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## Crews “planting rain gardens” at Pennichuck Square

From the street, the Pennichuck Square cluster of stores along Route 101A doesn't look like it's on the edge of a sensitive environmental area.

That section of Amherst Street, at the western edge of Nashua on a little spit of land in Merrimack, is about as heavily developed as a road gets, with four lanes of traffic whizzing by in either direction. There are stores and strip malls as far as the eye can see.

Yet a brief walk to the back of the site reveals a different picture.

From the northeast corner of the 2.6-acre site, a vast wetland known as the Pennichuck Brook becomes visible. This wetland is literally a few feet from a storm drain that dumps runoff water directly into the brook, which happens to be part of the Pennichuck watershed. There's nothing illegal or even unusual about the drain. It's been standard operating procedure for developers to direct runoff to the nearest possible exit. More recently, communities have been demanding more from developers to curb polluted runoff.

“It's only in the past 20 years that people realized the way we do it now isn't working and it's really harmful to the environment, said Eileen Pannetier, an engineer working to redevelop the parking area at Pennichuck Square with more eco-friendly techniques.

Both the town of Merrimack and Pennichuck Water Works were looking for a willing landowner along the road to allow some storm-water improvements on their land, according to Pannetier.

The owners of Pennichuck Square, Renwood Cos., agreed. Plus, it didn't take much arm-twisting considering the project was paid for mostly with funds from the town of Merrimack, the state Department of Environmental Services and Pennichuck Water Works.

This is a project where all parties came together and seemingly everyone wins. Pennichuck gets a piece of its watershed protection plan implemented, the state makes progress toward its goal of reducing runoff pollution, Merrimack gets a project that it can use as a model for other developers, and the landowners get a happy green hue.

In all, the project will cost about \$90,000 to \$100,000, Pannetier said.

Already crews have been busy at work at the site at the corner of 101A and

Continental Boulevard. The techniques are pretty simple, explained Matt Lundsted, a project manager for Comprehensive Environmental Inc. Typically, parking lots have been dressed up with plants and trees to make them look a bit softer on the eyes. But look closer next time - these landscaping pockets are often in raised beds and surrounded by curbing. A typical design is to put a drain right at the base of one of these islands.

The green development takes the opposite approach. Instead of being raised, the beds are dug 4 feet deep, filled with crushed stone and capped with a spongy, organic soil. The top of the bed is sunk below the grade of the asphalt. After a heavy rain, polluted runoff goes into these rain gardens instead of going down the drain.

On an industrial level, these rain gardens are called bio-filters. The Pennichuck Square site will have several. In the back of the lot, raised curbing that directed all runoff water into the drain headed for the brook has been removed. Instead the water will trail off into a swale in the woods and be filtered and absorbed by the soil and the plants.

"If we could get everyone to do this, you'd really see a dramatic impact," Pannetier said. So far, the project is only about 10 percent to 15 percent complete.

When it's finished, the amount of runoff going into Pennichuck Brook will be reduced by 80 percent or more, Pannetier said. Instead of about 2.8 million gallons of runoff flowing into the brook from this site, the amount should be closer to 500,000 gallons.

This type of project is especially easy to do with new development, and can be done as parking lots need to be repaved.

"One of the purposes is to show cost-effective techniques - green development doesn't have to be more expensive," Pannetier said.

"It doesn't cost much but the benefits are very real."

Pannetier puts it this way: These green techniques, called "LID" for low-impact development, are just common sense. The problem is getting people to see it that way.