

Malfunctioning Infiltration BMPs

3 Steps to take when it is suspected that a BMP is not infiltrating.

- 1.Observation
- 2.Investigation - Diagnosis
- 3.Corrective Action

How do you determine if the BMP is not draining.

Observations

- Witness stick
- Signs of stagnant water - algae
- Rain Gage at the site checked daily
- Must drain the 2 year storm within 72 hours - may need to prorate runoff and extrapolate dewatering times
- How quickly should the BMP dewater - look at the calculations

Standing Water with Algae



It's not draining – What next?

Investigation - Diagnosis

- Look for signs of erosion leading to the BMP and sedimentation in the BMP.
- Review the critical stage inspection reports and photos for any potential construction issues (compaction, polishing, rolling, etc.)
- Verify that that the BMP is not receiving unexpected flow (draining adjacent wetlands / waters, subsurface flow, springs, etc)
- Develop an E&S Plan for draining the BMP and drain the BMP.
- Inspect the basin for signs of compaction and or sedimentation.
- Survey to verify that the BMP elevations (infiltration surface, outlet control structure, etc) are consistent with the plans and original soil / infiltration testing.
- Conduct soil pits, infiltration tests, and permeability tests. May need to excavate more than 2 feet below the infiltration surface to test deeper soils for restrictive layers.

Compaction / Polishing



Sedimentation



Sedimentation



The problem is identified – What now?

Corrective Action

- If the BMP has sedimentation - repair and stabilize the erosion contributing to the problem. Remove fine sediment to virgin soil. Scarify the infiltration surface. Test the surface for infiltration. Stabilize to plan specification.
- If the BMP has compaction identified by inspection or review of critical stage reports - Develop an E&S plan for draining the BMP and drain the BMP. Scarify / subsoil the basins bottom. Stabilize to plan specifications and monitor for dewatering.
- If the basin is receiving unexpected flow - Identify the source of the unexpected flow and develop a plan to manage the flow.
- BMP has not been constructed to plan specifications- Re-construct BMP to designed perimeters. If the design is no longer valid - prepare revised plans to restore the rate, volume and water quality components of the BMP or provide additional BMPs to replace the rate, volume, and water quality components.
- Soils testing shows soils that are not conducive to infiltration - Scarify and re-test, amend soils, infiltrate deeper below restrictive layer.

Prevention is the best solution

- Stay off of the infiltration surface and fence the area off.
- Do not stockpile material in the footprint of infiltration BMPs
- Avoid using PCSM infiltration BMPs as a sediment basin / trap. When avoidance is not possible, maintain a minimum of 1 foot (more if possible) separation between the sediment facility bottom and the infiltration surface.
- Construct from the perimeter of the BMP where possible, use low ground pressure equipment where not possible, keep trips to a minimum on inf. surface.
- Construct the infiltration surfaces when the tributary areas are stabilized.
- Establish vegetation as soon as possible. The root structure aids in opening up the soils for infiltration and also aids in uptake of water.

Lessons Learned

- Engage the design engineer early in the process when a problem is suspected.
- Critical stage inspections are important. - Document the inspections and take lots of pictures. Stop construction if the BMPs are not being constructed properly and correct the deficiencies immediately.
- Figure out what the problem is before you act. - Saves money in the long run.
- Follow the plan.
- Depending on soils, permeability tests of underlining soils should be conducted.
- Observations, Investigations, and Corrective Action is expensive.

Questions?
