

Partners in Project Green Webinar: City of Mississauga's Stormwater Charge and Suspended Pavement Systems

Questions and Answers

City of Mississauga

Certification

For the supporting documentation, is it a requirement that it be certified by an engineer or just a preference? What about for past management programs that have no P.Eng certification?

It is a requirement that the supporting documentation be certified by a licenced professional engineer, qualified in the field of stormwater management with a good understanding of municipal engineering as it relates to storm drainage.

The certification by the engineer must confirm that the stormwater best management practices (BMPs) achieve the performance targets of the stormwater credit categories being applied for and, if constructed, that they were built/installed in accordance to the drawings and details provided in the application, are operational and in a state of good repair. It is expected that supporting information will include drawings, details, calculations, modeling results and any other relevant information to describe the BMPs and how the credit performance targets are achieved. The original professionally prepared engineering or landscaping plans may be used as part of the application package, provided they accurately reflect the current configuration of the BMPs, otherwise new drawings may need to be prepared to describe how the BMPs have been constructed.

For the P. Eng certification, is that certification based on an info works model at design stage or by in situ monitoring during performance of BMP? Is credit evaluation based on model (eg., info works) or monitoring?

Certification is required of the following:

1. Hydrologic and hydraulic calculations and/or modelling results which demonstrate the expected performance of the stormwater best management practices (BMPs).
2. BMPs being constructed in accordance with submitted drawings and/or designs
3. BMPs being operational.

Monitoring data of the operational performance of the BMP will be accepted as supporting documentation, but is not required for certification.

Will the city accept certification from OALA members? So for water quality would you require both OALA and P.Eng. Certification if you use a treatment train approach i.e Oil Grit Separator and Bioswales?

The certification by the professional engineer qualified in the field of stormwater management must confirm that the stormwater best management practices (BMPs) achieve the performance targets of the stormwater credit categories being applied for and, if constructed, that they were built/installed in accordance to the drawings and details provided in the application, are operational and in a state of good repair. The engineer is also expected to ensure that the supporting documentation describes the BMPs accurately and in sufficient detail for the technical reviewer to evaluate the application. Should the design of the BMPs necessitate expertise beyond the field of stormwater management, it is acceptable that drawings submitted in support of the application have been prepared by other professionals, such as OALA members, structural engineers, and so on. However, the certification of the credit performance targets being achieved by the BMPs, designed in whole or in part by other professionals, must be provided by a professional engineer qualified in the field of stormwater management.

Stormwater Credit Program

For the water quality credit, is a Stormceptor sufficient to achieve the credit?

An oil-grit separator device, such as those manufactured by Stormceptor and others, may achieve credits in the water quality category. The onus is on the professional engineer certifying the credit application to demonstrate the expected stormwater management performance of the device, in accordance with the evaluation criteria described in [Stormwater Charge Credit, Application Guidance Manual](#), through calculations, modeling results, drawings, reports or other technical documentation, as appropriate.

What are the parameters for the logbook?

The typical elements to be included in a log book for stormwater best management practices (BMPs) receiving an approved stormwater credit are:

- Dates of inspection and maintenance activities;
- Names, titles, and qualifications of personnel conducting the inspections and/or maintenance;
- Condition of each BMP, including functional components;
- Any other item that could affect the proper function of the BMP;
- Description of the need for maintenance;
- Description of maintenance performed; and
- Updates to the inspection and/or maintenance plans, as required.

So if you can meet the quantity control requirements for the site for example post to pre would that mean 40% reduction in cost?

Applicants who can demonstrate, in accordance with the evaluation criteria and supporting documentation requirements described in Stormwater Charge Credit, Application Guidance Manual, that the stormwater best management practices (BMPs) achieve the target of reducing the post-development 100-year peak flow rate from the impervious (“hard surface”) areas of the property to the theoretical pre-development 100-year peak flow rate would be eligible for a reduction of 40% on their annual stormwater charge, subject to approval of the application and any terms and conditions.

Why did you choose the 15mm rate?

The credit schedule, including Runoff Volume Reduction, was developed by staff in consultation with stakeholders representing commercial, institutional and industrial landowners, engineering practitioners in the field of stormwater management, and local conservation authorities. In the Runoff Volume Reduction category, a threshold of 15 mm is a value considered to represent over 80% of all rainfall events in this geographic area and therefore represents a significant volume of runoff that is serviced by the municipal stormwater system. Achieving this target of runoff volume reduction is expected to result in reduced wear and tear on the system, such as watercourse erosion, and cost savings to the City’s stormwater program.

Any requirement for ongoing monitoring of site performance in addition to inspection within the SW Credit program?

Performance monitoring is encouraged, but not required. Credit holders wishing to renew their credit shall provide evidence that acceptable operation, inspection and maintenance practices have taken place and that the BMPs are in a state of good repair. Performance monitoring logs could assist with demonstrating that BMPs are in a state of good repair.

Stormwater Charge Program

Why are residential homeowners not eligible for credit at this time?

Staff has carefully considered how to recognize homeowners who make efforts to manage runoff. Council asked staff to report on their research, which was summarized in the report “Stormwater Charge Implementation Update - Additional Information on Residential Program.” That report is available online as part of the [published agenda of City Council on May 27, 2015](#). (The report begins on page 54 of the file).

The report summarized staff research which found that financial rebate programs for residential properties typically have low participation rates and concluded that an Outreach and Education Program recommended in the report presented to General Committee on May 20, 2015 would represent the best value to realize a meaningful uptake of improved stormwater practices on residential lands in Mississauga.

In October, Council received and adopted a motion that a working committee of Councillors and staff be established to consider a credit program for residential properties with stormwater management measures and that the working group report back to Council in the spring of 2016.

What is the expected total financial contribution to the S/W fund in 2016, and what will this fund go towards? How will decisions be made to allocate funds?

The City expects revenue of \$33.0M in the year 2016, of which \$20.7M or 63% will be spent on infrastructure renewal and \$12.3M or 37% will be spent on operations and maintenance. Of the infrastructure renewal component, \$8.9M will be spent on capital projects. Examples of capital projects within the Stormwater Program include watercourse erosion control, stormwater management facility dredging, flood relief works and trunk sewer rehabilitation. Operating activities include watercourse monitoring and maintenance, by-law enforcement, storm sewer monitoring and catch basin cleaning. The stormwater charge will also provide funds to a storm pipe reserve to be used as these assets reach the end of their lifecycle.

Similar to other service areas across the City, the 2016 Stormwater Budget and Business Plan is presented to Budget Committee then Council for review and approval this fall. It is available here:

<http://www7.mississauga.ca/Departments/Marketing/stormwater/stormwater-charge/img/2016-stormwater-budget-summary.pdf>

Deeproot

What is the typical life span of either of these systems?

Each product will have a different lifecycle. For example the Silva Cell has an estimated design life of 100+ years. When properly designed and installed, the units themselves are not expected to require maintenance within their design life. The suspended pavement system as a whole will have a different lifecycle depending on the application and location of the installation.

What is the frequency of cleanouts for the Toronto system?

The frequency of cleanouts for the Toronto system was initially 6 months. Due to a lack of TSS material in the distribution pipes, the City of Toronto decreased the frequency of cleanouts to one year and later to 18 months. The city has not found any accumulated TSS in the distribution pipes to date. The CB sump is cleaned on the normal municipal cycle. Municipalities that have a higher TSS load may need more frequent cleanouts and each city needs to adopt a maintenance cycle that reflects their site conditions.

Which department at the city is maintaining it?

Toronto Water

What is the biggest challenge or barrier to getting more use of the soil-cell system in municipalities? Is it the same across country, or different depending on provincial or municipal regulations? Any suggestions on ways to address these barriers?

The two biggest barriers to use are Cost and future O&M.

Capital Cost:

Soil Cell systems do have higher capital costs than traditional tree planting methods and day-lighted bioretention facilities. However they also provide more value. Getting municipalities to see the Cost Benefit advantage and the Life Cycle value that large mature trees and LID solutions provide is key.

The implementation of soil volume standards for trees and Stormwater credit systems is an acknowledgement that cities understand this equation.

O&M:

The installation of Soil Cells means that the tree and its soil volume are now sharing the public right of way. That means you need to be able to address the justifiable concerns of both the utilities and public works departments with respect to how they can do future maintenance and repair around the systems without incurring undue expense. Education and a proven O&M manual goes a long way to address their concerns.

Has there been any feedback from City of Toronto operations staff on the Queensway pilot? Any specific design concerns? How have the trees survived?

The Queensway pilot project is a monitored site. The City of Toronto is expecting to have data to report on the performance of the system in 2016. We are hoping that they will be reporting at the TRIACA conference next year. As this was a pilot project there were lessons learned which we have applied to subsequent installations. The trees are doing very well and look healthy. They were planted in 2009 and now are around 9" DBH.

Have there been any efforts to determine how natural woodlot areas or parks manage storm water vs paved areas?

The study published in *Urban Forestry & Urban Greening* (2013), [The effect of street trees and amenity grass on urban surface water runoff in Manchester, UK](#) written by D. Armson, P. Stringer, A.R. Ennos found that, while grass almost totally eliminated surface runoff, trees reduced runoff from asphalt by as much as 62%.