

## 'Rain gardens' filter storm water naturally

*Filters: Deceptively inconspicuous islands of vegetation drain storm water and keep pollutants out of streams and the Chesapeake Bay.*

On the Bay: Tom Horton

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LARRY COFFMAN has promised to change forever the way I look at development, so it's underwhelming when he pulls into exhibit A, an old IHOP in Bladensburg.

Amid its asphalt and brick surrounds of highways, strip malls and parking lots, the pancake house features a single, smallish island of greenery to one side, maybe 60 feet by 20.

But the little outpost of nature, with its shrubs, lush grass and native wildflowers, is far more than a belated nod to landscaping, Coffman explains.

It is a "bio-retention cell," or "rain garden" -- an example of how development might proceed around the Chesapeake Bay without its current, guaranteed degradation of adjoining waterways.

The IHOP rain garden, in its sixth year, is situated to collect the rain washing off about 2 acres of mall and parking lots.

It filters this storm water, polluted with everything from grease and fertilizer to toxic metals, through layers of strategically placed mulch, soil and sand, extensively cleansing it.

Beneath that is a pipe to drain to the Anacostia River what little storm water doesn't trickle into ground water, which in turn will feed the river in dry weather, seeping through its bed and banks.

I wondered how long one little rain garden could perform this trick without needing expensive replacement.

Coffman says best estimates are "a minimum of 120 years. There's enough biological activity in the soil, with microbes and earthworms, that it's virtually a self-sustaining process."

Rain gardens are just one of a large suite of techniques that Coffman, a Prince George's County environmental official, has refined as "low impact development."

It is a strategy to mimic nature, to filter rainwater through the landscape to reduce the storm-water pollution that has degraded more than 2,000 stream miles in Maryland already.

"It seems obvious, and it is, but no one was doing it," says Coffman. Conventional storm-water controls have until recently been all about whooshing rainfall off developments as quickly as possible.

Thus, we have our gutters and downspouts leading to concrete curbs, leading to storm drains and pipes. These all concentrate the pitter-patter of raindrops into a blast of water that destroys streams' aquatic life through physical force more than through pollution (though pollutants cause bigger problems as they move toward the bay).

Maryland and other states in the bay region began about 20 years ago requiring developers to build ponds to catch storm water and take the edge off its destructiveness.

Tens of thousands of these exist throughout the bay watershed (3,000 in Fairfax County, Va., and more than 1,000 in Prince George's County).

Such Band-Aid approaches helped, but not nearly enough. They also created a huge and costly infrastructure -- Prince George's County spends more than \$6 million a year to inspect and maintain its storm-water system.

"We don't think we can continue to afford this, and we're one of the better-funded counties [collecting \$23 million annually from a storm-water tax on property owners]," Coffman says.

For the bay, finding better ways to handle storm water is critical. It is the fastest-growing source of pollution in the watershed, though not as large as sewage and farm runoff -- yet.

On the Patuxent River, draining fast-developing Central Maryland, urban storm water's contribution of nitrogen and phosphorus, two major bay pollutants, has surpassed sewage and agriculture in recent years, based on U.S. Environmental Protection Agency estimates.

New concepts such as Smart Growth that force development into ever-denser patterns make storm-water management all the more urgent, Coffman says.

His next stop is Somerset, a several-year-old development of 200 single-family homes on 85 acres, where the builder used low-impact techniques.

It looks like typical suburban housing, lacking sidewalks, curbs and gutters on the houses. Rain gardens, set in shallow depressions, dot the expanses of lawns. Open drainage ways -- grassy swales graded into the site during development -- substitute for pipes to carry storm flows.

"What you have here is hundreds and hundreds of windows for the runoff to soak in, to move slowly instead of fast," Coffman says. Three more subdivisions in the county are planning low-impact designs, he says.

Somerset was a first cut. Coffman thinks "we have the tools now" to design developments with virtually zero storm-water impact.

If there's a knock on Coffman's techniques, it's that they require a fundamentally different approach, where pollution control drives the whole development process.

It's absolutely the way to go, but will developers do it widely? Maryland's new, tougher storm-water rules embrace low-impact techniques but don't do enough to make them happen.

But it's high time we move beyond painting "Chesapeake Bay Drainage, Don't Dump" on storm drains. We need to eliminate the need for storm drains.

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