CASE STUDY
Lynchburg, VA

Opti by aliaxis

Meeting MS4 and Chesapeake Bay Program Compliance While Achieving 90% Savings on Phosphorus Reduction

The Challenge

Located in the foothills of the Blue Ridge Mountains, Lynchburg sits along the historic James River, Virginia's largest source of drinking water supply for 2.7 million people. The river also drains into the Chesapeake Bay, making the City of Lynchburg subject to special conditions for its MS4 system. Upstream from Richmond and at the center of Virginia's fifth largest metro area, the City needed a new approach to meet its TMDL permit while protecting both water bodies from stormwater pollution.

The Solution

To help meet its MS4 permit and Chesapeake Bay TMDL Action Plan goals, the City of Lynchburg used Opti's Continuous Monitoring and Adaptive Control (CMAC) with an existing regional detention facility, Warren Pond. CMAC integrates data directly from field deployed sensors with real-time weather forecast data to monitor performance and make automated and predictive control decisions to actively manage stormwater storage and flows across the watershed.

This approach helps Lynchburg achieve its goals by increasing runoff residency time, mitigating peak flows, and generating water quality credits to help the City achieve 100% of its annual nutrient reduction targets.

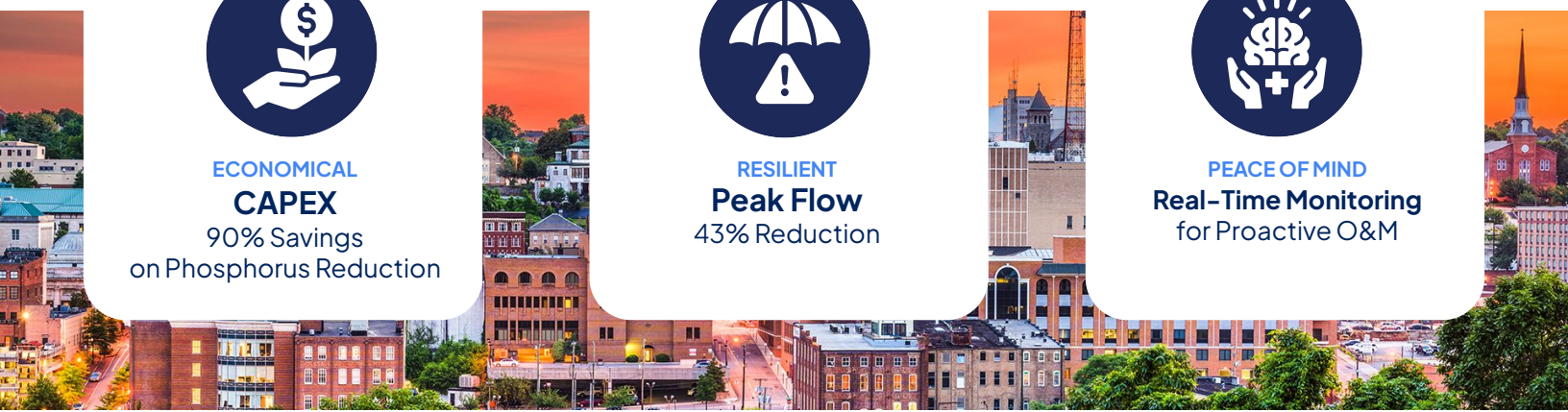
At a Glance

- $1,852/lb Phosphorus reduced
- Operating since 2017
- Offsetting CAPEX with an existing BMP

"Retrofitting this facility using CMAC has proven to be a cost-effective measure to improve the function of an existing stormwater pond and meet reduction requirements."

City of Lynchburg
Dept of Water Resources
Chesapeake Bay TMDL Action Plan
Prepared by Greeley & Hansen

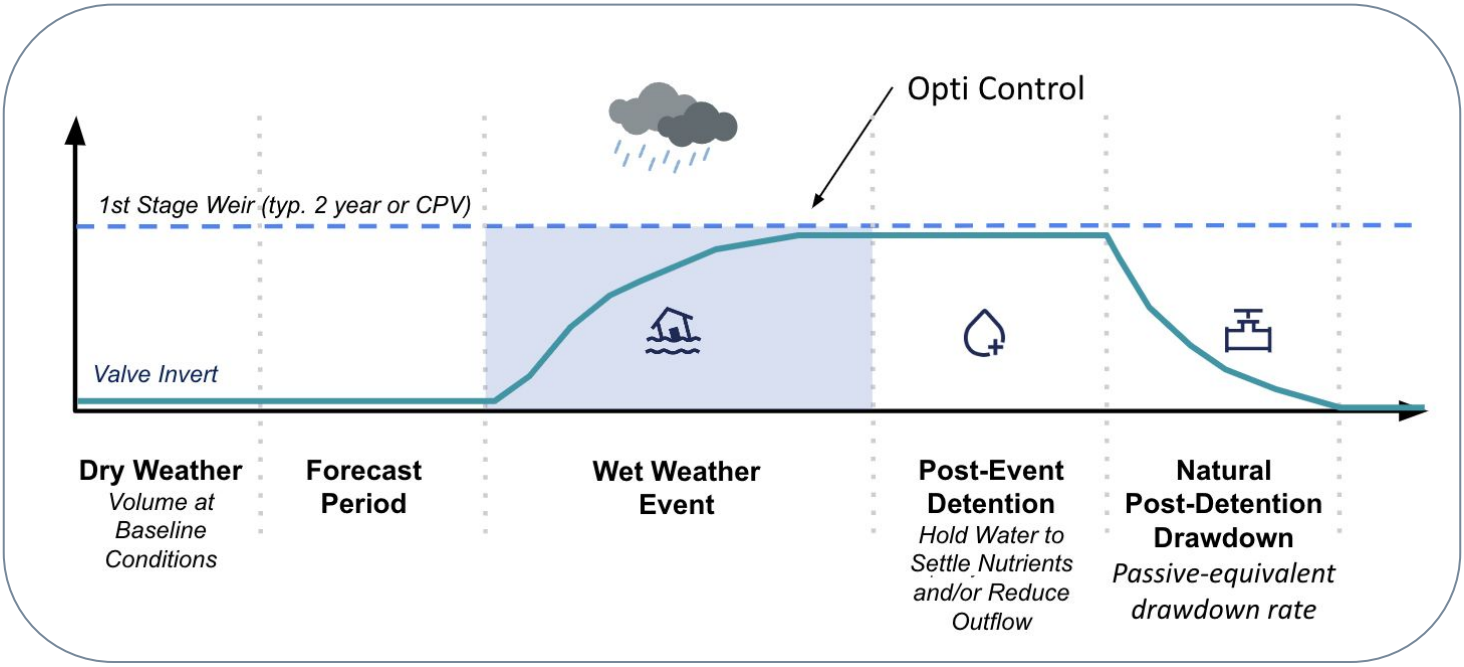
LYNCHBURG WATER RESOURCES



ECONOMICAL
CAPEX
90% Savings on Phosphorus Reduction

RESILIENT
Peak Flow
43% Reduction

PEACE OF MIND
Real-Time Monitoring
for Proactive O&M



The City of Lynchburg was the first to model retrofitting an existing dry pond with CMAC to function like a wet extended retention pond for generating water quality credits using the Chesapeake Bay Retrofit Curve Model.

Results

Since 2017, Opti's CMAC controls over 158,000 CF by utilizing the dry pond's available capacity. By retrofitting Warren Pond with Opti's CMAC, the City of Lynchburg **achieves 5% of its pollution reduction goals** for Chesapeake Bay TMDL and **100% of its local TMDL goals** to meet its MS4 permit. Benefits include:

- ➔ Increased water quality and flood mitigation
- ➔ Improved nutrient load reduction to meet permits
- ➔ Centralized and secure dashboard for real-time, data-driven O&M
- ➔ Ability to automatically control and reduce wet weather discharge from the pond storage facility

Warren Pond POC	TMDL Credit (lbs / year)	% Met of Total POC Reduction Requirements	Price / lb of POC Reduced ($)
TN	446	68	224
TP	54	130	1,852
TSS	32,661	102	3.06

Source: Warren Pond POC (Pollutant of Concern) TMDL reduction credit approved on July 15, 2021, as reported in the City of Lynchburg MS4 Program Plan for 2018–2023.

CMAC is approved by CBP's Urban Stormwater Workgroup and carries reciprocity in 6 states and the District of Columbia.

Chesapeake Bay Program
Science. Restoration. Partnership.

Powered by Microsoft

About OptiRTC

Opti, an Aliaxis company, 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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