STORMWATER MANAGEMENT REPORT

Goals, Objectives, Costs, Revenue Options

Camden County Board of Commissioners
September 2012

Stormwater Advisory Committees

- South Mills
  - Freddie O'Neal
  - Roger Nichols
  - Glen Carey
  - Clarence Raper
  - Mark Powell
  - Don Keaton
- North River
  - Elton Sawyer
  - Forest Pugh
  - Dewayne Berry
  - Abner Wayne Staples
- Shiloh
  - Gurnie Needham
  - Iris Leary
  - Curtis Lawson
  - Sim Williams
- Sawyers Creek
  - Brian Lannon
  - George Tarkington
  - Jeff Jennings

Comprehensive Goal

- To plan & implement a countywide stormwater/drainage program administered for each of the 4 watersheds that meets reasonable expectations of the citizens to minimize flooding of farms, homes, businesses AND meets or exceeds state & federal water quality standards.

Flooding Occurs When

- Volume of runoff exceeds conveyance system capacity
  - primarily function of amount of land being drained
  - Partially related to impervious surface
- Speed of runoff exceeds system capacity
  - primarily a function of addition of hard (impervious) surfaces
  - And highly channelized conveyances
- System capacity is compromised though blockage by vegetation or sedimentation, and erosion – a function of natural environment & speed of runoff

Water Quality is Degraded By

- Pollutants carried by runoff
  - Herbicides
  - Pesticides
  - Pet waste
  - Trash
  - Discharges
  - Vehicles
- NC DENR has been adding basin specific rules & it may be just a matter of time before they reach us

Drainage Goals

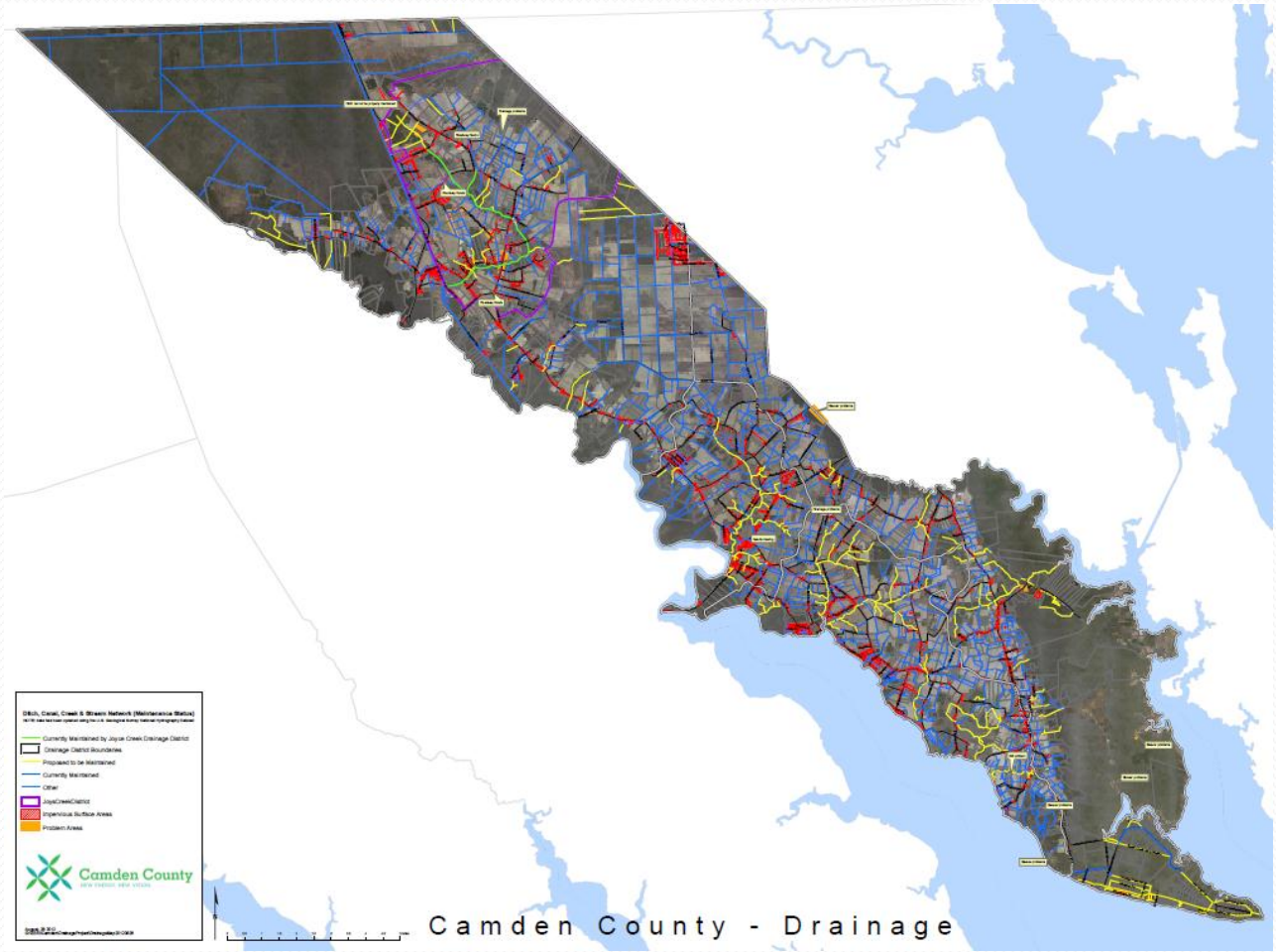
- To have a 5 year rotating maintenance program for each of the four watersheds that
  - keeps ditches clear of debris, vegetation, and dams;
  - includes a major drainage conveyances (creek outfalls & major forested tributaries);
  - is implemented by both private property owners and the county.
- To strengthen regulations on new development that includes adequate stormwater infrastructure and BMPs to minimize negative impacts on the existing drainage systems.
- To consider and plan for capital projects for critical problem areas.

Maintenance Objectives

- Identify & map all conveyances, crossings, problem areas, and existing maintenance activities
- Select conveyances to include in program
- Identify & estimate costs for maintenance
- Determine a fair way to generate revenue to implement maintenance
- Begin maintenance
- Amend UDO to require HOAs to submit inspection report stormwater plan compliance on a periodic basis

Camden County Conveyances

(Click above to view in more detail)



Water Quality Goals

- To educate the citizens about the importance of individual responsibilities and Best Management Practices (**BMPs**)that can help avoid public expenditures to meet regulatory requirements.
- To monitor existing water quality conditions.
- To monitor and meet or exceed the ever changing regulatory environment of state & federal standards.

Proposed Expenditures

- Clearing and Snagging of ditches, creeks and canals.
- Re-channel ditches where permitted
- Purchase Easements along ditches for maintenance.
- Maintenance Equipment (Mowers, spray equipment, etc.).
- Invasive species control (Sprayer, herbicides, etc).
- Restoration Projects/ Incentives (Stream bank stabilization,
- Public Outreach/ Education (Programs, 4-H Rain Barrel Sale, etc.).
- Monitoring equipment for water quality
- Best Management Practices (**BMPs**) – incentives for installation.
- Compensation for collections and other administrative costs

Typical Watershed Budget

Costs			Total
Billing, Collections, etc			$ 1,007.00
Dues, Memberships, Traiing, etc			
S & W Conservation			$ 6,647.63
Utility Implementation			$ -
Capital Improvement Projects			
Maintenance Creeks & ditches			$ 36,391.98
Purchase Easements			$ 18,546.88
Outfall Water Quality Monitoring			$ 5,000.00
Floodplain Program			$ 2,954.29
Legal Fees			$ 2,683.90
Stormwater Plan Review			
Public Education & Involvement			$ 1,341.95
Planning			
Total			$ 74,573.62

County Authorization for Utility Fees

- **§ 153A-274. Public enterprise defined.**
  - (7) Stormwater management programs designed to protect water quality by controlling the level of pollutants in, and the quantity and flow of, stormwater and structural and natural stormwater and drainage systems of all types.
- **§ 153A-277. Authority to fix and enforce rates.**
  - (a)A county may establish and revise from time to time schedules of rents, rates, fees, charges, and penalties for the use of or the services furnished by a public enterprise

How may fee amount vary?

- Residential vs. commercial vs. industrial
- Use of property
- Size of property
- Area of impervious surface on property
- Quantity and quality of runoff from property
- Characteristics of watershed
- Other factors that affect stormwater drainage system

Fee Assumptions

- Owner pays a combination of three (3) elements:
  1. Fixed cost per account (**FCPA**)
     1. Same for every property
  2. Gross acreage Tier rate (**GA**)
     1. Tier 1 = < 2 acres
     2. Tier 2 = 2 – 5 Acres
     3. Tier 3 = 5 -10 Acres
     4. Tier 4 = 10 - 100 Acres
     5. Tier 5 = > 100 Acres
  3. Impervious area rate (**IA**)
     1. Average single family house = 4500 Sq ft of Impervious Area
     2. Equivalent residential unit (**ERU**)

FCPA Rate Rationale

- Certain administrative costs are the same for each account and not dependant on size or impervious surface
  - Billing
  - Collections
  - Legal fees
  - Public Outreach & Education

Calculating Fixed Cost Per Account

- FCPA Rate
  - Total fixed costs for all watersheds
  - Divided by total properties in county (accounts)
  - Equals rate per account (FCPA)

Gross Acreage Rate Rationale

- Larger properties allow for longer times of concentration, more absorption and evapotranspiration
- Establish base rate for Tier 1 – (smallest parcel size)
- Cost for Tiers 2, 3, 4, & 5
  - Scaled at 2, 3, 4, & 5 times Tier 1
  - Rather than straight line per acre rate
- Result is decreasing cost per acre as parcel size increases, generally reflecting engineering formulas

Gross Acreage Example

Size of Property	Rate for Property
Tier 1 - Less than 2 acres	$ 16.26
Tier 2 - 2 to 4.99 acres	$ 35.52
Tier 3 - 5 to 9.99 acres	$ 48.78
Tier 4 - 10 to 99.99 acres	$ 65.03
Tier 5 - 100 plus acres	$ 81.29

Impervious Area Rate Rationale

- Impervious areas increase the speed of runoff & decreases the amount trans-evaporation and absorption
- Basic unit of impervious area is a single family home – Equivalent Residential Unit (**ERU**)
- Determine average Impervious Area (**IA**) for house
  - Identify sample of house from different types of neighborhoods
  - Use GIS aerial photos to measure IA of each house lot (including driveways etc.)
  - Solve for average IA for typical single family lot
  - **1 ERU = 4500 sq ft**

Impervious Rate Example

Property Type	Imp. Sq. Ft.	Impervious rate
Single family home (**1 ERU**)	4500 sq. ft.	**$ 14.54**
Non single family property **(2 ERU)**	9000 sq. ft.	9000/4500 = 2 2 x $ 14.54 = **$ 29.08**
Non single family property **(3.33 ERU)**	15000 sq. ft.	15000/4500 = 3.33 3.33 x $ 14.54 = **$ 48.47**

- No exemptions for public or non-profit property

Total Annual Fee Examples

Property	FCPA	GA	IA	Total
House 1.99 acres (1 ERU)	$2.50	$16.26	$14.54	**$33.30**
House 5 acres (1 ERU)	$2.50	$35.52	$14.54	**$52.56**
Non single family				
1.99 acres	$2.50	$16.26		
9000 sq. ft. Impervious (2 ERU)			$29.08	**$47.84**
Non single family				
1.99 acres	$2.50	$16.26		
15000 sq. ft. Impervious (3.33 ERU)			$48.47	**$67.23**
Non single family				
5 acres	$2.50	$35.52		
15000 sq. ft. Impervious (3.33 ERU)			$48.47	**$86.49**

A Few More Examples

Property	FCPA	GA	IA	Total
10 – 99.99 acre farm	$2.50	$65.06	N/A	**$67.56**
10 – 99.99 acre w/house	$2.50	$65.03	$14.54	**$82.07**
100 plus acre farm	$2.50	$81.29	N/A	**$83.79**
100 plus acre farm with house(1 ERU)	$2.50	$81.29	$14.54	**$98.33**
100 plus acre farm 9000 sq. ft. impervious	$2.50	$81.29	$29.08	**$112.87**

Issues For Consideration

- Fees
  - Credits program for Best Management Practices
  - Appeals of impervious calculations
  - Process for modifying conveyances under program
- Planning
  - Flood monitoring program
  - Water quality monitoring protocols
- Medium/long term capital projects
  - Data development & analysis
  - Engineering
  - Funding/reserves

Next Steps

- September
  - Develop standard criteria for segments inclusion and modify map and data accordingly
  - Review & finalize budget -water quality monitoring, collections, rate allocation percentages
- October
  - Obtain 3rd party review of rate model & legal considerations
  - Test run rate model for all parcels
  - Analyze results versus expectations & Debug if needed
- November
  - Prepare private legislation to permit enforcement through liens
  - Develop Impervious surface appeal process

Next Steps

- January – March 2013
  - Submit private legislation
  - Develop public & distribute information materials
  - Discuss with state agencies for participation through agreements
  - Consider & develop a credit program for BMPs and other situations
- Spring 2013
  - Prepare and approve utility ordinance (public hearing)
  - Prepare and approve utility fee schedule (public hearing)
- Summer 2013
  - Prepare and mail billing
- Fall 2013
  - Begin maintenance

QUESTIONS?

Contact Planning Department

Dan Porter, Planning Director

Phone: 252-338-1919 Ext. 263

Email: dporter@camdencountync.gov

Brian Lannon, Soil & Water Conservation Technician

Phone: 252-338-1919 Ext. 262

Email: blannon@camdencountync.gov