NEW BERN
STORMWATER MANAGEMENT

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CITY OF NEW BERN
Presentation Outline

- The Issue
- Background
- Site-Specific Challenges
- Best Management Practices
- Maintenance
- Education
- Conclusions and Recommendations
The Problem

Stormwater flooding in two neighborhoods in New Bern, NC
Renaissance Plan

The New Bern Gateway Renaissance Plan

EPA BROWNFIELD AREA-WIDE PLANNING PILOT PROGRAM

Goody Clancy
Geographic Context

New Bern, NC

88% of Craven County is level

0 to 12 inch Water Table

Study Sites

K Street

3rd Avenue

Proximity to Rivers
Flooding Context

One meter sea level rise by 2100
Focus on immediate concerns
Typical summer storm is 1.5"
Runoff Calculations

**K Street**
- 28,000 square meters
- ~24% area is impermeable
- ~174,000 gallons of rainfall

**3rd Avenue**
- 17,000 square meters
- ~26% area is impermeable
- ~283,000 gallons of rainfall
The Study Sites

3rd Avenue
Few and Ineffective Drains
Obstructed Drainage from Road
Recessed and Eroded Land

K Street
Poor Management Practices
Little Drainage
Elevation Maps

Contour Intervals for Third Avenue

Contour Intervals for K Street
Data and Observations from 3rd Avenue
Data and Observations from K Street
Optimal BMPs

- Bioswales
- Wetlands
- Roof-water Management
- Rain Barrels and Cisterns
- Alternate Pavers
- Alternative Surfaces
Bioswales

- vegetated trenches that divert and manage water flow
- collect and evapotranspire water and remove pollutants
- native plants ideal for long-term solutions
- must be regularly cleared of debris and trash
Stormwater Wetlands

- larger areas promote infiltration and filter pollutants
- reduce peak discharge
- enhance wildlife and vegetation
- require little maintenance if properly installed
Roof-water Management

- divert stormwater away from homes
- best with rain barrels or cisterns
- gutters require maintenance to prevent clogging
Rain Barrels and Cisterns

- collect roof water for home-uses
- cisterns can collect all water 100-10,000 gallons
- rain barrels typically 55 gallons and are more affordable
- both help divert stormwater from roads and puddles
Alternate Pavers

- permeable or semi-permeable surfaces
- can replace concrete or asphalt in low traffic areas
- cement or plastic grids that hold gravel or grass
- must be maintained to prevent clogging
Alternative Surfaces

- gravel, cobble, wood, brick, mulch, and stone
- great for greenways, walking trails, or driveways
- more permeable and natural than pavements
- typically cost-effective to install and maintain
Proposed BMPs for K Street

- Rain Barrel
- New Bioswale
- Existing Swale
- Wetland

1040 m²
Maintenance

- Current stormwater drains must be cleaned
- Implemented BMPs must be maintained
- Regular maintenance must be factored into costs
Education

- community must be engaged in BMPs
- produced educational pamphlets for both study areas
- can also be used as educational tool for schools
- wetlands increase local flora and fauna
- rain barrels and cisterns help teach water conservation
Bioswales

What are they?
Bioswales are grassy channels along roadsides used to collect and better drain water.

What can you do?
Keep them clean of debris and trash.

Wetlands

What are they?
Wetlands are grassy regions filled with 'thirsty' plants capable of tolerating large amounts of standing water while beautifying the surrounding area.

What can you do?
Keep them clean of debris and keep plants healthy during lesser rain events.

Proposed BMPs for K Street

The table above summarizes the best management practices recommended for K street, and the approximated locations of proposed BMPs.

Rain Barrels

What are they?
Rain barrels are containers that collect water during rain events.

What can you do?
Empty them in nearby water collection areas when they are full to prevent overflow.

Gutters

What are they?
Gutters channel water from your roofs to nearby water collection areas.

What can you do?
Remove leaves that hamper draining, and regularly clean to prevent clogging.
Summary

- K Street and 3rd Avenue neighborhoods flood regularly
- institute new BMPs to improve flooding issue
- maintain all management practices
- can aid in education and outreach for communities
- help revitalize neighborhoods and promote local ecology
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Sources


- City of New Bern Pedestrian Plan. (2009). Division of bicycle and pedestrian transportation, & The Louis Berger group Inc.


