

## Marsh Creek Watershed Study

The completed Marsh Creek Watershed Study will help the City make informed and strategic decisions about stormwater projects over the next several decades. Projects identified from the watershed study include stormwater system improvements, nature-based solutions including green stormwater infrastructure (GSI), and stormwater asset renewal and rehabilitation.

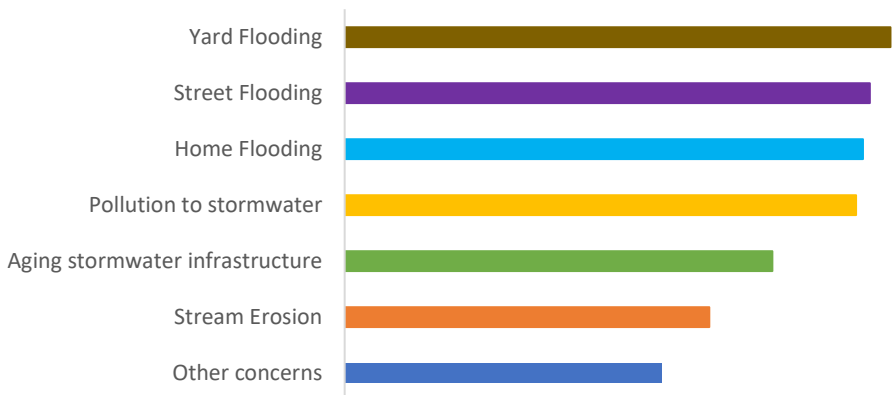
### Study Area

Marsh Creek is one of 36 watersheds in Raleigh and covers **9.5 square miles** of suburban land from North Ridge to Crabtree Creek near the I-440 beltline. Impervious surfaces (like roads, buildings, parking lots, and sidewalks) cover **43%** of the watershed.

### Community Engagement

We connected with those who live and work in the watershed to better understand the community's stormwater priorities. We conducted a survey to gather information on stormwater conditions, held public meetings to share updates on our progress, and talked with community members to learn more about their experiences and concerns. In all, we collected input from **187 project participants**.

### What are your primary concerns in the watershed?



Survey feedback about top concerns in the watershed (ordered from most concern to least).

### Key Findings and Project Recommendations

#### Understanding the Condition of the City's Streams and Stormwater Assets

The City inspected over **45 miles of stormwater infrastructure** within road rights-of-way and walked **21 miles of streams**, assessing both their ecological health as well as the structural integrity of practices installed to protect private property from stream erosion. Those inspections found that:

- **95%** of active City owned pipes are in good or fair condition based on their business risk exposure (BRE) score
- **53%** of inspected stormwater inlets and outlets have maintenance concerns with the majority located on private property and not maintained by the City
- Approximately **30%** of stream reaches have channelization or have been hardened with riprap
- **82%** of streams may benefit from stream restoration or stabilization.

Based on the results, we have identified potential stormwater asset repair and rehabilitation projects, as well as future maintenance needs that will provide proactive solutions to aging infrastructure.



Stream erosion (top) and hardening (bottom) in the Marsh Creek watershed.

## ***Improving Stormwater Conveyance and Reducing Flooding Impacts***

We created a hydrologic and hydraulic (H&H) model to analyze the severity and frequency of flooding in the watershed across a range of storm sizes. Much of the watershed was developed before modern stormwater design standards, and as a result, the study found that **53% of the stormwater system does not meet the current desired level of service for flooding**. Based on flooding reported by the public and/or the model results, project opportunities were identified to address street and structural flooding in **eight focus areas**.

The watershed study identified **36 potential projects** with an estimated cost of **\$219 million**. Recommended projects include stormwater infrastructure improvements (new or upsized pipes and enhanced channels), stormwater storage (detention basins and floodplain reconnection), stream restoration, and combinations of these approaches. These projects will be scored and prioritized through the Capital Improvement Program model. Project scores and available funding will determine when they are implemented.

## ***Establishing Partnerships for Water Quality and Ecosystem Enhancement***

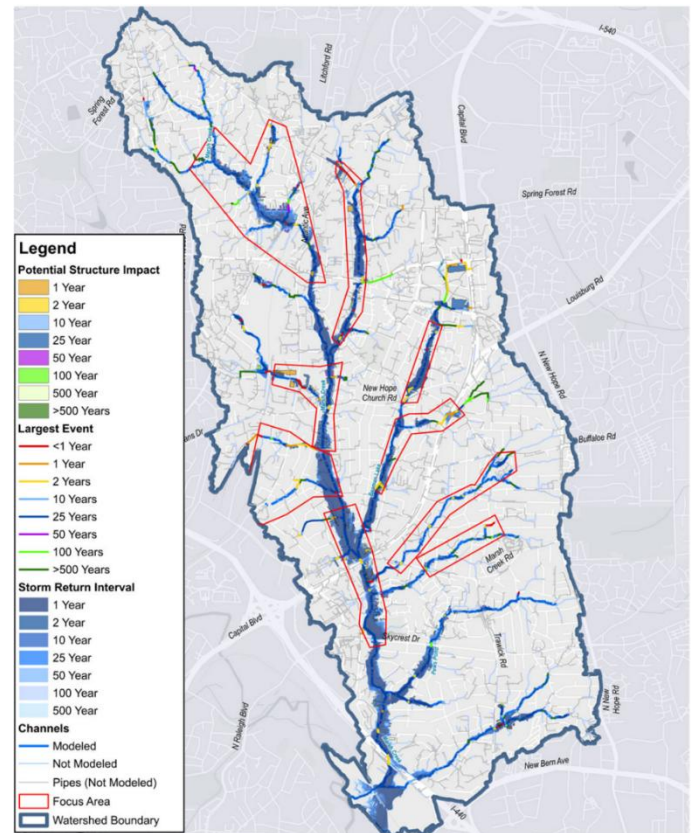
A central goal of the Stormwater program is to protect water resources and support environmental sustainability. There are already successful examples of completed green stormwater infrastructure (GSI) in the watershed, as well as additional projects that are in design or construction, such as the Green Road Park Improvements Project.

This study identified five **(5) additional opportunity areas to install GSI** on City-owned land and on properties owned by potential project partners. The City would need formal agreements or other types of partnerships to install GSI on property not owned by the City. These projects will improve water quality and enhance the ecosystem in the Marsh Creek watershed.

## **How to Stay Engaged with Your Watershed**

There are many ways you can continue to help protect our watersheds. Visit [raleighnc.gov](http://raleighnc.gov) and search **“Stormwater Volunteering”** for more information about volunteer opportunities.

If you see pollution or someone illegally dumping litter into the stormwater system, call the Stormwater Helpline at **919-996-3940** or email [IllegalDischarge@raleighnc.gov](mailto:IllegalDischarge@raleighnc.gov).



*H&H model results with the boundaries of the focus areas to identify project opportunities.*



*City owned parks like Millbrook Exchange Park were identified as potential locations for new or retrofitted GSI.*