





**PROBLEM:** Stormwater isn't soaking into the ground. Instead, it flows over the land and carries pollution directly into coastal waters.

**SOLUTION:** Reduce the amount of stormwater with techniques to infiltrate rain into the ground or allow plants to use it to grow, the way nature intended.

river and begin the process of re-opening closed shellfish waters.

**WHAT THEY FOUND**

During the project, an army of Lockwoods Folly volunteers collected over 300 water samples from 12 sites throughout the watershed and conducted flow measurements and water heights during storm events. Their samples showed very high levels of bacteria throughout the lower portion of the river and identified polluted stormwater as the primary culprit. The study stressed the need to reduce the flow of stormwater from residential development and all land uses that had caused more surface runoff into coastal waters.

**BACKGROUND**

In 1980, 16% of the Lockwoods Folly River was closed to shellfish harvest. Now over 55% of the area is closed permanently and when it rains the majority of the river is closed because of unacceptably high bacteria levels that make it unsafe to consume raw oysters and clams. These closures not only harm commercial fishing—they also indicate a declining trend in water quality that could affect other uses of the river like fishing and swimming.

Despite current laws to protect water quality, experts tell us that stormwater runoff is to blame. You see, the way we develop and use the land is increasing the flow of stormwater. That means that additional runoff flushes bacteria and other pollution off the land, negatively affecting water quality throughout the watershed. Even though most of the bacteria comes from wildlife and has always been present, it now is being transported into coastal waters rather than staying on the land where it does not cause a problem for water quality.



the Lockwoods Folly River.

**WATERSHED STUDY**

In 2007 the N.C. Coastal Federation teamed up with Brunswick County, the N.C. Division of Water Quality, N.C. Division of Environmental Health's Shellfish Sanitation and Recreational Water Quality Section, the N.C. Division of Transportation, the N.C. Ecosystem Enhancement Program and the U.S. Environmental Protection Agency (EPA) to work toward solving water quality problems in the Lockwoods Folly watershed. Funded by an EPA Section 319 grant, the team conducted a three-year study that focused on how to reduce the bacterial source pollution of the

A **WATERSHED** is a land area that drains into a water body. The Lockwoods Folly Watershed spans approximately 150 square miles and includes the island communities of Oak Island and St. James, the traditional fishing village of Varnamtown and the communities of Bolivia, Supply and parts of Boiling Spring Lakes.

# SOLUTIONS FOR POLLUTION

The Lockwoods Folly restoration plan targets simple, low-cost solutions that homeowners can install as well as prioritized larger projects to reduce the amount of stormwater runoff into the river.

## MAKING THE MOST OUT OF THE RAIN:

### *Homeowner Tips and Simple Solutions to Stormwater Pollution*

It's easy to help protect and restore the Lockwoods Folly River. Here are five simple things you can do to clean up the river:



### 1. Soak up Rain with an Attractive Rain Garden

Rain gardens are shallow, concave landscaped areas that soak up rain. Install a small rain garden in your yard to capture runoff. Go to [WWW.NCCOAST.ORG](http://WWW.NCCOAST.ORG) for rain garden resources and ideas.



### 2. Collect Rain for Future Use

Connect roof leaders to a rain barrel to slow the flow of runoff. Rain barrels collect and store rainwater for use during dry weather. Did you know that lawn and garden watering make up nearly 40% of total household water use during the summer? Go to [WWW.BRUNSCO.NET](http://WWW.BRUNSCO.NET) or call Brunswick Soil and Water Conservation District at (910) 253-2830 to order yours today.

### 3. Landscape with Native Plants, Trees and Shrubs

Plants native to this area are well-suited to the local soils and climate, and require relatively little upkeep once established. Native plants provide natural beauty, cost-effective landscaping and are great at consuming and slowing the flow of stormwater runoff. For a list of plants native to our area contact the North Carolina Cooperative Extension Brunswick County Center at [BRUNSWICK.CES.NCSU.EDU](mailto:BRUNSWICK.CES.NCSU.EDU)



### 4. Redirect Your Downspouts to Slow the Flow

Downspouts directed to driveways, sidewalks or parking lots increase the amount of polluted runoff by an average of 50 percent or more.

Instead of contributing to stormwater pollution you can put rain water to good use. Re-route your downspout with these few simple techniques:

- Turn downspouts away from sidewalks and driveways into yards and other vegetated areas by using extension gutters to “disconnect” the impervious surfaces
- Route downspouts to landscaped areas such as rain gardens
- Link downspouts to rain barrels

*(re-route all stormwater at least five feet from your foundation)*



*Left: example of a downspout that contributes to stormwater pollution; Right: an example of a redirected downspout that infiltrates and prevents stormwater runoff.*

### 5. Pick Up After Your Pet

Stormwater runoff washes pet waste directly into coastal waters. Always clean up after your pet and put the waste in the trash. Encourage your local government to install pet waste stations. Install a pet waste station in your neighborhood with your homeowners association.

# SETTING EXAMPLES IN THE LOCKWOODS FOLLY

People are partnering to get things done on the Lockwoods Folly. Here are a few stormwater reduction projects that set excellent examples of how people can make a difference when they come together to work toward solutions.



## Brunswick County Government Complex Stormwater Retrofits

The federation worked with Brunswick County and Stantec Consulting to design and construct two stormwater reduction measures at the Brunswick County Government Complex, to enhance local water quality. The measures provide an example of innovative and effective techniques for small-site level stormwater control in a highly visible location. This work was made possible by funding from the N.C. Attorney General's Environmental Enhancement Program.



## Reducing Runoff in River Run

Residents of River Run Plantation near Sunset Harbor, master gardeners and other volunteers planted two bio-retention areas to reduce the flow of polluted runoff that enters the river. This project was awarded by the Brunswick County Soil and Water Conservation District as part of a Community Conservation Assistance Program.



## Winding River Reduces the Flow of Stormwater

Volunteers constructed a rain garden and a bio-retention area in the Winding River subdivision along the Lockwoods Folly to reduce the flow of stormwater reaching the river from the existing development. The rain gardens will provide great visible examples of what people can do to reduce the flow of stormwater. Educational signage will share the message to property owners and visitors.



## Sunset Harbor Boat Ramp

The N.C. Wildlife Resources Commission recently renovated the Sunset Harbor public boat ramp on the shores of the Lockwoods Folly River. The plan included LID techniques such as permeable pavement and redirection of the stormwater flow away from the ramps and river.



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[WWW.NCCOAST.ORG](http://WWW.NCCOAST.ORG) See our webpage for more information on rain gardens and Low Impact Development.

For more information about the Lockwoods Folly project, contact Mike Giles at [mikeg@nccoast.org](mailto:mikeg@nccoast.org).

*Please recycle.*