



Maryland’s Stormwater Program & Alternative/Innovative Technologies

Introduction: Urban runoff has a great impact on the quality of Maryland’s waters. Stormwater management practices help control pollution from urban runoff through various techniques that intercept, filter, and treat runoff from developed areas. The Maryland Department of the Environment (MDE) recognizes that new and innovative technologies for stormwater management are being developed, including many proprietary designs. The following provides guidance concerning the use of alternative/innovative technologies for addressing Maryland’s new development and redevelopment stormwater management requirements. There is separate guidance for using innovative technologies for retrofitting, which is found in MDE’s *Certification of Innovative Stormwater Management Technologies for Retrofit Applications*¹.

Maryland’s stormwater management requirements for new development and redevelopment are found in the State law², regulations³, and the *2000 Maryland Stormwater Design Manual*⁴ (the Manual). These requirements, which mandate the use of environmental site design (ESD), provide a unified approach for sizing stormwater management practices. This approach requires capturing specific volumes of runoff to meet pollutant removal goals, maintain groundwater recharge, and reduce channel erosion in receiving streams. General performance standards are found in Chapter 1 of the Manual while the sizing criteria for the water quality, groundwater recharge, and channel protection volumes (WQ_v, Re_v, and Cp_v, respectively) are presented in Chapter 2. With the implementation of ESD in 2009, these volumes were combined into the environmental site design volume (ESD_v). The performance criteria for the ESD_v are found in Chapter 5. However, the criteria for the WQ_v, Re_v, or Cp_v also apply to those stormwater measures and/or systems of measures that are used to address ESD.

Approved Practices: Currently, the different practices that may be used to meet new development stormwater management requirements in Maryland are classified either as ESD practices (see Table 1) or as structural measures (see Table 2). A more detailed discussion of how ESD practices are evaluated may be found in MDE’s *Environmental Site Design (ESD) and Innovative Technology*⁵ (MDE, 2013).

Table 1. ESD Practices

Alternative Surfaces	
Green Roofs	Reinforced Turf
Permeable Pavements	
Micro-Scale Practices	
Rainwater Harvesting	Micro-Bioretention
Submerged Gravel Wetlands	Rain Gardens
Landscape Infiltration	Swales
Infiltration Berms	Enhanced Filters
Drywells	

If an innovative technology is comparable to a generic practice found in the Manual, then that technology may be used provided that it complies with the performance standards, specifications, and design criteria (e.g., treatment volume, media composition, drainage area limitations) found in Chapters 2, 3, and 5, and the construction specifications found in Appendices B.3 and B.4 of the Manual. MDE’s *Alternative/Innovative Technology Review Checklist*⁶ (the Checklist) outlines the specific information that must be submitted to initiate a formal review.

Table 2. Structural Practices

Ponds	
Micropool Extended-Detention (ED) Pond	Multiple Pond System
Wet Pond	Pocket Pond
Wet ED Pond	
Wetlands	
Shallow Wetland	Pond/Wetland System
ED Shallow Wetland	Pocket Wetland
Infiltration	
Infiltration Trench	Infiltration Basin
Filtering Systems	
Surface Sand Filters	Organic Filters
Underground Sand filters	Pocket Sand Filters
Perimeter Sand Filters	Bioretention
Open Channel Systems	
Dry Swale	Wet Swale

Other Practices: If it is not comparable to any of the generic practices listed in Tables 1 and 2 above, an alternative technology may be used for meeting new development stormwater management requirements provided that it complies with the general performance criteria found in Chapters 1, 2, and 5 of the Manual. Where this is the case, MDE requires that field monitoring data be submitted that demonstrate compliance with the general performance criteria. Any field monitoring submitted to MDE must conform to the standards listed in the Checklist.

Documentation: Any formal request to MDE concerning an alternative/innovative technology should include a brief description of the technology and how it will be used. Additionally, the request should state the type of approval sought (e.g., ESD or structural practice) and provide the information concerning technology specifications found in the Checklist. Applications, including the completed Checklist, should be submitted to MDE’s Sediment, Stormwater, and Dam Safety Program, 1800 Washington Boulevard, Baltimore, MD 21230. If there are any questions concerning these procedures, please contact the Maryland Department of the Environment, Water and Science Administration at 410-537-3543 or at www.mde.maryland.gov.

¹ [Certification of Innovative Stormwater Management Technologies for Retrofit Applications, MDE 2014](#)

² Environment Article, Title 4, Subtitle 2 Stormwater Management, Annotated Code of Maryland

³ Code of Maryland Regulations (COMAR) 26.17.02

⁴ [2000 Maryland Stormwater Design Manual, Vol. I and II, MDE 2000 and 2009](#)

⁵ [Environmental Site Design \(ESD\) and Innovative Technology, MDE 2013](#)

⁶ [Alternative/Innovative Technology Review Checklist, MDE 2014](#)