## Table 3: Maintenance of Water Quality or Biofiltration Swales

Swales should provide even sheet flow that moves water from the inlet to the outlet.

| Maintenance Component | Defect or Problem | Condition When Maintenance is Needed | Recommended Maintenance to Correct Problem |
|---|---|---|---|
| General | Follow applicable Guidance from Table 1 AND applicable guidance from this table. | | |
| | Vegetation growth (mowing and brushing) | Vegetation growth restricts access, limits sight distance, obstructs water flow, or interferes with maintenance activity.<br><br>**Swales should be mowed annually.** | Mow access, berms, swale, and side-slopes as noted in the District Integrated Vegetation Management (IVM) Plan.<br><br>The use of heavy equipment is allowed unless access restrictions are listed in the O&M Manual. |
| Swale Components | Sediment accumulation in pre-treatment areas or ancillary structures (e.g. manholes) | Sediment affects flow.<br><br>Sediment jeopardizes infrastructure. | Remove sediment that prevents adequate drainage into swale.<br><br>Use methods that minimize disturbance to surrounding vegetation.<br><br>The use of heavy equipment is allowed unless access restrictions are listed in the O&M Manual.<br><br>Sediment may contain oil and other pollutants, especially in areas with high ADT. Refer to the ODOT Maintenance Environmental Management System (EMS) Manual for the disposal of contaminated sediment.<br><br>Note: Pollutant concentrations may increase if sediment is not routinely removed. |
| | Sediment accumulation along swale bottom | Sediment inhibits the flow of water through the grass (e.g. water is ponding or cutting a channel). | Remove sediment from grassy areas. The use of a Vactor® truck is allowed unless access restrictions are listed in the O&M Manual.<br><br>Restore slope and geometry to design standards, if necessary.<br><br>Reseed grass cover where needed.<br><br>Stormwater should infiltrate or flow toward outlet once inflow has ceased. |

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| Swale Components | Erosion | Side slopes show evidence of erosion greater than 2 inches deep and the potential for continued erosion is evident. | Promptly address erosion that causes immediate problems (e.g. damage to highway or highway structure)<br><br>Schedule non-urgent repairs with routine work.<br><br>Stabilize slope using appropriate erosion control and repair methods.<br><br>Repair the cause of the erosion where possible.<br><br>If necessary, contact the ODOT Erosion Control Coordinator to evaluate the condition. |
| | Poor vegetation coverage | Vegetation (grass) is sparse or eroded patches occur in more than 10 percent of swale.<br><br>NOTE: A single incident (e.g. vehicle accident) typically effects less than 10 percent of the area and is unlikely to trigger a repair. | Repair and reseed as appropriate to restore coverage.<br><br>Install erosion control measures as needed.<br><br>Trim overhanging limbs and remove brushy vegetation that limit grass growth (provide too much shade). |
| | Missing or eroded amended soil mix | Bare soil is observed over 10 percent of the amended area. | Identify and resolve erosion problem<br><br>Add amended soil. Contact a Region Hydraulics Engineer for required material specifications. |
| | Amended soil mix along swale bottom is clogged | Standing water is observed for seven (7) consecutive days or longer from May through October. | Remove and replace amended soil mix. Contact a Region Hydraulics Engineer for required material specifications.<br><br>Replace or repair damaged underlying drainage geotextile, impermeable liner, drain piping, and granular drain backfill material when applicable. |
| | Granular drain backfill material for underdrain pipe plugged | Amended soil mix has been replaced and standing water is still observed for seven (7) consecutive days or longer from May through October. | Remove and replace granular drain backfill material. Contact a Region Hydraulics Engineer for required material specifications.<br><br>Install new drainage geotextile over new granular drain backfill material.<br><br>Replace amended soil mix. |

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| Swale Components | Impermeable liner damage<br><br>NOTE: Liners may not be visible.<br><br>If present, liners are typically below the grass surface along the bottom of the swale<br><br>Fabric wrapped around underdrains is not a liner. | Liner is damaged (e.g. during sediment removal or by motoring public). Liner is damaged when condition allows potential contamination to be released to the subsurface. | Repair or replace the liner with similar material. Replace top soil and grass as appropriate.<br><br>Features with liners, typically have maintenance option limitations; check the O&M Manual.<br><br>If necessary, contact a Region Hydraulics Engineer for technical assistance. |
| | Obstruction or blockage of pipes | Water does not flow in, through, or out of the swale. | Remove obstructions to restore flow (e.g. remove trash, debris, sediment, or vegetation as necessary).<br><br>Jet rodders may be used to clean piping unless specifically prohibited in the O&M plan. |
| | Flow spreader is uneven or clogged | Water does not flow evenly across the structure | Clean sump or forebay as needed to maintain capacity.<br><br>Clean or repair spreader as needed to provide a uniform flow and prevent erosion. Level portions of the flow spreader that have settled. |