City Council Workshop

October 8, 2018

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10.08.2018

Stormwater Management Program

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Clean Water Act

- Established 1948 – (overhauled in 1972) regulates the discharge of pollutants into the waters of the United States
- Unlawful to discharge pollutants into navigable waters
- Criminal charges possible for violations

Clean Water Act

Former Owner of American Waste, Inc. Sentenced to 18 Months Imprisonment for Illegal Dumping

Columbia, South Carolina---- Acting United States Attorney Beth Drake stated today that , age 51, of Greer, South Carolina was sentenced yesterday in federal court in Anderson, South Carolina, for Violating Pretreatment Standards of the **Clean Water Act**, in violation of 33 U.S.C. § 1317 and 1319.

Ordinance Timeline

- 1971 – Storm Drainage Code Adopted
- 1974 – Resolution Adopting Maintenace Policy
- 1980 – Stormwater Ordinance Requiring 10-yr Detention for Commercial Properties

Federal/State Mandates

- Tar-Pamlico Stormwater Rule (2004) & NPDES Phase II MS4 Permit (2005) require the following:
  - Management of Nutrient Loading (Nitrogen and Phosphorus)
  - Protection of Stream Channels from Erosion
  - Good House Keeping Measures
  - Public Involvement/Education

Ordinance Timeline

- 2001 – Stormwater Utility Established
- 2003 – Utility Fee Charged
- 2004 – Stormwater Ordinance Revised to meet Tar-Pamlico Rule and NPDES requirements
- 2013 - Detention of the 1, 5, & 10-yr storm events; also 25-yr storm event in critical areas identified through the WSMP

Stormwater Management Program

Title 9, Chapter 9:
Stormwater Management & Control Ordinance

- Six different components
- Required program per Federal/State mandates
- Funded by the Stormwater Utility

Public Education and Outreach

- General pollution prevention
- Greenville's Program
- Technical workshops
- Capital projects

Public Involvement and Participation

- Stenciling Program
- Adopt-a-Street
- Surveys
- SWAC
- EAC Grant

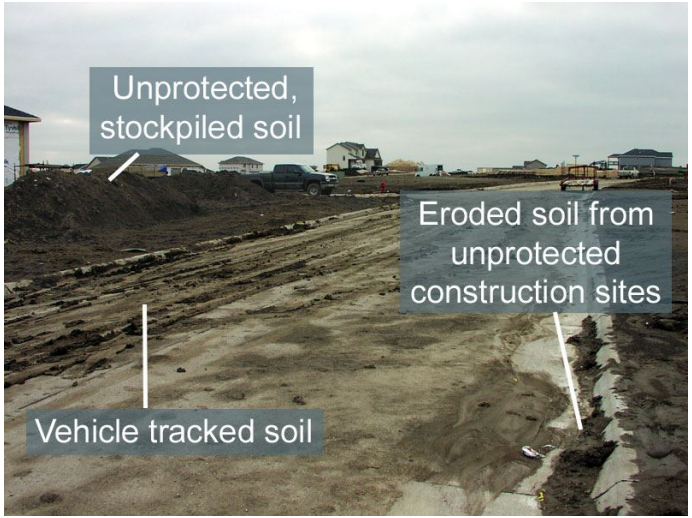
Illicit Discharge Detection and Elimination

- Illegal connection or non-stormwater discharge to the storm system
- Citizen complaints
- Outfall inspections
- Exemptions

Construction Site Runoff Controls

Sedimentation and Erosion Control Program

- Plan Review
- Inspections
- Reporting



Post-Construction Site Runoff Controls

Stormwater Control Measures (SCMs)

- Plan Review
- Inspections
- Enforcement
- Reporting

Pollution Prevention and Good Housekeeping

- Street sweeping
- Cleaning Catch Basins
- Vegetation Maint.
- Stormwater Pollution Prevention Plan

Inventory Maintained by the City

- 237 Miles of Pipe
- 17,000 Drainage Structures
- 97 Culverts
- 2,913 Outfalls
- 68 Miles of Open Channel

Stormwater Utility Fund

- Intent of Fund

  "SEC. 8-3-3(A) There is hereby established a stormwater management utility…which shall provide for the management, protection, control, regulation, use and enhancement of stormwater and drainage systems."

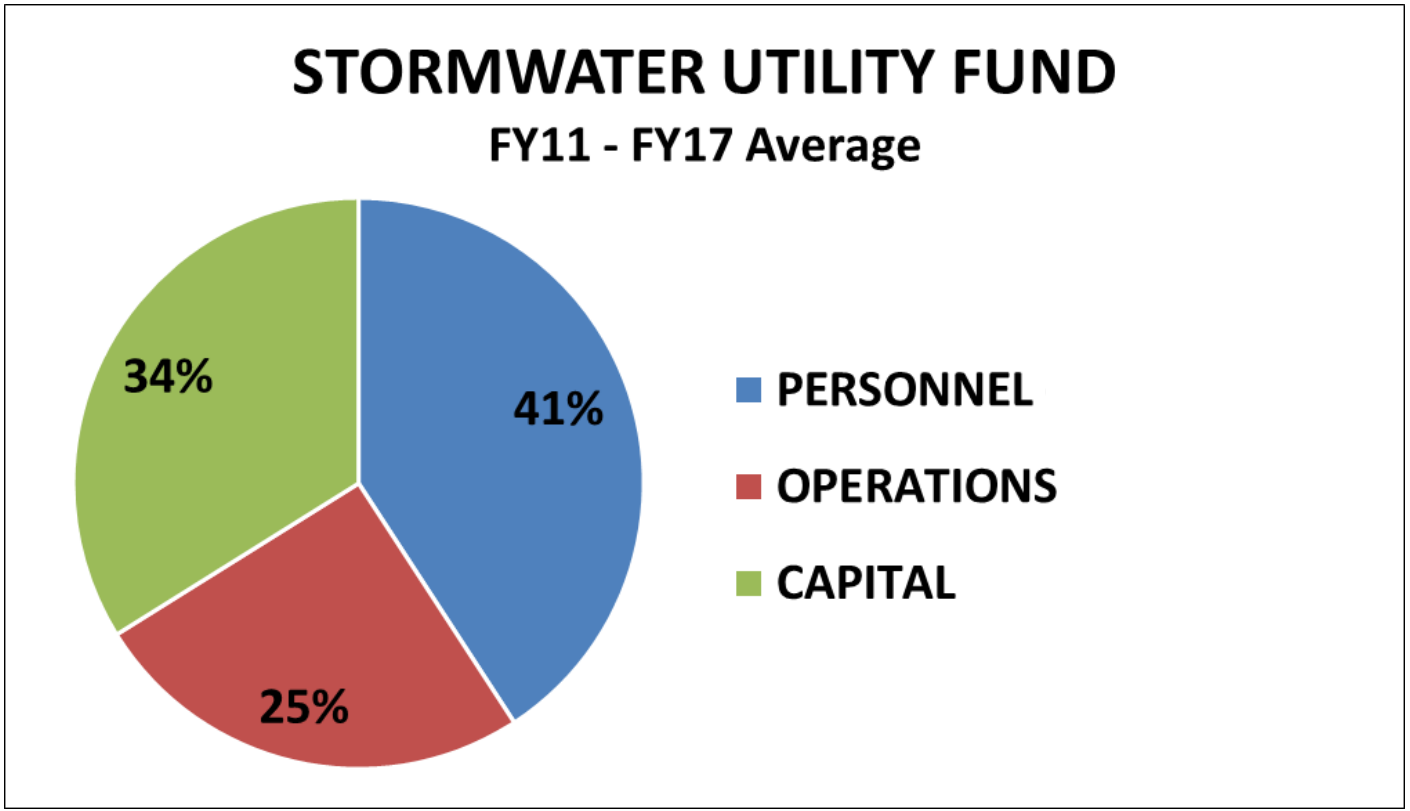
- The fee was implemented July 2003

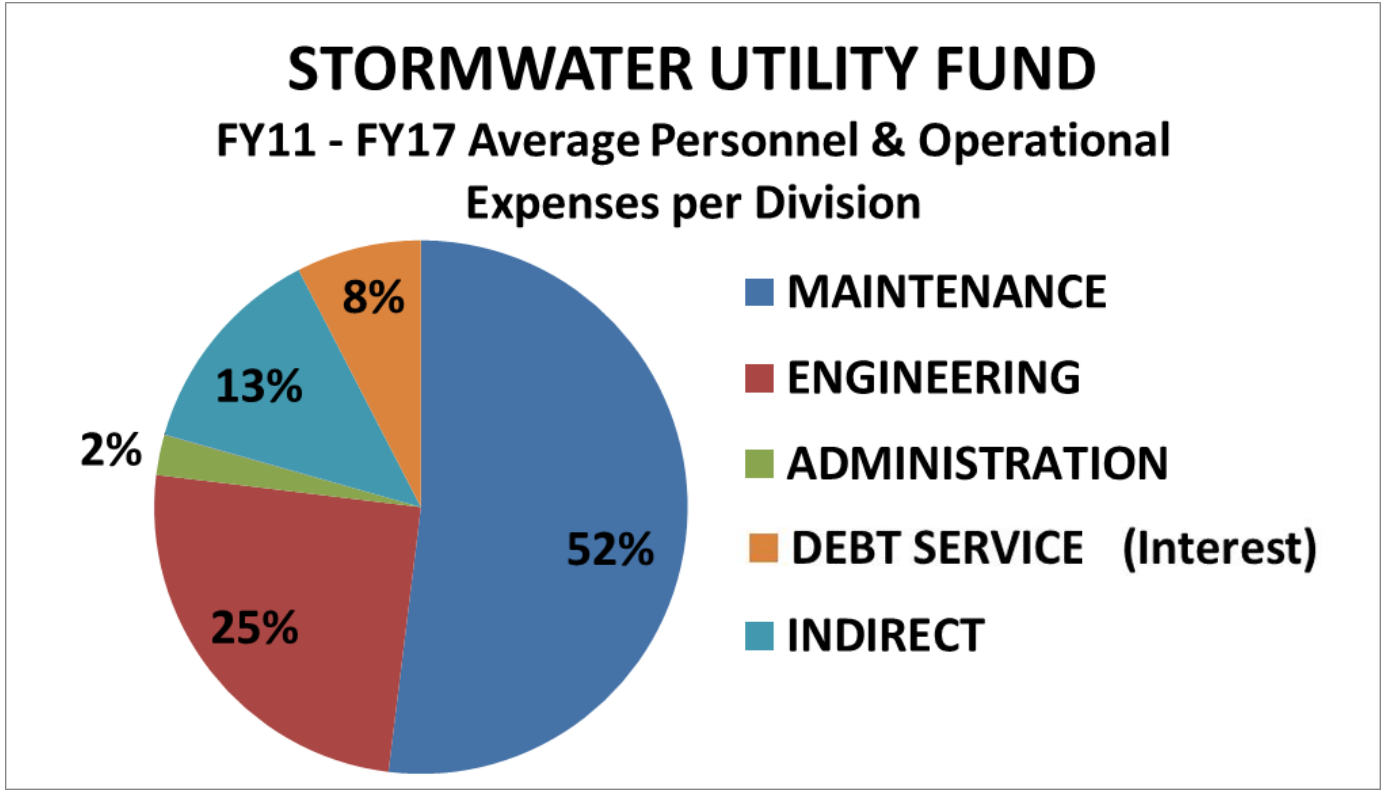
Equivalent Rate Unit

- ERU = 2,000 sq ft impervious area
- Includes roof, driveway, patios, etc.
- Not based on heated square feet

Utility Rate

- Utility is billed by GUC on all electric accounts
- Approximately 40,400 accounts (103,000 ERUs)
- Rate of $5.35 per ERU
- Projected revenue of $6.1 M for FY 2019


STORMWATER UTILITY FUND
FY11 - FY17 Average
34%
41%
25%
PERSONNEL
OPERATIONS
CAPITAL


STORMWATER UTILITY FUND
FY11 - FY17 Average Personnel & Operational Expenses per Division
8%
13%
2%
52%
25%
MAINTENANCE
ENGINEERING
ADMINISTRATION
DEBT SERVICE (Interest)
INDIRECT

Street Maintenance

Open Channel (1 FTE/15 miles)

- Maintain Flow
- Inspect/Maintain Streambank Projects

Closed System (1 FTE/55 Miles)

- Pipe Cleaning
- Basin Cleaning
- System Repairs
- Camera

Engineering

Permit Requirements

- Six components
- Sedimentation & Erosion Control Program

Capital Improvement Program

- Infrastructure Projects
- Town Creek Culvert
- Property Acquisition
- Streambank Stabilization Projects

Engineering

Design

- Bank Stabilization
- Remove and replace

Floodplain Management

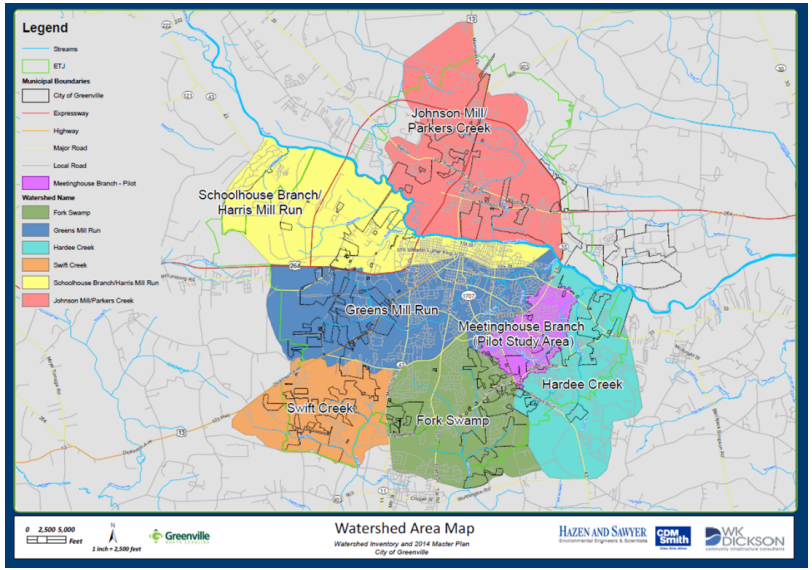
- Development Review
- CRS (15% reduction)

Manage Utility Billing

- Policy/Procedures
- Credits

How do we optimize our revenue?

Citywide Watershed Master Plans



Benefits of Inventory

Moving from reactive to proactive

- Debris blockages removed
- Broken structures repaired
- Illicit discharges
- System connectivity
- Increased efficiency for maintenance and service calls

Modeling

- Model results show existing and future level of service (LOS)
- Results for existing LOS validated against data collected in public outreach efforts
- Future build-out conditions based on City and County zoning, land use plans, and feedback from City Planning

Level of Service

- Closed Pipe Systems – 10-year
  (10% chance/year, 5.8” rainfall)
- Minor Thoroughfare Crossings – 25-year
  (4% chance/year, 7.2” rainfall)
- Major Thoroughfare Crossings – 50-year
  (2% chance/year, 8.5” rainfall)
- Structural Flooding and Railroads – 100-year
  (1% chance/year, 9.8” rainfall)

Primary/Secondary systems

Primary (Blue line)

Typically open channel, carries water out of City

Secondary (Red line)

Typically closed systems, carries water out of neighborhoods to primary system

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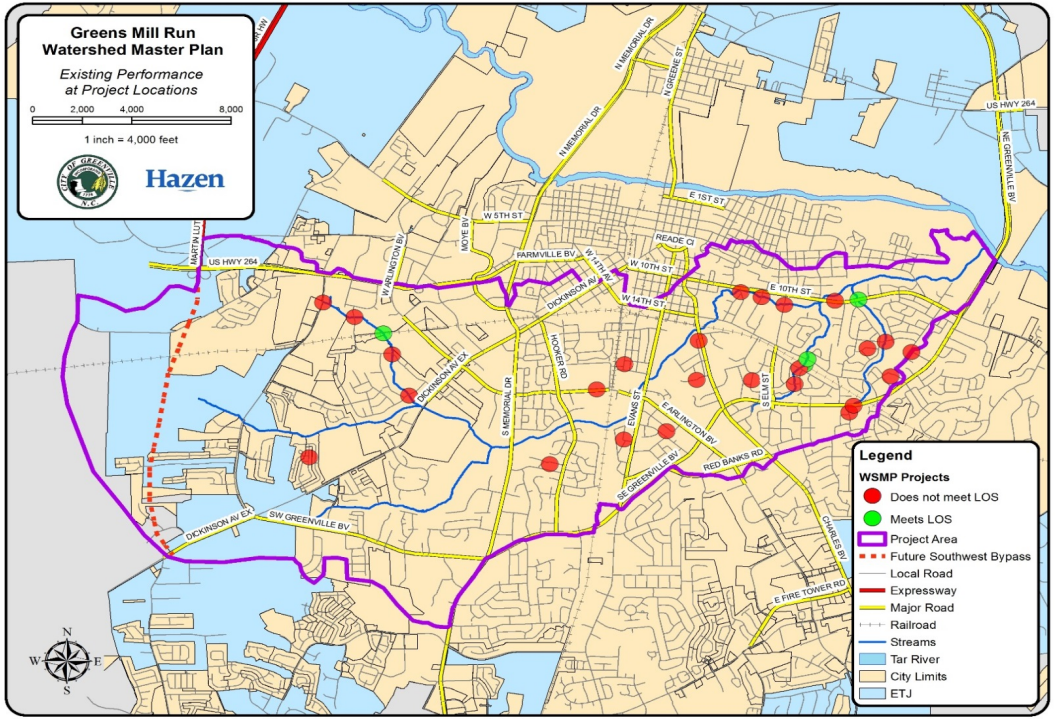
Greens Mill Run - Existing



GMR North Fork

- 3 issues: flow volume, water backing up, structural dimensions
- Railroad culverts back up water on Spring Forest
- Cannot improve LOS without imp. at RR and downstream
- RR improved – can release water downstream
- Increased flows downstream:
  - Must be accounted for in improvement designs
  - Will result in increased WSE which must be mitigated with channel improvement

GMR North Fork

- Norfolk Southern RR
  - No LOS violation
  - Cost $1.4M
- Spring Forest Rd (DS)
  - Cost $2.3M
- Ellsworth Drive
  - Cost $1.9M
- Floodplain Benching
  - Mitigate increased WSE
  - Cost $1.4M

TOTAL COST: $8.1M

Recommendations

Culvert/Bridge Improvements

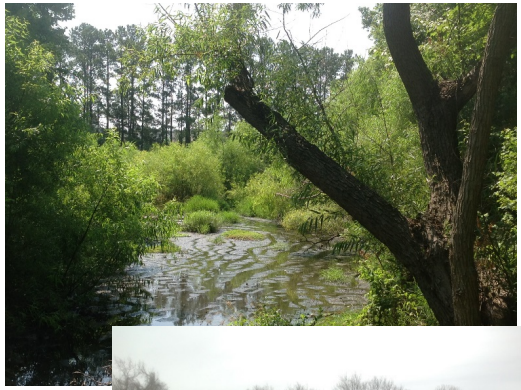
Recommendations

Floodplain Storage/Benching

Recommendations

Closed System Improvements

Recommendations



Detention

Recommendations

Stream Stabilization

Prioritization

- Projects within each watershed prioritized based on 9 categories
- Four prioritization lists for each watershed created based on project type
- Primary flood control projects may be grouped based on dependency on other projects
- Prioritization consistent across watersheds to create Citywide Prioritization lists

Prioritization

Prioritization can be adjusted for numerous reasons:

- Development
- Failures
- Funding (MOAs, grants, loans, etc.)

Summary of Annual Needs

Replace Existing Storm Sewer ($300M/50YRS)	$6M
Capital Improvements ($ 150M/25YRS)	$6M
Operational Costs	$3M
Total	**$15M/YR**

Current Utility Revenue = $6M/yr

Results from WSMP

- Asset inventory
- Prioritized list of Capital Projects
- Recommendations for development regulations (10 vs. 25 year)
- Assessment of stream health and water quality on impaired streams

Benefits from WSMP

- Immediate impacts to Operations
- Immediate impacts to Stormwater Ordinance
- Stormwater Advisory Committee (stakeholder group)

Stormwater Advisoy Committee (SWAC)

Tom Best - Chair
Drake Brinkley
Michelle Clements
Donnie Brewer
Beth Ward
Matt Butler
Landon Weaver
Joni Torres
Jon Day
Don Edwards
Cassius Williams

Stormwater Advisoy Committee (SWAC)

- Meetings & Objectives
  - 14 SWAC Meetings since February 2017
    - Level of Service
    - Capital Project Implementation
    - Impacts to Utility Rate
- Recommendations will be presented at the November Council Workshop

Town Creek Culvert

Town Creek Culvert

Town Creek Culvert

Recent storm event