

Bioretention Maintenance Requirements

Important operation and maintenance procedures:

- Immediately after the bioretention cell is established, the plants will be watered twice weekly if needed until the plants become established (commonly six weeks).
- Snow, mulch or any other material will NEVER be piled on the surface of the bioretention cell.
- Heavy equipment will NEVER be driven over the bioretention cell.
- Special care will be taken to prevent sediment from entering the bioretention cell.
- Once a year, a soil test of the soil media will be conducted.
- Remove top layer of fill media when the pool does not drain quickly. Based on the media specification, the pool should drain within 24 hours.

After the bioretention cell is established, it will be inspected **quarterly and within 24 hours after every storm event greater than 1.0 inches**. Records of operation and maintenance shall be kept in a known set location and shall be available upon request.

Inspection activities shall be performed as follows. Any problems that are found shall be repaired immediately.

SCM element:	Potential problem:	How to remediate the problem:
The entire bioretention	Trash/debris is present.	Remove the trash/debris.
The perimeter of the bioretention cell	Areas of bare soil and/or erosive gullies have formed.	Regrade the soil if necessary to remove the gully, plant ground cover and water until it is established. Provide lime and a one-time fertilizer application.
The flow diversion structure (if applicable)	The structure is clogged.	Unclog the structure and dispose of any sediment off-site.
	The structure is damaged.	Make any necessary repairs or replace if the damage is too much for repair.
The inlet device	The inlet pipe is clogged (if applicable).	Unclog the pipe and dispose of any sediment in a location where it will not cause impacts to streams or the SCM.
	The inlet pipe is cracked or otherwise damaged (if applicable).	Repair or replace the pipe.
	Erosion is occurring in the swale (if applicable).	Regrade the swale if necessary and provide erosion control devices such as reinforced turf matting or riprap to avoid future erosion problems.
	Stone verge is clogged or covered in sediment (if applicable).	Remove sediment and clogged stone and replace with clean stone.
The pretreatment area	Flow is bypassing pretreatment area and/or gullies have formed.	Regrade if necessary to route all flow to the pretreatment area. Restabilize 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 dispose of it in a location where it will not cause impacts to streams or the SCM.
	Erosion has occurred.	Provide additional erosion protection such as reinforced turf matting or riprap if needed to prevent future erosion problems.
	Weeds are present.	Remove the weeds, preferably by hand. If pesticide is used, wipe it on the plants rather than spraying.

Bioretention Maintenance Requirements (continued)

SCM element:	Potential problem:	How to remediate the problem:
<p align="center">Bioretention cell vegetation</p>	<p>Best professional practices show that pruning is needed to maintain optimal plant health.</p>	<p>Prune according to best professional practices. Maintain lines of sight between 2'-6'.</p>
	<p>Plants are dead, diseased or dying.</p>	<p>Determine the source of the problem: soils, hydrology, disease, etc. Remedy the problem and replace plants. Provide a one-time fertilizer application to establish the ground cover if a soil test indicates it is necessary. If sod was used, check to see that it was not grown on clay or impermeable soils. Replace sod if necessary.</p>
	<p>Weeds are present.</p>	<p>Remove the weeds, preferably by hand. If pesticide is used, wipe it on the plants rather than spraying.</p>
	<p>Tree stakes/wires are present six months after planting.</p>	<p>Remove tree stake/wires (which can kill the tree if not removed).</p>
<p align="center">Bioretention cell mulch and media</p>	<p>Mulch is breaking down or has floated away.</p>	<p>Spot mulch if there are only random void areas. Replace whole mulch layer if necessary. Remove the remaining mulch and replace with triple shredded hard wood mulch at a maximum depth of four inches.</p>
	<p>Soils and/or mulch are clogged with sediment.</p>	<p>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 four inches. Search for the source of the sediment and remedy the problem if possible.</p>
	<p>An annual soil test shows that pH has dropped or heavy metals have accumulated in the soil media.</p>	<p>Dolomitic lime shall be applied as recommended per the soil test and toxic soils shall be removed, disposed of properly and replaced with new planting media.</p>
<p align="center">The underdrain, filter fabric element, and outlet system</p>	<p>Clogging has occurred.</p>	<p>Wash out the underdrain system.</p>
	<p>Clogging has occurred.</p>	<p>Clean out the drop inlet. Dispose of the sediment in a location where it will not cause impacts to streams or the SCM.</p>
	<p>The drop inlet is damaged</p>	<p>Repair or replace the drop inlet.</p>
<p align="center">The receiving water</p>	<p>Erosion or other signs of damage have occurred at the outlet.</p>	<p>Repair the damage and improve the flow dissipation structure.</p>
	<p>Discharges from the bioretention cell are causing erosion or sedimentation in the receiving water.</p>	<p>Contact Wake County Watershed Management and the NCDEQ Raleigh Regional Office.</p>