

Oxford, MD

Background

The Town of Oxford is a small town located on 513 acres in Talbot County on Maryland's Eastern Shore. It is situated on the Tred Avon River and intersected by Town Creek, and lies within the Lower Choptank watershed segment draining directly into the Chesapeake Bay. Oxford has approximately 650 full-time residents, a number that more than doubles in size during summer months.

The highest elevation in the town is at 11 feet above mean high water, with many parts of town falling between 4-10 feet above sea level. The majority of Oxford is low-lying land frequently exposed to flooding caused by tidal and rain events, resulting in recurrent flooding in many areas of the town. Stormwater and tidal concerns are closely linked issues that cannot be easily separated when exploring potential solutions to manage stormwater in the town of Oxford.

Oxford's stormwater infrastructure system consists of pipes, culverts, swales, rain gardens, rain barrels, outfalls, biobags, and tide gates that work together to convey or store stormwater and minimize pollution loading. The stormwater system, which is separate from the sewage system, is based on gravity flow and relies on an elevation gradient to drain water to outfalls. The low-lying configuration of the town and tidal influence diminish this elevation gradient, and the conveyance system necessitates assistance from tide gates.



A rain barrel at the Oxford town office

In order to address increasing high water concerns affecting the town and meet state regulations, Oxford officials began to gather key partners which included the University of Maryland

HIGHLIGHTS

Location: Maryland

Jurisdiction Type: Town

Population: 651 (2010)

MS4 Permit: Unpermitted

Project Period: 2012-2013

Funder: National Fish and Wildlife Foundation

At the time of this study, much of the stormwater system was more than 50 years old and there were components of the system for which the town did not have accurate records of location, age, and condition. Much of the town's oldest stormwater infrastructure was located in the Historic District or at the causeway, coinciding with flooding hot spots. While there was limited information on the precise age of Oxford's stormwater infrastructure, many of the system components were believed to be approaching their useful lifetime.

The Town of Oxford adopted a stormwater ordinance in 2011 that helped shape its existing stormwater program. This ordinance, along with other regulations such as Maryland's Critical Area Law and the Total Maximum Daily Loading (TMDL) limitations for phosphorus, nitrogen, and sediment also played a role in prioritizing stormwater management for the town.

Environmental Finance Center; the Eastern Shore Land Conservancy; the Chesapeake Bay Foundation; Preservation Green, LLC; and GMB, LLC. The partners convened to discuss Oxford's flooding and stormwater issues resulting in what eventually became the Oxford Stormwater Task Force (hereafter known as the Task Force) – a title selected to indicate the shared responsibility of the group to develop and implement a long-term plan for managing and financing Oxford's stormwater program.

Approach

The primary focus of the Task Force was to find the best tools available for addressing flooding concerns in the town. This included developing recommendations for the proper design and maintenance of existing infrastructure as well as conducting essential community outreach and financial analysis to evaluate the costs of infrastructure improvements. In addition to concerns about water quantity, the Task Force also sought to improve water quality through the identification of certain stormwater best management practices (BMPs) that could be incorporated into Oxford's stormwater program. Although Oxford was not regulated for stormwater, the Town did have water quality concerns and was actively working with Talbot County officials and the State of Maryland to improve and better manage pollution from stormwater in the future.



A mapping exercise to identify flooding hotspots in Oxford

The project unfolded in three phases: 1) identification and characterization of stormwater and flooding issues, 2) community education and outreach, and 3) technical analysis of infrastructure and funding elements. During the first phase, the Task Force sought feedback from the community to gain a better understanding of Oxford's overall stormwater and flooding problems. Feedback was solicited through neighborhood-focused meetings that included mapping exercises and written surveys.

The second phase of the project was defined by educational outreach that delivered information about the importance of stormwater and practices for managing it on personal and public property. The centerpiece of the outreach phase was the "Oxford Summer Stormwater Series," which consisted of a series of presentations, workshops, and volunteer opportunities. Between the neighborhood stormwater discussions and the Summer Stormwater Series, the goal of this phase was to ensure that citizens had a voice in the town's stormwater program and were provided an active role in mitigating the impacts of flooding.

The third phase of the project was a detailed technical analysis of Oxford's stormwater program. By looking at engineering reports and budget history, interviewing town officials, and touring Oxford through photographs and in-person, the goal was to illustrate the town's entire stormwater program from infrastructure to funding trends. The analysis included identifying gaps in the program or areas where the program was not able to meet current or future expectations. Program gaps were compared with citizen concerns to identify the most critical problems and to begin targeting potential solutions. The last piece of the technical analysis involved the exploration of technical solutions, including capital improvement projects, capacity for resolving stormwater problems, and possible mechanisms for funding the projects.

Key Findings and Recommendations

After collecting significant stormwater management data; organizing many outreach activities that helped gather important feedback from the community; and subsequently analyzing possible solutions and associated costs, five key recommendations for remediation of stormwater and frequent flooding were developed for the Town of Oxford. Project findings and recommendations were presented to Oxford residents, businesses, and town officials on September 24 and 25, 2013. They included:

- **Adopt a more effective stormwater budget:** Approximately \$630,000 over a five-year timeframe is needed to invest in stormwater management for the Town of Oxford. This amount includes implementing the currently planned capital improvement projects, a stormwater infrastructure inventory and map, as well as a stormwater Master Plan. Oxford should also consider budgeting for additional major capital improvement projects in the next 5-8 years for such things as Causeway stormwater pumps and a road elevation project, which will address an area of priority concern at a total five-year budget of approximately \$1.5 million.
- **Account for projected sea level rise:** With the Chesapeake Bay projected to rise between 2.6 and 4.3 feet by 2100 at an average rate of 0.35 inches/year, Oxford should factor sea level rise projections into all major capital improvement projects. As an additional precaution, Oxford should assume some additional costs in their future budget projections. Furthermore, the town should evaluate its response to sea level rise beyond the scope of its stormwater program.
- **Establish a utility as part of a blended financing strategy:** Oxford should adopt a tiered residential and commercial stormwater utility fee as a consistent, dedicated, and equitable form of revenue to cover program costs. The utility should be supplemented by general funds and could be used as a way to leverage additional grant funding and/or competitive loan rates.
- **Designate an appropriate utility purpose and label:** Given that the frequency and severity of high water events cannot be resolved solely through a traditional stormwater program, Oxford should broaden the definition and functionality of the utility to include shoreline protection. The revenue collected through the utility should address both stormwater and shoreline drivers of high water events and water pollution. The name of the utility should reflect the multi-functionality of the revenue collected thus allowing projects to be appropriately funded through this financing mechanism.
- **Utility structure and reserve fund:** It was recommended that the Town of Oxford adopt a base utility fee of \$175 per home per year and that an additional \$100,000/year, which is currently spread across multiple line items, be allocated to the stormwater (and shoreline protection) program from the general fund. This would raise approximately \$990,000 over a five-year period.

On May 13, 2014, the Town of Oxford adopted a pioneering ordinance to create a Stormwater Management and Shoreline Protection Fund. With many residents in attendance and few in opposition, Oxford commissioners unanimously agreed to increase the town's property tax rate, which was expected to raise approximately \$100,000 per year for the purpose of stormwater and shoreline planning, capital improvement projects, and maintenance. The fund would mitigate long-standing and worsening flood issues throughout the community.

For more information, please visit the [MOST Center Knowledge Center](#).

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