



# Stormwater Management Division

## Stormwater Management Advisory Commission

FY2018 Annual Report

The Stormwater Management Advisory Commission's (SMAC) work with the Stormwater Management Division directly resulted in many successes over the last fiscal year. Here are highlights from the Commission's efforts from July 1, 2017 to June 30, 2018:

### **Stormwater Infrastructure Projects**

The Commission received updates and provided input on several stormwater infrastructure projects in FY2018. In this year alone, the number of projects under construction nearly doubled reaching 12 major projects valuing \$22 million in construction costs. There also was a significant increase in the number of completed projects. One project was finished in FY2017 and seven were done in FY2018.

The Stormwater Management Division expects to complete 10 more projects by the end of FY2019. The Commission also reviewed and offered input on the proposed Stormwater Capital Improvement Program (CIP) for fiscal years 2019 – 2023.



**New box culvert installed during Brockton Drive Dam Rehabilitation – Phase 1**

### **FY2018 Project Highlights**

- **Brockton Drive Dam Rehabilitation – Phase 1**

The Stormwater Management Division completed the first phase of this \$4.5 million project in June. The dam rehabilitation has three main goals – reduce flooding, improve water quality, and enhance the stormwater infrastructure in this neighborhood. To do so, the upper portion of Brockton Lake was transformed into a stream. The constructed stream helps reduce flooding to nearby homes and provide opportunities for better water quality. During this process, the under-sized pipe connecting the upper and lower portions of the lake was replaced with a larger box culvert. This infrastructure carries water to the lower lake, which reduces upstream flooding impacts. In addition to this work, a stormwater pipe was replaced on Hollowell Lane and upgrades to a sanitary sewer line were completed in partnership with the Public Utilities Department. Next, the Stormwater Management Division will make improvements to the dam structure at the lower lake in the second phase of this project.

- **Lower Longview Lake Dam Rehabilitation**

Construction for this project is nearly complete. The \$3.4 million project will improve the structurally deficient dam at Lower Longview Lake. The poor condition of the dam led to the closure of Albemarle Avenue in 2009. The dam's new concrete structure was designed to handle the flow of excess water from the lake and lower water levels to reduce the potential for flooding downstream during major storms. The project will lead to better road and flood safety.

- **Simmons Branch Drainage Improvements – Phase 2**

This project replaces the aging 700-foot-long box culvert that carries stormwater along Swift Drive and increases the size of the stormwater pipes on Pineview Drive. These improvements will stabilize the stormwater channel and help reduce street and home flooding in this southwest Raleigh neighborhood. The project also includes a series of street, sidewalk, and drainage projects along Swift Drive and Pineview Drive, which make roads safer, improve access to the neighborhood, and reduce the need for ongoing storm drainage system maintenance. Reconstructing White Oak Lake, which is expected to start six months after the Simmons Branch project, provides additional flood relief and improves water quality in the area. Construction for this \$5.6 million project started in April and is expected to be finished in spring 2019.



- **Newton Road Culvert Replacement**

The Stormwater Management Division is working on an emergency stormwater culvert replacement on Newton Road. Originally, the culvert was scheduled to be repaired this summer. The project was reprioritized to a full replacement following damage caused by a major rain storm on May 21 that led to nearly four inches of rain falling in North Raleigh within an hour and half. The impaired double 72-inch diameter stormwater pipes that were affected by the storm are being replaced with a 120-foot-long concrete box culvert that more effectively handles the stormwater runoff from this area. The project is expected to be finished in August.

### **FY2018 Stormwater Infrastructure Projects Overview**

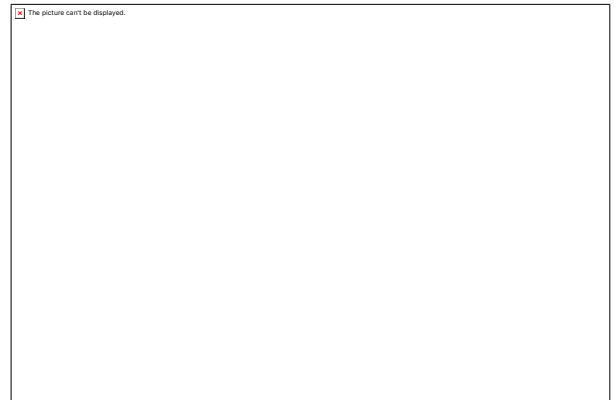
	<b>Under Design</b>	<b>Under Construction</b>	<b>Completed</b>
Number of Projects	13	12	7
Total Cost	\$22 million	\$22 million	\$6.9 million

### **Drainage Assistance Program**

In FY2018, the Commission approved 10 projects (totaling \$1.25 million) through the Drainage Assistance Program that are fully funded by the Stormwater Utility Fee. Projects focus on alleviating severe stream bank erosion, repairing private storm drainage systems, and reducing flood damage to structures on private property.

This is the first time that the Stormwater Management Division completed more than \$1.25 million worth of projects in a single year, which was the total amount of funding allocated for this program in FY2018. This success is a direct result of the Commission and Stormwater staff working together to provide a high level of service to residents by efficiently approving, managing, and delivering projects that improve Raleigh's storm drainage system.

Stormwater staff also made significant progress in completing projects that were approved under the former Drainage Petition policy, which required a shared cost between the City and property owners for stormwater drainage projects. These projects are highlighted below.



**Drainage Assistance project to reduce erosion at 500/502 Brent Road**

### **FY2018 Project Highlights**

- **Brent Road Stream Bank Stabilization**

This project was approved by the Commission under the former Drainage Petition policy in 2014. A duplex at 500/502 Brent Road experienced impacts to their deck from a severely eroded stream that flows through the property and is located in the Bushy Branch watershed. Given the stream bank height and the proximity to the deck, a vertical boulder wall was designed, permitted, and constructed to address this drainage and safety concern. The wall stabilized the stream bank to prevent future erosion to the property. This project was completed in December 2017.

- **Basil Drive Structural Flooding Project**

The Stormwater Management Division presented this project to the Commission in October 2013 to address structural flooding at 2208 Basil Drive. Following approval from the Commission and Raleigh City Council, the project was designed and constructed in July 2017. This project was approved under the former Drainage

Petition policy and included adding stormwater piping and improvements to the drainage ditch to eliminate flooding to the home during the 10-year storm, which has a one in ten chance of occurring in a given year.

### **FY2018 Drainage Assistance Projects Overview**

	<b>Under Design</b>	<b>Under Construction</b>	<b>Completed</b>
Number of Projects	18	3	21
Total Cost	\$200,000	\$420,000	\$1.4 million

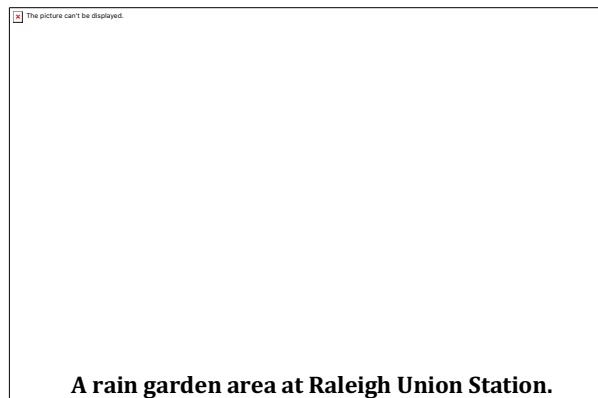
### **Raleigh Rainwater Rewards**

The Commission recommended policy changes for the Stormwater Quality Cost Share Program, which is now called Raleigh Rainwater Rewards. The new policy streamlines the approval process for small and large projects that are a shared cost between the City and program participants. For example, projects less than \$5,000 in City cost are approved directly by Stormwater staff and include a five-year maintenance agreement as opposed to 10 years for larger projects. In addition, projects costing the City between \$5,000 and \$30,000 are now approved directly by the Commission.

In April, a shift in program branding coincided with the new policy to simplify the program's messaging and increase its visibility. Communications efforts resulted in an increase in site visit requests, which is the first step in applying for project funding. Site visits conducted by Stormwater staff have increased from 2-5 sites over a two-week period to 15-20 visits in the same timeframe. Over 100 inquiries have been received since the new name and policy were announced.

In addition, ongoing collaboration with community organizations and partners has resulted in an increase in the number of projects being constructed. In FY2017, only five projects were under construction totaling \$318,475 in City reimbursement. In FY2018, 16 projects were being constructed valuing \$757,000 in City reimbursement. (Dollar amounts may vary slightly since reimbursement is provided after construction is finished.)

Notable projects in FY2018 include permeable pavement, a green roof, and a rain garden at Raleigh Union Station; a rain garden and bioswales (which are like rain gardens but also carry stormwater runoff through the drainage system) at a downtown Raleigh bed and breakfast; and several residential properties that now use cisterns and permeable pavement to capture and recycle stormwater runoff.



### **FY2018 Raleigh Rainwater Rewards Overview**

	<b>Under Construction</b>	<b>Completed</b>
Number of Projects	16	6
City Contribution	\$757,000*	\$35,000*

\*Design and construction costs projected to be reimbursed by the City of Raleigh.

### **Stream Restoration and Water Quality Projects**

In FY2018, the Stormwater Management Division continued designing stream restoration and water quality projects with support from the Commission and in partnership with various City departments and community organizations. Projects in

the design or study phase as of June 30 include:

<b>Projects</b>	<b>Design/Study Costs</b>	<b>Partners</b>
Devereux Meadows/Pigeon House Branch Stream Restoration	\$150,000	Raleigh Parks
Durant Nature Preserve Upper Lake Study	\$182,000	Raleigh Parks, NC State University, and NC Clean Water Management Trust Fund
Millbrook Exchange Park Stream Restoration and Study	\$172,000	Raleigh Parks, NC State University, and NC Clean Water Management Trust Fund
Rosengarten Stream Restoration	\$100,000	Raleigh Parks
Wooten Meadows Park Stream Daylighting	\$100,000	Raleigh Parks

## **PROGRAM AND POLICY UPDATES**

### **Stormwater Management Design Guidance Manual**

With continued support from the Commission, the Stormwater Management Division received approval from Raleigh City Council in May to begin rewriting the City's Stormwater Management Design Guidance Manual. The manual was originally created in 2002 after the City expanded regulations to permanently address stormwater issues beyond those that were enforced during construction, like stormwater quality, stormwater retention, and stormwater conveyance, which is the flow of stormwater runoff on developed sites and streets.

Since 2002, stormwater regulations have been updated to address additional stormwater management needs. The new manual will reflect these regulations, which are related to riparian buffers, floodplain development, small lot development, and water supply watershed issues. It also will coincide with adjusted State regulations, shifting development trends, and offer more comprehensive stormwater fee crediting opportunities that will make it easier to navigate the application, credit, and reporting process for this City program.

Enhancing the manual will provide the development community with clarified guidance on stormwater management regulations; design policies, requirements, and methodologies; submittal requirements for stormwater, erosion control, water supply watershed, riparian buffer, and floodplain regulations; and support in areas like lot-to-lot drainage, steep slope regulations, and green stormwater infrastructure—all of which are intended to protect and preserve the environment and meet ongoing development needs.

The Stormwater Management Division, in partnership with the project's consultant, Freese and Nichols, Inc., will be developing the revised manual. This process includes multiple opportunities for public input and periodic presentations to the Commission. The manual is expected to be complete in 2019.

### **North Carolina MS4 Sustainability Strategy (MS6)**

The Stormwater Management Division became the first stormwater program in North Carolina holding a National Pollutant Discharge Elimination System (NPDES) Phase I Permit to receive the North Carolina Municipal Separate

Storm Sewer System (MS4) Sustainability Strategy (MS6) designation. MS6 is a voluntary and collaborative initiative that supports and recognizes stormwater programs for their exemplary efforts in reaching local, state, and federal stormwater management requirements. MS6 goals include implementing a successful stormwater management program that benefits the community and local watersheds while maintaining a commitment to ongoing transparency, public engagement and education, and strategic planning that addresses current and future stormwater management needs. The Commission will provide insight and guidance as the Stormwater Management Division continues to carryout MS6 requirements.

### **Stormwater Financial Policy**

The Commission received information and provided feedback on the Stormwater Management Division's first formalized financial policy this fiscal year. The policy includes developing and maintaining a financial model that provides details on operating fund costs; Capital Improvement Program (CIP) expenditure projections over time; funding sources for projects; and data that forecasts the need for utility fee adjustments. Additionally, the policy focuses on maintaining a fund reserve that helps the Stormwater Management Division prepare for emergency projects and unexpected project needs. The policy was developed in collaboration with the City's Budget and Finance Department.

### **Flood Hazard Mitigation Program**

In FY2018, the Stormwater Management Division continued efforts with the Flood Hazard Mitigation Grant program to assist residents who have properties in the floodplain and, as a result, experience ongoing flooding leading to property damage and water quality degradation. The Commission supported the purchase and demolition of 8 single-family properties that were built prior to current development regulations and are significantly impacted by major flooding. These properties are located throughout the City and are within the Crabtree Creek Watershed. Restoring the area to green space allows the floodplain to function more naturally, which reduces hazardous flooding to homes and increases public safety. This \$2 million project is in partnership with the Federal Emergency Management Agency (FEMA) and includes funding to relocate property owners who have sold their homes through the program.

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### **SMAC Mission Statement**

The Stormwater Management Advisory Commission will manage resources sufficiently to protect the public infrastructure, quality of life, environment, and property of the citizens of Raleigh through fair and equitable cost-effective means. SMAC recommendations will seek to improve, enhance, and protect the quality of the Neuse River and its tributaries.

**Raleigh City Council received this report on September 4, 2018**