water plants twice weekly as needed until the plants become established (typically six weeks).
- Do not place mulch or any other material on the surface of the Bioretention Area.
- Do not drive heavy equipment over the Bioretention Area.
- Prevent sediment from discharging to the Bioretention Area.
- Conduct a soil sample of the filter media once per year.

After the Bioretention Area is established, perform inspections once a quarter and after every storm event greater than **1.0 inch** for the first year, and annually thereafter. Keep operation and maintenance records in a known location and make them available upon request.

Perform recommended maintenance activities as follows:

Required Maintenance	Frequency
Periodic pruning and weeding.	As needed
Remove trash and debris.	As needed
Inspect inflow points for clogging. Remove any sediment.	Every 6-months
Repair eroded areas. Re-seed or sod as necessary.	Every 6-months
Mulch void areas.	Every 6-months
Inspect trees and shrubs to evaluate their health.	Every 6-months
Remove and replace dead or severely diseased vegetation.	Every 6-months
Removal of evasive vegetation.	Every 6-months
Nutrient and pesticide management.	Annual, or as needed
Water vegetation, shrubs, and trees.	Every 6-months
Remove mulch, reapply new layer.	Annual
Test planting mix for pH.	Annual
Apply lime if pH < 5.2.	Annual, As needed
Add iron sulfate + sulfur if pH > 8.0.	As needed
Place fresh mulch over entire area.	As needed
Replace stone entrance.	Every 2 to 3 years as needed

Perform trouble shooting activities as follows:

Field Conditions	Common Solutions
Trash/debris is present.	Remove the trash/debris.
Areas of bare soil and/or erosive gullies have formed.	Re-grade the soil if necessary to remove the gully, and then plant a ground cover and water until it is established.
Outlet pipe is clogged.	Unclog the pipe. Dispose of the sediment off-site.
Outlet Pipe is cracked or damaged.	Replace the pipe.
Erosion is occurring at entrance.	Re-grade as necessary to smooth and provide additional erosion protection as needed such as erosion control blankets and turf reinforcement matting to prevent future erosion problems.
Stone entrance is clogged or covered in sediment.	Remove sediment and clogged stone and replace with clean stone.
Flow is bypassing pretreatment area and/or gullies have formed.	Re-grade if necessary to route all flow to the pretreatment area. Re-stabilize the area after grading.
Sediment has accumulated to a depth greater than three inches.	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and re-stabilize.
Erosion has occurred.	Provide additional erosion protection as needed such as erosion control blankets and turf reinforcement matting to prevent future erosion problems.
Weeds are present.	Remove the weeds, preferably by hand.
Pruning is needed to maintain optimal plant health.	Prune according to best professional practices.
Plants are dead, diseased or dying.	Determine the source of the problem: soils, hydrology, disease, etc. Remedy the problem and replace plants. Provide a fertilizer application to establish the ground cover if a soil test indicates it is necessary.
Tree stakes/wires are present six months after planting.	Remove tree stake/wires (which can kill the tree if not removed).
Mulch is breaking down or has floated away.	Spot mulch if there are only random void areas. Replace whole mulch layer if necessary. Remove the remaining much and replace with triple shredded hard wood mulch at a maximum depth of three inches.
Soils and/or mulch are clogged with sediment.	Determine the extent of the clogging - remove and replace either just the top layers or the entire media as needed. Dispose of the spoil in an appropriate off-site location. Use triple shredded hard wood mulch at a maximum depth of three inches. Search for the source of the sediment and remedy the problem if possible.
An annual soil test shows that pH has dropped or heavy metals have accumulated in the soil media.	Apply lime as recommended per the soil test and toxic soils shall be removed, disposed of properly and replaced with new filter mix.
Clogging has occurred	Wash out the underdrain system. Clean out the drop inlet. Dispose of the sediment off-site.
Clogging has occurred	Aerate filter mix surface
The outlet structure is damaged	Repair or replace the outlet structure.