



Chester County Stormwater BMP Tour Guide

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BMP: **Infiltration Basins** (As of April 2002, still being used for E&S)

Site Name: Branford Village Residential Subdivision

Location: East Fallowfield Township, ADC Map Coordinates: 28-H10
Directions: Northeast of intersection of Strasburg and Buck Run Roads. From Strasburg Road, left into development. See large basin on the right side. Make left at first intersection, follow the road back making left turns, look for the large basin on the left.

Watershed: West Branch Brandywine Creek (Stream Designation: TSF, MF)

Land Use: Residential Development

Description: An infiltration basin is a constructed stormwater pond designed to promote the infiltration of stormwater that collects in the basin. An infiltration basin is designed to store stormwater until it gradually seeps through the soil into the ground and eventually into the water table below. To permit infiltration, basin soils must be permeable and remain uncompacted for the life of the structure. Soil percolation tests are performed prior to basin construction and at the conclusion of any earth disturbance to ensure soils have sufficient infiltration capacity. There are three infiltration basins at this site that receive on-site and off-site surface runoff. The basins are sized to infiltrate stormwater volumes from a 2-year storm and can accommodate stormwater from the 100-year storm event. The infiltration basins will be cleaned out, planted with turf grass, and maintained as meadow once site construction is complete.

Function: Infiltration basins replenish water table and help sustain stable base flow in streams. Infiltration ponds provide efficient groundwater recharge since infiltration occurs relatively close to where the runoff is generated thus limiting evaporative loss and infiltrating more rainfall. Properly maintained infiltration basins have the potential to filter some pollutants commonly found in stormwater runoff. Grass in the basin can physically trap suspended solids, including soil and sand particles, and can uptake nutrient pollutants. Oil and grease may also be trapped within the basin grasses and in the upper soils.

This BMP is not advisable for use in drainage areas that have extensive stormwater pollution sources (i.e., hotspots), since independently an infiltration basin has limited pollutant removal capabilities. (For example, this infiltration basin alone cannot remove toxic chemical pollutants.) Planting an alternative ground cover in the basin, such as native meadow grass and mowing it minimally can enhance the basin's capacity to filter stormwater pollutants and provide natural habitat for wildlife including birds. Functioning as designed, an infiltration basin can approximate the following pollutant removal efficiencies:

- Total Suspended Solids (TSS): 95 %
- Total Phosphorus: 70 %
- Total Nitrogen: 51 %

- Metals (copper and zinc): 99 %
- Bacteria: No Data

Operation and Maintenance: The Chester County Conservation District considers infiltration basins to have moderate maintenance requirements. Operation and maintenance requirements include the following:

- Inspect infiltration basins regularly to ensure they are properly infiltrating
- Avoid running heavy equipment over infiltration structures to prevent soil compaction
- At the completion of construction, scrape soils to remove accumulated sediment and conduct soil percolation test to ensure soil permeability
- Maintain turf in accordance with maintenance schedule (i.e., mow meadows once or twice a year)
- Limit mowing to maximize the opportunity for grass to trap and remove stormwater runoff pollutants
- Do not apply chemical pesticides and fertilizers to turf in and around infiltration basins

Cost Factors: Infiltration structures can be more costly to construct than conventional non-infiltrating stormwater basin. Factors influencing the cost include the necessary soil percolation tests, the possible need for importing soils, and the process of protecting soils during site construction and the life of the basin. The value of this structure in recharging groundwater, however, can offset its construction and maintenance costs.

Other Site BMPs

Infiltration Walking Path. The walking path throughout the development designed to remain unpaved to permit stormwater runoff infiltration. The path will be surfaced with stone and surrounded by beams. The path is elevated in some areas since it serves as a berm for stormwater structures on site. Note: Ensure desired percolation rate to permit infiltration is compatible with compaction requirements where path serves as basin berm.

Energy dissipators consisting of riprap are located at basin inlet and outfall locations. Energy dissipators are designed to slow the rate of flow of stormwater entering the basin and discharging from the basin to prevent excessive erosion. The rock riprap is installed to absorb energy and slow the flow of moving water and can prevent the formation of gullies within the basin and in the area where the basin discharges.

For More Information:

Designer: Brandywine Valley Engineers, Ty Leinneuber (610) 444-6522

Owner: Maury Johnson, Vice President, Dilsheimer Communities,
401 City Avenue, Bala Cynwyd, PA 19004 (610) 617-9700

Manufacturer: Not Applicable

References:

Center for Watershed Protection, *Approaches to Stormwater Treatment*, Copyright 2001.

Pennsylvania Handbook of Best Management Practices for Developing Areas, Prepared by CH2MHILL, Spring 1998.

Site 1 - Branford Village – Future Infiltration Basin (During Construction)



During site construction measures must be taken to prevent soil compaction that can result from heavy equipment and excessive sedimentation. When site construction is complete, soils will be tested to verify their permeability and ensure infiltration.