



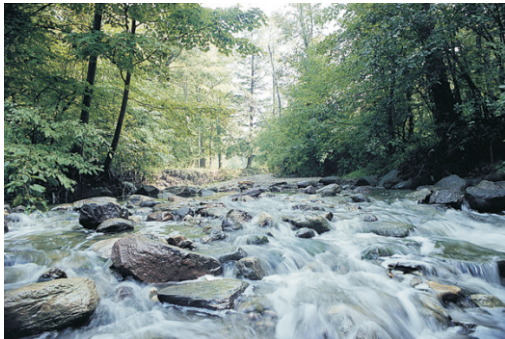
# Sustainable Technologies Evaluation Program

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The Sustainable Technologies Evaluation Program (STEP) is a multi-agency program, led by the Toronto and Region Conservation Authority (TRCA). The program was developed to provide the data and analytical tools necessary to support broader implementation of sustainable technologies and practices within a Canadian context. The main program objectives are to:

- monitor and evaluate clean water and clean air/energy technologies
- assess barriers and opportunities to implementation
- develop tools, guidelines and policies
- promote broader use of effective technologies through research, education and advocacy

Technologies evaluated under STEP are not limited to physical structures; they may also include preventative measures, alternative urban site designs, and innovative practices that help create more sustainable and livable communities.



## Clean Water

The primary goal of the water component of STEP is to advance the knowledge and practice of wet weather flow management through monitoring and evaluation of stormwater management practices. Other general areas in which technology evaluations are being conducted include stream restoration, water conservation and community wastewater treatment.



## Clean Air

The clean air component of the program addresses technologies that help reduce emissions of green house gases and pollutants to the atmosphere, and prevent smog-related heat build-up in urban environments. New and emerging technologies or approaches are being investigated in the general areas of green energy, green building, and energy conservation.

## Program Partners

Toronto and Region Conservation  
Fisheries and Oceans Canada  
The Great Lakes Sustainability Fund

Environment Canada  
Ontario Ministry of Environment  
Seneca College

Region of York  
Region of Peel  
City of Toronto

## Sample Projects

**Green roofs.** Vegetated roofs offer several distinct advantages over conventional roofs. This three year monitoring study evaluated the stormwater management and biodiversity benefits of a green roof located at the York University campus in Toronto. A subsequent economic analysis, completed in 2007, examined the life cycle costs and savings associated with building and owning a green roof in the Greater Toronto Area.



**Permeable Pavement and Bio-retention Swales.** Permeable pavements and bio-retention swales help to prevent the adverse effects of urban runoff on streams and aquatic life by re-instating the natural hydrologic functions that existed prior to development. This three year study evaluated the capacity of permeable pavement and bioswales to reduce surface runoff and trap pollutants. Several older sites were also surveyed to assess how well these practices hold up over time and the potential for contaminants to build-up in soils below the facilities.



**Rainwater Harvesting.** The use of roof runoff for irrigation and toilet flushing can help conserve water, reduce site runoff, and relieve pressure on costly water treatment plants. This study investigates the benefits of rainwater harvesting systems through monitoring of three different systems installed in the Toronto Area. Barriers and incentives to wider adoption of rainwater harvesting at commercial and institutional sites are also evaluated.



**Polymer Technology.** The impacts of a construction project on the natural features that surround it can be substantial. Large areas stripped of their vegetative cover are more susceptible to wind and water erosion, resulting in sediment-laden runoff generated during storm events. This study evaluated the performance of the polymer *anionic polyacrylamide* for the clarification of construction runoff at development site in Vaughan, Ontario. Results are considered in the context of related polymer research from across North America, and findings are applied to help determine the future role of polymers in improving construction sediment management in Ontario, and to inform the development of policies governing their use.



**Archetype Sustainable House Energy Monitoring Systems.** In 2008, two semi-detached houses were constructed at the Kortright Centre in Vaughan to demonstrate the best in sustainable design and technology. Monitoring of the two houses is being conducted through a partnership with Ryerson University. The project will evaluate their performance with respect to energy efficiency, water conservation and stormwater management. Results will provide third party verification of installed technologies and facilitate the development of simulation tools designed to evaluate and compare the systems.



### The STEP Website

[www.sustainabletechnologies.ca](http://www.sustainabletechnologies.ca)

The website provides information about STEP projects and highlights the great work that our partners and others are doing in related areas. Full reports and fact sheets on a wide range of clean water and air technologies are also available on the site. For more information about the program, contact Tim Van Seters at (289) 268-3902, or send an e-mail to [STEP@trca.on.ca](mailto:STEP@trca.on.ca).