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## **Woonasquatucket River Stormwater Management 2.0 - by Jim Riordan**

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The following is an update to an article that was published in NEREJ on March 1, 2024.

The Woonasquatucket River begins in the swamps of North Smithfield, R.I., flows through downtown Providence, and merges with the Seekonk River at the head of Narragansett Bay. Known as the location of the annual “Waterfire” demonstration each summer in Waterplace Park, not far from the Capitol building, the Woonasquatucket River is considered to be impaired (i.e., polluted) by pathogens, heavy metals, and nutrients. Sources of pollutants include wastewater, stormwater, and historic industrial discharges. The river is also considered a significant source of pollutants to Narragansett Bay and contributes to shellfishing closures and loss of recreational resources. Although pollution abatement has resulted in a much cleaner river and bay, much work remains to be done.

Needing funding assistance to alleviate the impacts of pollutants to the river, the town of North Providence sought grant moneys from the Rhode Island Department of Environmental Management through the Narragansett Bay and Watershed Restoration Bond Fund. The grant funding has helped defray the costs of implementing stormwater best management practices (BMPs) at two sites to address the flooding and water quality issues in those areas.

Professionals now with Weston & Sampson helped the town apply for and secure over \$190,000 in grant funding to assist in the town’s efforts. Design work is now complete, and implementation is underway – including construction of various green infrastructure BMPs along the river to address nutrients.

With funds in hand, the town retained Weston & Sampson to provide construction management and oversight for the installation of a variety of stormwater BMPs at town-owned outfalls. The intent of these BMPs is to infiltrate stormwater runoff on site before it enters the town’s stormwater management system, with any overflow being directed back into the system. By capturing and infiltrating the runoff like this, the BMPs not only reduce the amount of runoff entering the town’s system, but they also improve water quality in the river through the infiltration process itself.

Most recently, the town has installed a large stormwater BMP on North Elmore Ave. on a heavily vegetated and underutilized town-owned lot. Designed as an amenity to cascade stormwater, the BMP diverts the runoff from a preexisting underground pipe network through three pools lined with large stones, reminiscent of a rock wall and low-profile waterfalls. It is beautifully landscaped with park-like features.

DPW director, Bernie Salvatore, added several aesthetic touches and safety features, including white vinyl fencing to prevent the BMP from becoming an “attractive nuisance” to local children. The

fence was installed on a planting berm and is lined with trees and other landscape features that help create screening as requested by abutters.

Several trees, primarily invasive Norway maples, needed to be removed to allow for BMP installations and were replaced with attractive, quick-growing natives that will screen the views as the maples had. Some neighbors had concerns about how the BMP would be sited and affect their views, so it was landscaped to address these issues and accommodate such concerns.

From the standpoint of stormwater treatment and hydraulics, the pools function as grassed sand filters and provide excellent water quality treatment for pathogens, nutrients, and heavy metals, which are all a water quality concern for the restoration of the Woonasquatucket River. As noted by Bernie Salvatore: "Working with the town council, any time you clean up stormwater to the surrounding area is great. Any council would sign on. Everyone contributes to stormwater pollution and so everyone should have an opportunity to be involved with cleanup. Looking at the site today and the way it's cleaning up water is a huge accomplishment! Each day we drive by is a reminder of the contribution that we're making to clean water."

Salvatore also offered kudos to the installation contractor. "Cassisi Brothers construction worked closely with the town to remove a massive amount of ledge. They crushed it at the site and reused it and then ringed the entire site with a natural rock wall. The employees of Cassisi were outstanding and very easy to work with."

In addition to cleaning up the river, DPW used the installation as an opportunity to clean up old debris, like yard waste and occasional large household items, that had been dumped at the site.

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