

Pigeon House Branch Watershed Study

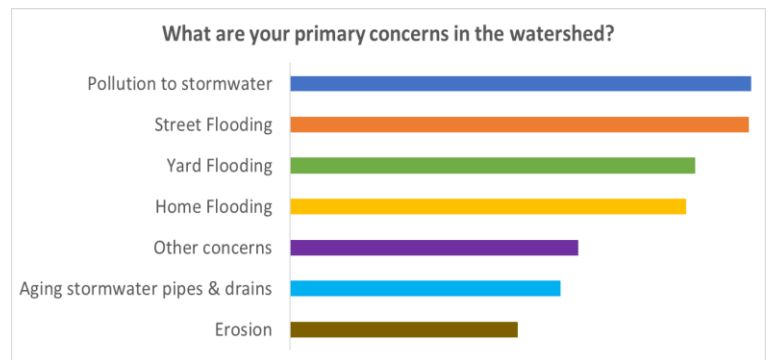
The Pigeon House Branch Watershed Study will help us make informed and strategic decisions about stormwater projects planned over the next several decades. Projects identified from the watershed study include stormwater conveyance improvements, green stormwater infrastructure, and stormwater asset renewal and rehabilitation. Watershed study findings also help inform our ongoing stormwater programs.

Study Area

This watershed is one of 36 watersheds in Raleigh and encompasses approximately 4.5 square miles of Raleigh's downtown area. The watershed includes portions of the Village District, Glenwood South, Capital District, Mordecai, Five Points, and Historic Oakwood neighborhoods. The watershed is bordered by Hillsborough Street and New Bern Avenue on the south and Fairview Road and Whitaker Mill Road on the north.

Community Engagement

We connected with those who live and work in the watershed to better understand stormwater priorities. As part of this watershed study, we released a survey to gather feedback on stormwater conditions, held three public meetings and a pop-up meeting, and talked with many community members. In all, we've collected feedback from almost **300 project participants**. We appreciate your feedback!



Feedback from the Watershed Survey

Key Findings and Project Recommendations

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

The City has inspected over 20 miles of stormwater infrastructure within public rights-of-way in Pigeon House Branch watershed. We also assessed the entire length of Pigeon House Branch, Cemetery Branch, and their major tributaries, assessing both their ecological integrity as well as the structural integrity of hardscapes installed over the years to protect private property from stream erosion. We have already initiated stormwater asset repair and rehabilitation projects that will provide proactive solutions to aging infrastructure. We are also using these inspections to plan for maintenance and future routine asset renewal projects.



Pigeon House Branch Stream Assessment

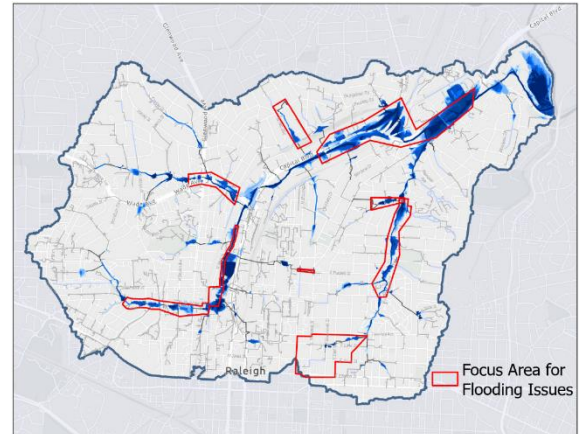


Projects to renew poor condition pipes (left) using trenchless lining techniques (right) are underway

Improving Stormwater Conveyance and Reducing Flooding Impacts

A hydraulic model was developed to look at the severity and frequency of flooding in the watershed. Focus areas were identified due to severe flooding reported by the public and/or through hydraulic modeling. Projects were identified to address street and structural flooding in these areas:

- Oakwood West/ East Lane Street
- Frank Street
- Watauga Street
- Brookside Drive Culvert
- Aycock/Roanoke Street
- East Franklin Street
- Sunrise Avenue
- Holden Street, Glascock Street, and Frank Street Culverts
- Oakwood East
- Upper Pigeon House Branch



Hydraulic Model Results Showing Areas of Flood Inundation

Projects consist of stormwater infrastructure improvements (newer and larger storm sewers, open channels, or “daylighted streams”), stormwater storage (containing stormwater within above and/or below ground basins, tanks, swales, stream floodplains), and combinations of both.

Establishing Partnerships for Water Quality and Ecosystem Enhancement

A central goal of the Stormwater program is to protect water resources and support environmental sustainability. The ongoing Smoky Hollow Park stream restoration and the Fred Fletcher Park wetland restoration projects both address water quality and ecosystem enhancement in the Pigeon House Branch watershed.

This study focused on identifying additional opportunities to install green stormwater infrastructure (GSI) into the existing landscape on non city-owned properties. A water quality model was constructed for the Pigeon House Branch watershed to evaluate potential benefits. Five example GSI projects were developed focusing on schools, universities, other government entities, and non-profit organizations. The City is building partnerships to find cost-effective and multi-beneficial methods to implement these projects.



Bioretention Area to Treat Runoff at Gateway Plaza



Live Plant Stakes Installed near Marshall Street for Stream Bank Stabilization

Supporting Ongoing City Programs

The watershed study provides data and technical support to other stormwater initiatives including: drainage assistance to property owners; stream stabilization and streambank repair efforts; Raleigh Rainwater Rewards; stormwater asset management; and stormwater maintenance programs.