



Flood Mitigation in Historic Ellicott City, MD and Water Quality Improvements Along the Anacostia River

The Challenge

Located in the Chesapeake Bay Watershed, Howard County’s MS4 permit places stringent requirements on municipalities to reduce stormwater pollution into local waterways and the Bay. In addition to water quality concerns, the historic community of Ellicott City has experienced intense flooding in recent years, prompting urgent action from the County to mitigate flood risk. The County was tasked with treating stormwater runoff from approximately 2,000 acres of impervious surfaces by the end of 2019, and complying with future stormwater targets in the next cycle of their MS4 permit.

The Solution

As part of the Clean Water Howard initiative, the County implemented Opti technology at two existing stormwater ponds located on both commercial and public property. Opti predicts and responds to the weather forecast, enabling the system to maximize storage capacity and retention time in each pond. Opti adaptively controls the outlet structures of the ponds, enabling it to draw down volume ahead of wet weather, mitigate peak flows during storms, and retain water for up to two days after the storm.

At a Glance

- \$14,000 a year in cost savings to landowners
- 4X retention time and water quality improvement



“We are harnessing technology to meet water quality and quantity goals.”

Lindsay DeMarzo
Stormwater Programs
Manager, Howard County
Government



ECONOMICAL

70% Savings

\$15k vs. \$50k per acre



RESILIENT

90% Peak Flow Reduction

Average annual performance



PEACE OF MIND

Safety and Compliance

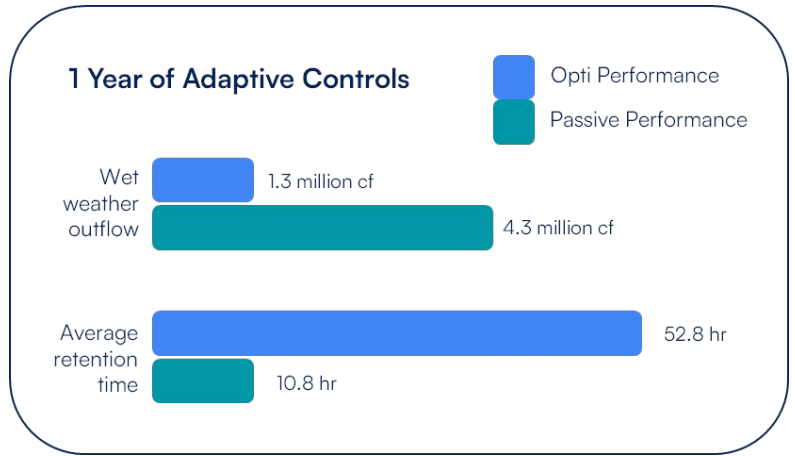
Achieve MS4 and flood mitigation goals

Results

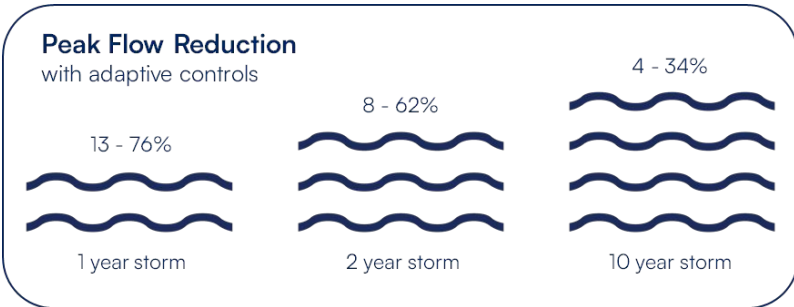
Opti technology increased wet weather capture and retention time, mitigating the impacts of downstream flooding.

In addition to flood mitigation, Opti provided \$14,000/yr in cost savings to landowners paying Watershed Protection Fees, and delivered an additional 19.4 acres of water quality credits towards Howard County's MS4 permit.

Based on one year of data, Opti's adaptive control system outperformed traditional passive management by 2.3-3.9X.



Opti delivered 2.3X more stormwater runoff capture and 3.9X longer average retention time.



Assessment results: Opti adaptive controls reduced flows by as much as 76% during modeled 24-hour storm events.



Geospatial analysis: GIS was used to integrate floodplain and site data during the assessment.

Watershed Flood Assessment

After a year of adaptive management at the two Ellicott City ponds, Opti performed an assessment for Howard County. Maryland Department of Natural Resources (DNR) providing support for the project through the Chesapeake Bay Implementation Grant (CBIG), which are EPA funds the DNR administers on behalf of the State of Maryland. Over 1,400 sites were evaluated and ranked based on their downstream flood mitigation potential, providing a critical knowledge base for expanding adaptive stormwater management on the watershed scale. The top six highest-ranked ponds were chosen for further analysis.

About OptiRTC

Opti is the leading provider of digital adaptive stormwater control solutions. With over 300 deployments to date, Opti empowers customers and partners to address the impacts of climate change, aging infrastructure, urbanization, and water pollution, enabling them to secure the sustainability of our communities and natural resources. Opti's cloud-based platform optimizes stormwater asset performance through instant actionable insights to provide economic savings, resilient solutions, and peace of mind. With our commitment to innovation, we are driving a resilient and brighter future for all.



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CALL
+1(844) 678-4782

EMAIL
sales@OptiRTC.com

VISIT
OptiRTC.com