

# Carriage Hills Stormwater Restoration

Annapolis, Maryland



from top: After restoration, during Superstorm Sandy, an almost eight inch rain event, the project cut the peak discharge by 50% relative to a paired watershed; Initial conditions

*This project was the first American Recovery and Reinvestment Act restoration project to be implemented in Maryland.*

A severely incised and unattractive tributary to Clements Creek was experiencing erosion and sedimentation resulting from unstable soils and a stormwater dominated hydrologic regime. Areas in its flow path were also dominated by invasive plant species such as multiflora rose and honeysuckle. Outside of the flow path, relatively mature woodlands persisted 15 to 20 feet above the invert of the channel.

Biohabitats developed a restoration design which used a regenerative stormwater conveyance approach to convert the incised and headcutting outfall channel into a stable seepage wetland ecosystem well linked to its historic floodplain. The restoration provides stable conveyance and water quality treatment

of stormwater flowing to Clements Creek. By recharging the groundwater table, this approach also helps support a number of threatened plant species associated with Anne Arundel County's native acid seep wetland systems.

Biohabitats' restoration design package included cost estimates, construction details, specifications and implementation guidance (e.g. sequence of operations, operation & maintenance). The designs were approved by state and local authorities and the project was constructed in one month.

#### SERVICES

- Inventory & Assessments
- Design
- Permitting
- Construction Procurement
- Construction Oversight
- Construction Management

conservation planning  
ecological restoration  
regenerative design



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