townonline
BUILDING COMMUNITY

Kinch: Raingardens and our water supply

By **Jim Kinch**
Friday, June 16, 2006

There has been a lot of talk over the past few weeks about 50-year storms and 100-year rain events, and while we all talk about the weather and its effects there just isn't much that the average citizen can do about it. But there is a relatively simple technology on hand to provide a solution to the detrimental effects of stormwater and uncontrolled runoff. Technically termed the bioretention cell or more familiarly a Raingarden, the concept is to catch and clean the first flush of storm runoff And Cohasset, through the efforts and support of the Water Department, will soon be host to one of the largest applications of this technology in the Northeast.

Stormwater quickly flashes off the lawns and streets and into the gutters, gullies and sewers, after all, storm sewers were designed to move this excess water away from where it's not wanted. With this torrent flow sediment, animal waste, vegetation and trash, picked up along the way are eventually deposited into the receiving streams, ponds, lakes and harbors. Nutrients, natural growth promoters, and pollutants are part of this floating and dissolved debris and deliver a dramatic impact to the receiving waters. Over enrichment is a major problem to the water quality of Lily Pond, Cohasset's drinking water source. Algae blooms and excess plant growth lead to increased turbidity, reduced quality and off tastes in water. None of these is a good thing for any water body but are especially detrimental to a drinking water source.

Over the past 18 months the Cohasset Water Department has been quietly preparing to construct a series of raingardens that should dramatically improve water quality in Lily Pond. This technology is not a high-tech, expensive or mechanized treatment but one based on Low Impact Development or LID. LID refers to techniques that are low technology, unobtrusive and effective and, in a word, elegant. A raingarden is just such an application.

In two presentations in May, Mike Clark, an engineer and senior associate with Norfork Ram LLC of Plymouth and consultant for Cohasset Water presented an introduction to the program. Before an audience of citizens and members of the Cohasset Garden Club at St Anthony's Parish Hall, Clark outlined the plan for construction of 50 raingardens in the watershed of Lily Pond. Construction has already begun with five completed and many of the remaining gardens are expected to be installed by winter.

In his discussion he described the engineering and construction detail and outlined locations. "The goal of this program is to slow the rate of water movement, to capture the first inch of rainfall, and remove the sediment and reduce the nutrient load reaching Lily Pond. Raingardens are the most cost effective application of LID the Water Department could employ to improve and protect the water quality of the Pond," Clark said.

Last year a demonstration bioretention cell was constructed adjacent the parking lot at the water plant within 60 feet of Lily Pond. Clark explained, "We used this site as a test bed to work out the system. Our landscape consultant employed three distinct plant communities to display the variety of plants that will be used in the neighborhood installations. We played around with different mixes of engineered soils until we came up with the right combination of coarse sand, loam and hardwood mulch. The formula we developed provides the perfect media for retention of water and beneficial bacteria. I was pretty excited to see the clear water leaving the garden after the first major rain event!"

Engineered system

A raingarden is an engineered system for retaining and redirecting runoff, its holding capacity lowers water velocity and uses gravity and engineered soil mixtures and healthy bacteria to reduce suspended solids and sufficiently cleanse the water of pathogenic bacteria, and dissolved mineral nutrients. Raingardens are layered in-

ground systems consisting of slotted pipe imbedded first in pea stone then gravel then covered with an engineered soil and finally overlaid with a garden of select hardy plants. These structures will replace the familiar common open sewer grates in public right of ways at designated sites to act as passive systems to control and clean runoff water heading into Peppermint Brook before it reaches Lily Pond. Installed structures are now on Pond Street, by the high school, King Street, along the driveway of the water plant and at the end of Arrow Wood Rd in Veterans Park.

Home lawns are very poor at absorbing rainfall so most excess water ends up in streams and eventually in our lakes and harbors. The raingarden's cleaning features uses plants and filtering soil bacteria scrub the rainwater of sediments, minerals and harmful bacteria and reduce the water velocity in its path to the sewers and streams. And most importantly these are passive systems requiring minimal maintenance for peak efficiency. In a monitored raingarden study at the University of New Hampshire, oil and greases and dissolved heavy metals contaminants were reduced by 100 percent with nutrient pollutants (nitrates and phosphates) reduced by more than 40 percent, when compared to the non-treated storm sewers.

So check out the contract crews over the next few months and stop by the demonstration raingardens at the water plant on King Street. Clark figures with a good construction season we could have nearly 40 sites installed this year. In any case you may see Clark checking each installation, tracking progress, making adjustments and monitoring each incremental improvement in stormwater, like a proud parent, engineers are like that. This program is partially funded by EPA 319 grants with matching funds from the Cohasset Water Department. The Cohasset application is thought to be the largest of its type in New England.

Jim Kinch is a member of the Water Resources Protection Committee.

E-mail article Graphic version Most popular

Recent articles

- How sweet it is
- Second forum gets down to business
- Police recover car with Lojack system
- Jury clears town in harassment suit
- We waited... for that?

Today's most read Town Online articles Updated 9:45 AM ET

1. Local events(1702)
2. Regional events(1700)
3. **Local Events** (1681)
4. Arts calendar(1676)
5. **Regional Events**(1668)

Search the site

Enter Keywords all relevance Go!