

Site photo depicting the final construction efforts completed in 2014. Remaining construction tasks, including plantings, are scheduled for spring 2015.

From Industrial to Oasis

A look at lot-level stormwater management for businesses in the Greater Toronto Area.

BY ERIC MELITON AND ALYSSA CERBU

THE GREATER TORONTO AREA (GTA), home to more than nine million people and nine watersheds, has felt a strain in the past few years on its once robust stormwater management systems, making it more pertinent to look at different approaches to managing stormwater in the GTA.

One approach being explored by Partners in Project Green (PPG)—a group run within the Toronto and Region Conservation Authority (TRCA)—is to engage private companies to adopt lot-level stormwater management techniques and facilitate the implementation of low impact development technologies for the industrial, commercial, and institutional sector.

Stormwater management in GTA

Although the City of Toronto was once considered to have sophisticated storm sewer infrastructure and flood management systems, the growing threats of population increases, urban sprawl, and climate change bring to question the robust design of these current systems. The city's infrastructure is aging and traditional modes of stormwater management alone (such as detention ponds, retention basins, and piped drainage systems) may not hold up against the potential threat of more frequent and intense storm events, such as the 100-year storm experienced on July 8, 2013.

In conjunction with the aging infrastructure issue, the City of Toronto faces growing water quality concerns related to both stormwater management and surface water quality, measured through indicators

like total phosphorous, *E.coli*, and benthic macroinvertebrates levels. Though Toronto's nine watersheds have improved in both of these areas on their watershed report cards, they are still met with water quality challenges. One way to look at tackling both of these problems is to take a closer look at lot-level stormwater management practices, such as green roofs, rainwater harvesting, and low impact development technologies, including permeable pavement, rain gardens, and bioswales.

Numerous partners, greater results

Calstone Inc., a furniture manufacturer in Scarborough, wanted to tackle some of these stormwater issues as well as beautify their property for their 30th anniversary in September 2015. After receiving the Earth Day Hometown Heroes award from the City of Toronto for a small rainwater harvesting project, Calstone approached PPG for further assistance. Using available capital project grant funding provided by its water stewardship team and from the Ontario Ministry of the Environment and Climate Change's Showcasing Water Innovation program, PPG was able to help scale-up the project to include a 9,300-litre rainwater harvesting tank, three infiltration ponds, and a recycled materials walkway.

The project's construction and maintenance plans were developed and reviewed by Grounds Covered Landscaping, XCG Consultants Ltd., and the Sustainable Technologies Evaluation Program (STEP) run through the TRCA.

Site photo depicting the fully developed location after project implementation was completed in November 2014.

Site photo depicting the undeveloped location before project implementation was started.

After completion of Phase I, four of Calstone's six roof downspouts are disconnected to feed into the retention tank. This tank overflows and feeds into the two ponds that provide temporary water storage and infiltration functions while the third pond functions as an eye-catching permanent water feature. The official planting of drought resistant and native plants, shrubs, and trees will be completed in spring/summer 2015 in addition to the testing and monitoring of the unique stormwater management system design.

Dean Young, project manager at STEP, said, "The understanding gained from evaluating the treatment and cost-effectiveness of this system will be used to inform decisions about future private-property retrofits across Southern Ontario." With the completion of Phase 1 and the help of all the project partners, Calstone Inc. will be able to divert 1.8 million litres of rainwater from aging City of Toronto sewer infrastructure to ultimately benefit and restore the local

watershed, the Highland Creek."

In 2016, Phase 2 of the project will begin, which involves disconnecting the remaining two downspouts, installing an additional rainwater harvesting tank, and constructing a permeable pavement parking lot. Not only will Calstone showcase a variety of different stormwater management and low impact development technologies, but they will also meet their goal of capturing 100 per cent of their roof rainwater and remove themselves from the municipal water supply through water re-use projects within their facility.

Stormwater project replication

By showcasing the successes of this project, it is the hope that other industrial, commercial, and institutional properties across the GTA and Southern Ontario see the value in mitigating the risks of on-site flooding, while simultaneously reducing the burden on aging stormwater infrastructure and

becoming stewards for a local watershed.

As of April 2015, PPG had more than 80 companies in its official membership and more than 20 technology vendors, landscape architects, and engineering consultants within their stormwater infrastructure vendor network. The network is positioned to speed up the implementation and replication of lot-level stormwater management systems. With a greater number of on-site stormwater projects, a larger volume of water can be treated and captured, building resiliency within local water management infrastructure and implementing solutions necessary to combat urbanization and the growing risks of flooding. [wc](#)

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