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From runoff to rain gardens: A new way to aid Puget Sound

Plants, special pavement cut pollution

Diane Huber

Lacey and Thurston County are considering cutting fees and expediting permits to encourage more environmentally friendly **developments**.

The city and county are among 19 jurisdictions around Puget Sound that are rewriting building codes to encourage developers to use porous pavement and native plants instead of traditional curbs, gutters and pipes for routing excess stormwater.

Picture beds of lush, native plants and grasses in the middle of parking lots and along neighborhood streets. Also, imagine streets and parking lots made of small squares of pavement that allow rain to seep through the cracks.

These **low-impact** projects would keep stormwater on-site, instead of running off and carrying pollutants into streams, lakes, rivers and Puget Sound, harming water quality and fish habitat.

Rain gardens and porous pavement already are popping up throughout the region. But no developers have tried a subdivision that would create no runoff - one with streets made of porous pavement that are narrower than 24 feet and in which 60 percent of the native trees and plants remain.

That's what's needed to help save Puget Sound, some city officials and **low-impact** proponents say. "If you really want to help a watershed ... then you've got to move toward that zero effect standard," **low-impact development** engineer Tom Holz said.

A lack of interest in **low-impact developments** is what prompted Lacey and Thurston County to pursue a grant issued by the Puget Sound Action Team, which was created by the Legislature in 1996 to restore Puget Sound. "We need to find a better way of mimicking the natural hydrologic cycle," said Scott Clark, a senior planner with the county's water and waste management division.

Creative incentives

Water quality suffers when even a small percentage of a watershed is covered with pavement and rooftops, said Bruce Wulkan, stormwater program manager for the action team. In a forest, all but 1 percent of rainfall is absorbed. Water not absorbed into soil often becomes polluted. "In a normal suburban environment, it's more like 20 (percent) to 30 percent runoff," Wulkan said.

To help local governments reduce stormwater runoff, the action team secured \$225,000 from the state Department of Ecology, the U.S. Environmental Protection Agency and the state's water-quality account. The grant paid for engineering firm AHBL of Tacoma to make recommendations to the 19 jurisdictions.

The recommendations include reducing utility rates and reducing permit fees for **low-impact development** projects. Communities could allow "clustering" - building houses on smaller lots and doubling the open space areas, said Len Zickler, owner of AHBL.

"The smaller the lot, the shorter the streets or the narrower the streets, the less it's going to cost"

developers, he said. And less pavement means less runoff.

The firm provided recommendations to Thurston County last year and will meet with Lacey this month. The county's **low-impact development** committee plans to review AHBL's recommendations and then make recommendations to the planning commission and board of commissioners, Clark said.

The committee even might recommend mandating **low-impact development** in certain ecologically sensitive areas of the county to protect salmon and shellfish beds, he said.

Costs vary

With environmentally friendly **developments**, some things cost more and some less.

One reason developers are hesitant to try a zero-runoff project is that pervious concrete costs about 25 percent more than regular concrete. And porous asphalt costs also can be higher.

However, stormwater ponds can cost less. Developers can reduce by two-thirds the size of stormwater ponds by implementing **low-impact** techniques. Stormwater ponds can eat a quarter of site **development** costs, which include clearing, grading and preparing for buildings, roads and utilities, Holz said.

Stormwater ponds also consume up to 10 percent of land in a new subdivision, said Andy Haub, Olympia's water resources engineer. Reducing the size of the pond means there's room for additional lots.

Other costs are a wash. Narrower road widths and smaller lots mean **lower** costs for developers, but planning the projects and additional site requirements can cost more, said Janine Smith, project manager for Triway Enterprises, which developed Cooper Crest, a **low-impact** subdivision in Olympia's Green Cove Basin. "It has been our experience that **low-impact development** methods are not cost-saving and often require significantly more planning and engineering," she wrote in an e-mail.

Zickler is optimistic things are changing. "We're finding buyers who are demanding residential product that is environmentally responsible," he said.

Examples that worked

Suzanne Griffin and Vivian Blanco, owners of the Lotus Spring medical building in west Olympia, used rain gardens, pervious pavement in the parking lot and other green building techniques when they built the facility three years ago. That meant they didn't need a stormwater pond or in-ground tubes to hold excess stormwater. In addition, it created a garden area that thrives in moist, healthy soil.

"You have to landscape anyway, and you're killing two birds with one stone," Griffin said.

Because of the limited pavement, Lotus Springs only pays a \$2-a-month stormwater bill.

Olympia charges an average of \$8 per 2,500 square feet of impervious surfaces, which include parking lots, sidewalks and roofs. That could equate to significant savings for a large **development**, Haub said.

Other earth-friendly **developments** also make sense from a cost standpoint. Bellingham installed rain gardens in two parking areas and saved 75 percent of the cost of putting in a traditional, in-ground vault, costing \$18,400 instead of \$80,400, according to an action team report.

Olympia installed several sidewalks made of pervious concrete this year, said Gerald Opdahl, owner of Chehalis-based Nova Contracting, which did the job. "It's very cost-effective. It can be very

challenging finding stormwater storage in an already developed neighborhood," Haub said.

Wulkan is optimistic such examples will encourage more people to look to at environmentally friendly **developments**. "I think it needs to become more in the mainstream," he said. "It needs to become common sense."

Low-impact examples

- Lotus Spring medical building on McPhee Road used pervious pavement and rain gardens.
- Lacey Downs shopping area on Lacey Boulevard and Homann Drive has rain gardens in the parking lot.
- The corporate center on Yelm Highway and Corporate Center Loop has rain gardens and pervious pavement.
- The Seminar II building at The Evergreen State College has a rain garden on the roof.

Low-impact techniques

Pervious pavement resembles squares of pavement that allow water to seep through the cracks and holes between them. Porous pavement is textured like cork and allows water to pass through. Olympia charges \$8 per 2,400 square feet of pavement as its city stormwater fee, so using part or all pervious pavement can significantly reduce those costs.

Rooftop water can be piped and groundwater can flow to rain gardens along parking lots and roads. The gardens are designed with a dip to collect water and contain native plants and grasses to help absorb and filter water.

Vegetated, or green, roofs are a specially designed garden for the roof that absorbs rainwater. The less turf-style lawns, the better, because lawns don't absorb water as readily as garden areas and they often require chemical fertilizers.

Diane Huber covers the city of Lacey and its urban growth area for The Olympian. She can be reached at 360-357-0204 or dhuber@theolympian.com.

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