

# The Preserve at Severn Innovative LID Regenerative Stormwater Conveyance

Anne Arundel County, Maryland



*Innovative design provides greater water quality treatment, flow control, and water temperature regulation for a cold water fishery, while also reducing construction cost and long-term operations and maintenance costs.*

The Preserve at Severn is a 156-acre site that was subdivided. The subdivision lies in an extremely sensitive area between two branches of Jabez Branch, the only natural trout stream remaining in the coastal plain of Maryland. The stormwater management design for the project was initially completed and permitted following the requirements of the 2000 Maryland Stormwater Design Manual. However, due to interest in maximizing the protection of the cold water fishery, Biohabitats and our client and collaborator, Underwood & Associates developed an innovative design for the site that provides greater water quality treatment,

flow control and water temperature regulation. The design complies with all applicable stormwater management criteria including recharge, water quality (1" storm event), channel protection (extended detention of the 1-year, 24-hour event), and flood control (10-, 25-, and 100-year peak discharge control).

Biohabitats worked with the regulators, watershed group, developers, engineer and County to gain approval for this innovative technique. The design approach for The Preserve at Severn emphasizes the use of Regenerative Stormwater Conveyance (RSC) systems.

For The Preserve at Severn, Regenerative Stormwater Conveyance systems are featured on both the front and tail end of the treatment system to provide water quality and groundwater recharge benefits. Those on the front end provide water quality, groundwater, and channel protection treatment while also providing non-erosive flow conveyance to the stormwater quantity control practice - a constructed wetland. Based on hydrologic modeling, this additional wetland basin isn't required to provide quantity control for stormwater including the 100-year event.

In addition to the stormwater management and ecosystem restoration benefits of the RSC system at the Preserve at

Severn, there are significant infrastructure cost savings. Initial cost estimates for using the RSC approach were half as much as those for conventional stormwater management using storm drain pipe and related drainage infrastructure such as catch basins, headwalls, and endwalls (\$400K vs. \$825K, respectively). Operation and maintenance costs associated with the RSC system are also expected to be lower than those associated with conventional practices.

## SERVICES

Hydrology & Hydraulics  
Modeling  
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Development  
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*conservation planning  
ecological restoration  
regenerative design*



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