



MEMORANDUM

City of Kitchener
City Hall, 200 King St. West
P.O. Box 1118
Kitchener, ON N2G 4G7

Date: August 4, 2011
To: Steering Committee Members
From: Nick Gollan and Nancy Corbett
cc: Project Team Members
Subject: **Credit Policy Development – Memorandum #2**
Description of Alternatives

INTRODUCTION

In municipalities that have implemented a stormwater rate, development of a credit policy generally affects the manner in which new developments are built; since some jurisdictions offer credits to properties that are below defined impervious cover targets. Credit policies have also motivated existing property owners to either reduce their impervious cover or reduce their directly-connected impervious area in order to achieve a reduction in the stormwater rate. Reducing the impervious area on a property may result in more significant rate reductions as compared to the rate reductions seen when receiving stormwater credits or rebates. For existing properties, typical examples of ways to achieve a stormwater rate reduction could include implementing treatment train approaches, such as redirecting parking drainage into vegetated swales that absorb, evaporate runoff and reduce runoff volume and pollutant loading to the outlet.

Problem Statement

The purpose of this memo is to provide a description of the various alternatives that will be considered in the development of the credit policy. As per the process described in Memo #1, the intention is to follow the model used in the municipal class environmental assessment process. The first step of this process includes defining the problem for which a solution is to be found.

“To develop a stormwater credit policy, as required by the approved council bylaw, which will incentivize private properties to implement and properly maintain stormwater management measures and reward private properties with existing stormwater facilities which achieve such objectives as reducing flooding and preventing pollutants from entering our watercourses. These measures in turn should result in a reduced loading on the municipal infrastructure.”

Concept of credits and rebates

As outlined in Memo #1, an internet based research was conducted of the existing stormwater utilities in North America including their credit programs. Based on this research, there has been a noticeable relationship between the attractiveness of credits (as determined by the number of credit applications) and the stormwater rate charge. At low rates (e.g., below \$3 per billing unit per month) there does not appear to be much interest or motivation to apply for a credit. Ratepayers are generally motivated to take advantage of stormwater rate credits when

the rate is high (e.g., above \$6 per billing unit per month) which effectively means there could be a larger uptake in any program by the properties in the higher rate tiers.

It is difficult to quantify the “pay off” to municipalities that adopt a credit policy as part of their rate program as it will take many years of monitoring privately owned stormwater controls to demonstrate their impact on the system. Encouraging source controls supports many municipalities’ stormwater management policies and water quality initiatives and is therefore a benefit from an environmental perspective. Cost payoffs are less apparent and can vary with the density of development. In principal, implementing measures that reduce total runoff volume and pollutant loading discharge to the municipal SWM system will minimize the municipality’s capital expenses as well as some of the operating and maintenance costs. From the property owner’s perspective, however, the pay off (i.e., return on their capital investment) will depend on their unique site characteristics.

A *credit* program implies a continuous payment on regular utility charges of some percentage in perpetuity provided the property remains eligible to receive it. Under the credit model, users would see a regular credit payment applied to their stormwater utility fee. The credit program could be developed to apply to non-residential properties and/or residential properties. By contrast, a *rebate* program would offer a single lump sum payment to implement some form of SWM best management practice (BMP). Under the rebate model, users would see no change to their monthly stormwater utility fee. A *rebate* program could be developed to apply to both residential and non-residential land uses.

There are various ways to administer a rebate program for a municipality. The funding set aside for a rebate program could be used for demonstration projects on various property types such as places of worship and schools where many people will witness the outcomes of the project and share the news with other members of the community. Additionally, a contest could be established for the residential sector where home-owners could submit applications to make their property a demonstration project. Depending on the amount of funding set aside, up to a maximum upset limit (to be determined) could be awarded to successful applicants to be put to use to implement SWM BMPs. After implementation of the SWM BMPs for the demonstration project is completed, feature stories could be written to showcase the successful implementation and to communicate the success to the broader community. Another possible way to administer a rebate program would be to subsidize programs run through other organizations to enable expansion of the program.

The link between incentive programs and the behavior of property owners is more obvious in the water and wastewater industries, where incentives for people to install water-saving devices have drastically reduced their water consumption and wastewater generation quantities. Credit policies started in the 1970s, first with big industrial users who could achieve significant reductions in water use and thus yield a corresponding reduction in the size requirements for the municipality’s treatment facilities. Incentives for the smaller commercial and residential users came along in the 1980s, and although this reached out to more customers they did not achieve the same water volume reductions as the few, large water users.

In comparison, credit policies for stormwater rates are in the early stages of development. Like water and wastewater, incentive programs could initially target the property owners that contribute the largest amount of stormwater runoff first (i.e. large industries, shopping malls, colleges, schools, places of worship, etc.) before addressing the individual single family homeowners (e.g., credits for rain barrels, rain gardens, etc.).

GENERATING ALTERNATIVES

Subsequent to developing a problem statement, a number of alternatives were considered including a “Do Nothing” scenario as is typically done in an environmental assessment program. The primary options for consideration in the development of the credit policy are as follows:

1. Do Nothing
2. Non-Residential Credits
3. Residential Credits
4. Rebate Program
5. Combination of Alternatives (Option 2 & 3, Option 2 & 4)

The final policy will be made up of one of the five options or any combination of the options as deemed feasible and appropriate by the Steering Committee and Project Team members. This final alternative will also consider the input received during the public information centres as well as input from external agencies such as the Grand River Conservation Authority, etc.

As part of the alternatives, a review of common best management practices in the field of stormwater management was also undertaken to gain a better understanding of what each alternative should encompass in order to achieve the objective.

Common Best Management Practices

Stormwater management involves managing stormwater both at its source (volume diverted, pollution prevention) and through conventional “hard engineered” infrastructure which includes “conveyance” (storm sewer) and “end-of-pipe treatment” (stormwater management ponds).

Measures such as source control, source reduction, stormwater best management practices, stormwater abatement or mitigation each imply absorbing rainwater into the ground and/or preventing pollution where rain falls on individual lots or in the neighbourhood.

Examples of source control technologies or practices include:

- Rain gardens (a landscaped depression where plants and soils are designed to absorb and use water);
- Green roofs and green walls (using plants and soils to absorb and use the water before it hits the ground/pavement);
- Permeable/porous pavement (allows rain to soak into the ground under the pavement);
- Rain barrels and cisterns (to temporarily store and release rain water and allow it to soak into the ground on dry days);
- Rainwater harvesting and treatment system for the reuse of stormwater as an alternate source of water;
- Bio-swales (a long linear depressed, vegetated area where water can soak into the ground and plants can use the water);
- Urban forestry;
- Oil and grit separators that act to remove sediment and petroleum hydrocarbons to improve the quality of water before it reaches the stormwater system;

- Infiltration galleries and other underground systems that hold the water and release it slowly, either into the ground or on into the stormwater system after peak flow has passed; and,
- Behavioral changes (avoid polluting activities like leaving pet waste, spreading fertilizer, driveway car washing, flicking cigarette butts, applying driveway sealants, de-icing salts, etc.).

Source controlled stormwater can be utilized in the following ways:

- Watering vegetation, flushing toilets or other uses, thereby helping to reduce consumption of treated drinking water;
- Absorption into the ground for infiltration;
- Vaporizing into the air by evaporation and plant transpiration (called "evapotranspiration"); and,
- Temporarily storing stormwater in at-source control facilities before being released slowly (preferably into the ground for infiltration).

Impervious or hard surfaces that exacerbate stormwater problems include the following:

- Roof tops;
- Concrete surfaces (urban paths, pedestrian malls);
- Pavement (including driveways, streets, parking lots);
- Hardened shorelines (lined or banked with concrete); and,
- Bare soil (often during new or renovating construction soil is left bare and erodes easily during rainfall events).

Description of Alternatives

1) Do Nothing Alternative

This alternative would not involve a credit or rebate program and would not fulfill the requirements of the stormwater utility bylaw which was approved by council in June 2010. It would not address the problem statement as there would be no incentive to property owners to implement and maintain stormwater management measures on their site nor would there be a reduction in the reliance on municipal infrastructure.

2) Non-Residential Credits

A non residential credit program would involve providing non-residential properties with a credit on their monthly stormwater utility charge based on the volume of runoff (flood protection) captured on their site. It could also include a credit for measures which provide pollution reduction.

In the past, it has been difficult for the City to ascertain whether stormwater management measures on private properties are being maintained adequately. Large measures such as oil and grit separators and stormwater management facilities are generally only installed on non-residential sites. The implementation of a credit program for non-residential sites would provide an incentive for properly maintaining these systems and it would be to the City's benefit to require that sites which apply for a credit demonstrate that the best management practice (BMP) is functioning effectively.

Typically, credits are defined as percent (%) reductions applied as a credit adjustment to the rate category that is applied to the property in question. Credits would be additive for each credit category described below. As long as the BMPs are functioning as approved, as demonstrated by self-certification reports and municipality inspections, the credit will be applied to the charged fee.

Best management practices may provide a single benefit or a combination of benefits, in which case credits will be additive. As an example, the credit options could potentially have a maximum additive credit capacity of 50% and the key areas are summarized below:

Credit Category	Credit Points
Stormwater Volume Control Credit	(maximum 30%)
Stormwater Quality Control Structural BMP Credit	(maximum 20%)
Integrated BMP and Education Credit	(maximum 10%)
CREDIT SUBMITTAL (add 1, 2, and 3)	(maximum 50% of total rate charged)

The actual final amount of the credit points will be determined during the impact analysis to ensure sustainability and feasibility. For detailed information about a sample credit program refer to Appendix F.

The subsequent sections outline the details regarding the types of credit categories within the non-residential credit program.

Stormwater Volume Control Credit Portion

Stormwater volume control can be achieved through infiltration and extended detention by the following mechanisms:

- Careful installation of approved structural BMPs, including:
 - Infiltration ponds and percolation basins,
 - Infiltration trenches, and,
 - Extended (dry) detention basins;
- Preservation of significant vegetated open spaces; and,
- Porous Pavement.

If flows generated on-site and/or from upstream areas are directed through the BMP or are controlled with on-site vegetated open spaces, then a site would be eligible for up to a maximum of 30% credit. Credits for stormwater volume controls would be based upon hydrologic data, water quantity data, design specifications, and other pertinent data supplied by qualified professionals on behalf of property owners.

On-site volume control credits awarded for structural BMPs shall be generally proportional to the benefit that such systems have on complementing or enhancing the water quantity and quality benefits to the municipality's stormwater management system. Property access, adequate and routine facility maintenance, and self-reporting would be required to be provided by the property owner to the municipality to verify that the BMP structure is providing its intended benefit in order to receive credit reduction.

Stormwater Quality Control Structural BMP Credit

Stormwater quality control BMPs as identified in the Ontario Ministry of the Environment's (MOE) *Stormwater Management Planning and Design Manual* (2003) and the Credit Valley Conservation Authority's *Low Impact Development Stormwater Management Planning and Design Guide* (2010) would be eligible for a maximum fee credit of 20%. This credit will be based upon hydrologic data, water quality data, design specifications, and other pertinent data supplied by qualified professionals on behalf of property owners. Credits for on-site stormwater facilities would generally be proportional to the benefit that such systems have on complementing or enhancing the water quality benefit to the municipality's stormwater management system. In order to receive credit reductions as applied to the fee calculation equation, property access, adequate and routine facility maintenance and self-reporting must be provided by the property owner to the municipality to verify that the BMP structure is providing its intended benefit.

The actual percentage received will be determined through an evaluation of the system benefits provided at the time stormwater leaves the customer's property. BMPs may provide a single benefit or a combination of benefits, in which case credits would be additive. Structural BMPs that are eligible for stormwater quality control credits would include, but are not limited to the following:

- Vegetated Swales and Filter Strips;
- Buffer Strips and Swales;
- Retention (Wet) Ponds;
- Constructed Wetlands;
- Media Filtration; and,
- Oil/Grit Separators.

Integrated BMP and Education Credit

Credits may be issued for a property with ongoing implementation of an integrated suite of fundamental non-structural BMPs that will assist the City with meeting its stormwater management objectives. To receive a 10% credit adjustment as applied to the fee calculation equation, documentation must be provided to verify that the following BMPs have been met. Upon receipt of the completed stormwater credit application, application approval, and satisfactory onsite inspection to insure that all criteria are being met, credits would be applied. Examples include:

- Paved Area Sweeping Program
- Storm Drain Stenciling Program
- Salt Management Plan

Non-residential customers seeking a credit may request unique opportunities or approaches to improving water quality. For example, a retail outlet might provide "Park and Ride" space to encourage use of the transit system, thereby minimizing the growth of impervious area by reducing the need for additional parking lots and travel lanes on roadways. The municipality will review and evaluate these types of unique requests on a case-by-case basis to determine the credit value for a site to which the BMP is being applied.

Education credits are typically available to institutional properties since these types of properties have the ability to influence and educate a broader population base. Those institutional properties, public or private, wishing to receive fee credit for educating students and employees in the area of water quality awareness and protection would be required to agree to the following minimum standards, for example:

- Devote two hours per half year (four hours annually) to educating one grade level of students (or split between two grade levels) about water quality awareness and protection. Educational institutions will be required to submit programs or agendas to the municipality for environmental education sessions that will include information concerning number of attendees, time(s), place(s), and topic(s) covered during each session. The municipality may assist with providing materials for the education program. Pre and post session surveys would be recommended. Topics would be required to rotate on at least an annual basis, or become part of the curriculum for the same grade level each year.
- Devote fifteen minutes per quarter (or an hour annually) to educating employees about water quality awareness and protection. Additionally, provide basic stormwater management information to new employees. Topics must rotate on at least an annual basis.
- Post stormwater and water quality specific educational information may be obtained from the municipality, province/federal environmental agencies, or from any other reputable educational resource center student and employee frequented areas. Information posted must be clearly visible. Topics would be required to rotate on at least an annual basis. Copies of posted materials would need to be provided to the municipality.
- Distribute stormwater and water quality-specific literature obtained from the municipality, province/federal environmental agencies, or any other reputable educational resource center to target students and all employees on an annual basis and provide copies to the municipality with the annual self-report. Topics would be required to rotate on at least an annual basis.

3) Residential Credits

A residential credit program would involve providing residential properties with a credit on their monthly stormwater utility charge based on the volume of runoff (flood protection) captured on their site. It could also include a credit for measures which provide pollution prevention however it is noted that the greater source of pollution into stormwater management systems is from non-residential sites.

One methodology which could be utilized to determine a credit for flood protection could be as follows:

- A 50% discount could be applied if all roof drainage is fully retained on the property;
- A 25% discount could be applied when private on-site stormwater management detains or partially retains stormwater discharges from roof areas; and,
- A 10% supplemental discount could be applied if there are 4 or more trees on private property taller than 4.5 metres. This award would not apply to street trees such as those planted in an adjacent right-of-way.

The pollution prevention credit could be done by utilizing an educational survey which intends to influence the behaviors of residents when it comes to their daily actions that affect the quality of stormwater runoff. Specific behaviors to target include:

- Not washing vehicles in driveways or on other impervious surfaces;
- Picking up pet waste and disposing of it in the garbage;
- Minimizing the use of lawn fertilizers;
- Minimizing the use of de-icing salts;
- Properly disposing of used engine oil; and,
- Sweeping dirt into lawns and the garbage as opposed to into the street.

Specifics associated with this alternative will be developed subsequent to input from the public and steering committee members.

4) Rebate program

The rebate program would consist of a one-time subsidy on the capital cost of implementing stormwater controls (e.g. rain barrel, cistern, etc.). For instance, the Region of Waterloo has previously had a rain barrel subsidy program held once per year which the City could partake in or alternatively, create a different rebate program. It was assumed that this program would only apply to residential land use.

The methodology for calculating rebate amounts will be further investigated during the impact analysis stage of the credit policy development.

5) Combination of alternatives

This could involve providing non-residential credits and a residential rebate or providing non-residential credits and a residential credit.

Next Steps

The next stage of developing the credit policy will involve an impact analysis of the five (5) alternatives. The purpose of this analysis is to identify the necessary resources to implement each option, estimate the implementation costs for each option and ultimately determine the feasibility of implementing each of the options. The information gathered throughout the impact analysis will feed into the evaluation criteria that are to be established in September, 2011. For the impact analysis, each municipality will need to identify key staff in revenue, IT, engineering and any database administrators to evaluate what the impact of the various credit policy alternatives will be on their day-to-day operations and to determine the most appropriate place to store the newly required property asset information. This analysis as well as the effort required to implement each alternative will be outlined in Memo #3.