

Lake Wilcox Sustainable Neighbourhood Retrofit Action Plan (SNAP)

A Locally tailored Eco-Landscaping Program that represents a basis for broader impact.

Innovation SNAPShot

The Lake Wilcox Sustainable Neighbourhood Retrofit Action Plan (SNAP) demonstrates how a locally tailored program can engage a new public, connect residents and landscaping businesses and increase adoption of eco-friendly actions. The residential Eco-Landscape program promotes low impact development (LID) features that reduce stormwater runoff, improve water quality, conserve outdoor tap water use and promote biodiversity and beauty. Understanding values, needs and behaviours of the busy commuter families was an important first step. Key outcomes include:

- Front Yard Makeover demonstrations on private residential lots were extremely effective at attracting attention, influencing trends and generating interest in the program.
- Monitoring results indicate rain gardens can manage runoff from 13 mm rainfall events.
- Eco-Landscape Program was strategically designed to appeal to homeowners' interest in low maintenance landscaping that can be easily obtained.
- An estimated 12% of homes (384) installed an eco-landscape, surpassing the short term implementation target of 10%
- Cross promoted partner programs have seen double the rate of uptake in the SNAP area as compared to Town-wide, indicating the benefits of locally tailored promotions.

Relationships with local private landscape businesses set the stage for long term program delivery. Engaged local champions provide a network for promoting further eco-action. Strategic approaches and tools developed in the pilot neighbourhood may be applied more broadly in other neighbourhoods of similar demographic to realize greater return on initial investment.

Lake Wilcox
SNAP



Project Context and Goals

The SNAP has identified that eco-landscaping 50% of residential lots will help achieve long term neighbourhood targets for expanding urban forest from 27% to 35% and reducing stormwater runoff and improving water quality (40-50% phosphorus reduction). In the initial implementation phase (3 years), SNAP aimed for engagement of 10% or about 350 homes in undertaking at least one eco-landscaping action.

Lake Wilcox SNAP - one of five pilot SNAPs in the Greater Toronto Region

SNAPs are plans for measurable environmental improvement and community transformation in older neighbourhoods. They address environmental objectives by identifying solutions that also meet the diverse objectives of municipal strategic plans and local community interests. Most importantly, they identify ways to overcome implementation challenges and transfer scalable lessons. The Lake Wilcox SNAP was developed by the Toronto and Region Conservation Authority (TRCA) in partnership with the Ontario Ministry of the Environment and Climate Change's Showcasing Water Innovation Program, Regional Municipality of York, Town of Richmond Hill, LEAF, Oak Ridges Friends of the Environment and other community stakeholders.



Map of the Lake Wilcox SNAP neighbourhood.

The Place

Located in the Town of Richmond Hill within the Oak Ridges community, the Lake Wilcox SNAP neighbourhood consists of approximately 3900 homes, of which about 3200 are relatively new (<10-15 years). The remaining homes are of varying ages dating back to the original cottage community of the 1940s. Lake Wilcox is a unique local treasure and the largest kettle lake on the Oak Ridges Moraine. The community is surrounded by provincially significant wetlands and stands of forest, home to sensitive plant, bird, amphibian and fish species. Land use impacts on the natural areas and elevated phosphorus levels in the Lake are an ongoing concern.

Goals

Protecting the health of Lake Wilcox and surrounding natural areas and improving neighbourhood sustainability are overall goals of the SNAP. Although the Town has been actively implementing actions in the public realm under the guidance of its Lake Wilcox Remediation Strategy (Gartner Lee Ltd., 1996 and Freshwater Research, 2012), there is still more that private homeowners can do on their properties. The Action Plan targets stormwater management, biodiversity, energy and water efficiency and a strong sense of community. Key actions include residential eco-landscaping, shoreline naturalization and stewardship of local natural areas. Eco-landscaping features that facilitate on-site stormwater management and replacement of water-intensive lawns and gardens with water efficient landscaping will also reduce outdoor tap water use, helping to achieve Regional objectives for water conservation.

The SNAP Approach

Recognizing the challenges

Acceptance and adoption of lot level stormwater management and water conservation practices has faced many challenges, particularly from homeowners themselves. Getting homeowners' attention is the first hurdle, when typical mass marketing campaigns have only a two per cent response rate (Gartner, 2011). Even when homeowners become engaged, common barriers include: perceived conflict with their desired landscape aesthetic, uncertainty over maintenance needs and lack of resources for convenient implementation (e.g. Lightman, 2011 or Freeman Associates, 2006). Innovative approaches are necessary to engage a new broader public, beyond the early adopters, and address common barriers to homeowner adoption.

Identifying the solutions

The Lake Wilcox SNAP study identified strategic retrofit options and marketing strategies based on extensive social market research into community interests and values, technical studies of environmental conditions and targets for implementation. The resulting "Eco-Landscaping Program" targets busy commuter families who want to balance environmental interests with aesthetic appeal.

Key elements of this program strategy included:

1. **Two Front Yard Makeover (FYM) demonstration projects on private residential lots** - The makeovers demonstrate how eco-friendly features such as lot level stormwater management features and water efficient, native plants can be compatible with a contemporary urban landscape design. The recruitment process and constructed projects were critical in attracting attention and interest in the concept of eco-landscaping by other local homeowners.
2. **A locally-tailored residential retrofit program** – A neighbourhood-wide Eco-Landscape Program promotes eco-friendly landscaping practices and is also designed to be the gateway for promotion of other sustainability practices, including water and energy efficiency and community stewardship. Key features of this program involved: branding and marketing, easy and convenient offers from trusted sources, community-spirited events and relationships with local private landscape businesses for long term program delivery.

Accomplishments

95 WHEELWRIGHT DRIVE

Before:



After:



20 WHEATSHEAF STREET

Before:



After:



Front Yard Makeovers – Showcase, Educate, Evaluate

In 2011 two homeowners were selected from among nineteen interested applicants to be the recipients of an eco-landscaping demonstration installed on their property the following year.

The Front Yard Makeover at 95 Wheelwright Drive, Richmond Hill includes: roof leader discharge to a bioswale; discharge of another roof leader into a rain barrel with overflow directed to a dry river bed that leads to a soakaway; addition of permeable driveway/walkway; and other design elements for enjoyment of the young family, including native plantings, a wooden bridge, stepping stones and a seating area.

The eco-landscaping elements installed at 20 Wheatsheaf Street, Richmond Hill included: roof leader discharge to a soakaway underlain with AquaBlox units; discharge of another roof leader into a rain barrel with overflow directed to a dry river bed leading to a rain garden; discharge of a third downspout onto a permeable driveway/walkway; and water efficient native plantings of trees, shrubs and plants.

The Front Yard Makeover project at 20 Wheatsheaf Street served as the focus for performance monitoring of lot level stormwater management led by TRCA's Sustainable Technology Evaluation Program (STEP). Monitoring took place August to November 2012 and June to October 2013 and findings were documented in a final report in 2014 (STEP, 2014). During the monitoring period, there were several months when the total rainfall depth was much greater than the long-term averages for the area. As such, these features were tested under wetter than normal conditions and the average drainage rates reported should be considered conservative values.

Rain Garden captures runoff from 13.2 mm events



A Rain garden installed at 95 Wheelwright Drive

The footprint of the rain garden is 5 m² and it receives water from a roof area of 63 m² and overflow from a 375 L capacity rain barrel. The objective of the rain garden was to fully capture the roof drainage in a 15 mm rainfall event, assuming both a 10% loss of rainfall due to evaporation and that the rain garden was fully drained at the onset of the storm. In this region, approximately 60% of average annual rainfall depth occurs as storm events 15 mm in depth or less. It was estimated that the rain garden was capable of fully capturing runoff from rain events up to 13.2 mm in depth on a consistent basis. During the majority of rainfall events of 13.4 mm depth or greater, the rain garden would fill to capacity and some overflow occurred; overflow occurred 27% of the total 114 rain events.

In result, the rain garden reduced roof runoff by a minimum of 19 m³ (19,000 L). This is considered a conservative estimation since the rain garden would have also captured a portion of rain events greater than 13.2 mm in depth. The primary reason for not reaching the 15 mm target was that, with the wetter conditions, the garden was not fully drained at the onset of most storm events greater than 13.2 mm in depth. However, during the monitoring period the rain garden fully drained within 12 hours (well within the 24 hour guidelines recommended), which ensures the feature will not provide breeding habitat for mosquitoes.

Suggestions to improve runoff capture performance were to increase the surface ponding area and depth as well as using and draining the rain barrel routinely during the dry periods.

Sideyard Soakaway – an effective practice for an under-utilized space



A Soakaway installed at 20 Wheatsheaf Street

This feature is situated in the shared space between the driveways of 18 and 20 Wheatsheaf Street. The soakaway has a 1.4 m² surface footprint, an excavation depth of 0.55 m and includes two Aquablox® D-Raintank® rainwater storage chambers (67x40x45 cm) wrapped in geotextile fabric and surrounded by 20 mm diameter clear stone. The total water storage capacity of the soakaway is approximately 0.67 m³. The roof area that drains to this feature is 130 m². Like the rain garden, it was estimated that the soakaway was capable of fully capturing runoff from rain events up to 13.2 mm depth on a consistent basis. Overflow occurred during 25% of the total 114 rain events. As a result, the soakaway reduced roof runoff by a minimum of 40 m³ (40,000 L).

It was observed that the soakaway never fully drained and was at least half full of water at the onset of most storm events. This is because drainage rates decrease exponentially with reduced hydraulic head (depth of water) coupled with low permeability native soil. Suggestions to improve runoff capture performance were to increase the surface footprint or depth of excavation and the number of Aquablox® D-Raintank® rainwater storage chambers installed. Due to the drainage characteristics of this site, it was also suggested that, where possible, the storage chambers be installed at a greater depth and one on top of the other rather than side-by-side.



"We are outside and use it every day in the summer. Neighbourhood kids play in our garden and pick the wild strawberries when ripe. The girls love to help weed and use the rainbarrel water to water the plants. They also like digging through the garden for bugs and worms."

- Front Yard Makeover homeowner.

"We think it's beautiful and speak often about it with friends/neighbours"

- Front Yard Makeover homeowner.

"[This Eco-Landscape is a] Great idea for young family to make their life easy and manageable"

- Garden Tour Participant

Homeowners love eco-landscaping!

Both homeowners are extremely happy with their gardens, noting greater year round interest, more opportunities for viewing wildlife, fun for kids, less time required for weekly maintenance and less municipal water use as key benefits. They reported the yards engaged their children more than a lawn and they have received very positive feedback from neighbours. Eco-landscaping avoided the need for potable water use, representing a water savings, as prior to the makeover homeowners reported watering once per week for 20 minutes.

Residential Eco-Landscaping Program

Launched in 2013, the Eco-Landscape program promotes landscaping that incorporates native/water efficient plants and raingardens and other on-site stormwater management practices. The Program was strategically designed to address local homeowners' needs and interest in low maintenance landscaping that has curb appeal and can easily be obtained within their busy lifestyle. The following strategies shaped the program:

- **Branding** – The slogan, *Beautiful, modern, easy to maintain gardens*, relates the program directly to target market interests and the Eco-landscape logo supports homeowners' secondary desire to make environmentally friendly choices.
- **Inspiration and making it easy** – To complement the Front Yard Makeover demonstrations, a collection of six landscape design templates were created for Lake Wilcox homes and, as they are associated with available plant kits, provide easy "garden in a box" options for homeowners.
- **Incentives and long term program delivery** – Exclusive discounts were negotiated with local landscape designers and suppliers of plants and garden materials, with the goal of providing a relationship with local business for the long term.
- **Building on community spirit; lending help** – Volunteer planting days and community BBQs, took advantage of the strong sense of community and provided opportunities for homeowners to access help for their "do it yourself" projects.
- **Promotion of social norms; engaging kids** – Recognition signage helps promote the growing trend, and includes stickers designed by local school kids that can be earned for actions undertaken under each of the four program themes.
- **Keeping it local; nurturing peer to peer dialogue** – Promotion through local community networks, coffee nights and garden tours fosters exchange of experience and awareness of the growing local trend.

A total of 18 promotional activities and events were held between 2011 and 2014. These ranged from celebrity gardening workshops to street party planting events and incentive grant programs.



Growing Participation

In total, over 560 people, representing 314 households, registered as participants at events during 2011-2014. A higher concentration of participation was observed in the vicinity of the Front Yard Makeovers, indicating the critical role the demonstrations played in attracting attention. Household participation increased over time with only 19% “repeat attendees”, suggesting a growing new participant base.

Measurable Outcomes

Most Eco-Landscaping Program incentive offers were designed as “attention getters” to generate participation and interest, and were limited in number (e.g. Street Party Planting Event, Landscape Design grants). More than 15 eco-landscapes are known to have been installed to date as part of these Program promotions. Additional 2012-2014 outcomes tracked through cross-promoted partner programs include 56 LEAF backyard tree and plant kit purchases and 74 Town of Richmond Hill Healthy Yard native plant kit purchases in the SNAP area. Both of these programs have seen double the rate of uptake within the SNAP area as compared to Town-wide, indicating the impact of locally tailored promotions.

The main thrust of the Eco-Landscape Program is for a “do it yourself” connection between homeowners and private retail sources and landscaping services. Therefore, in order to estimate uptake within the neighbourhood, an Environics survey was conducted by telephone December 8-18, 2014. The sample of 300 homes is considered representative, thus allowing the results to be extrapolated to the over 3200 area homes. The survey results indicate that 54% of residents installed a garden; 52% planted a tree; and 13% installed a rain barrel or rain garden in the past five years. Of those who installed a garden, 59% said they installed an eco-landscape garden. This finding should consider that 38% of residents reported being aware of the SNAP; those respondents may have more likelihood of understanding the defining features of an eco-landscape garden. Applying this adjustment factor, it is estimated that 12% of 3200 homes (384) implemented an eco-landscape garden, surpassing the 10% short term implementation target. Looking ahead, 31% of Lake Wilcox residents say that it is very likely they will plant a garden or do landscaping in the next two years, while 19% are very likely to plant a tree. These survey results point to a significant ongoing interest in landscaping projects.



"SNAP supports our business goals of environmental awareness, increased market demand and sales. Being a part of this program helps demonstrate we are a sustainable industry."

– a Retail Business Partner

Lessons Learned

Despite the strong interest in eco-landscaping, many homeowners had still not made time to undertake projects during the 2013-2014 Program. Factors affecting uptake include: weather (wet seasons, ice storm damage reduce interest); method of advertising (direct mail was more effective than flyers) and lack of time and money. Homeowners need time to plan for such an investment, and they need more help with design and installation. Therefore, programs need to evolve over several years and respond to client needs. The 2015 program was further refined to make it even easier and more convenient. The simplified program required only one phone call directly to a landscape partner to receive a customizable "design/install" offer at a pre-negotiated price. This offer appears to have attracted an even broader group of homeowners.

Application for Ontario communities

The SNAP represents an innovative model for sustainable urban renewal in older neighbourhoods. The locally designed program developed in the pilot neighbourhood can be scaled and applied in other neighbourhoods of similar demographic to realize greater return on investment. Eco-Landscaping tools, such as landscape design templates, can be used to develop partnerships with other landscape design businesses. A three-part video series on the front yard makeovers and Eco-Landscaping Program provides real life homeowner experiences and testimonials that can be shared with other communities.



"Cottage Oasis"
– An Example Eco-Landscape Design Template



"Design/Install" Offer for 225 m² Space

For More Information

Resources

For more information on this Sustainable Neighbourhood Retrofit Action Plan, visit www.sustainableneighbourhoods.ca. On our site we offer downloads of :

1. SNAP Five Year Program Review Summary Report (TRCA, 2014)
- documenting the neighbourhood scale retrofit planning model, lessons learned based on partner input and showcases of innovations from five pilot SNAPs including Lake Wilcox.
2. Three videos (2012-2014)
- featuring the front yard makeovers and eco-landscaping program, their eco-features and benefits, including testimonials from homeowners and program partners.
3. 20 Wheatsheaf Street Front Yard Makeover, Stormwater Monitoring Report (STEP, 2014).
4. Lake Wilcox SNAP Performance Monitoring Interim Report (TRCA, 2015).

For any other information please contact:

Sabrina Selvaggi, Toronto Region Conservation
416.661.6600 x5780 or sselvaggi@trca.on.ca

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