



Sustainable Technologies Evaluation Program (STEP) Professional Education and Training

A partnership between Greater Toronto Conservation Authorities



Lake Simcoe Region
conservation authority



CREDIT VALLEY
CONSERVATION



Toronto and Region
Conservation
for The Living City



Sustainable Technologies Evaluation Program

The Sustainable Technologies Evaluation Program (STEP) is a multi-agency initiative, comprised of Toronto and Region Conservation Authority (TRCA), Credit Valley Conservation (CVC) and Lake Simcoe Conservation Authority (LSRCA). The program provides data and analytical tools needed to support broader implementation of sustainable technologies and practices in a Canadian context. Its main objectives are to:

- Monitor and evaluate clean water, air and energy technologies;
- Assess barriers and opportunities to implementing technologies;
- Develop tools, guidelines and policies; and
- Promote broader use of effective technologies through research, education and advocacy.

STEP is excited to offer training and education designed to help professionals learn proper techniques and procedures for implementing sustainable technologies. This pamphlet will provide you with an overview of the courses offered. Our program areas include:



Water



Energy



Sustainable Design and Construction



Monitoring

Our Instructors

All courses are taught by industry professionals with direct experience designing, constructing, maintaining and monitoring sustainable technologies in Ontario. Instructors use real-world examples that demonstrate the concepts, techniques and approaches you need to implement sustainable practices.

Professional Training

Training will help build the knowledge, skills and abilities of you and your team. Whether you are a consulting company looking to gain green market share, a municipality looking to train your staff on how to build more resilient communities, a trade organization looking to offer more training education credits for your members, or an individual looking to upgrade your skills, we have the right training to help you meet your goals.

Open Training - In-class courses, webinars and e-learning opportunities are available to individuals looking to enhance their skill set. To view currently scheduled course offerings visit:

www.sustainabletechnologies.ca

Customized Training - We can also work with you to tailor a custom training package. Through consultation, we will develop relevant, in-depth training sessions that address the needs of your organization.

For further information or to schedule training please contact:

Patricia Lewis
289-268-3903
plewis@trca.on.ca

Julie McManus
905-670-1615 ext 247
jmcmanus@creditvalleyca.ca

Continuing Education Credits

Some courses are eligible for continuing development hours with Certified Inspector of Sediment and Erosion Control (CISEC) program and other industry associations.

Look for These Symbols in the Brochure



Classroom Delivery



Online Delivery

LID

Low impact development (LID) is a green infrastructure approach to stormwater management that uses simple, distributed, and cost effective landscaped features and other techniques to filter, store, infiltrate and use rainfall where it lands.



Join us for the STEP Monthly webinar series. Learn more at: www.sustainabletechnologies.ca

We offer LID training designed to help you through every step of the implementation process. In-class, online and webinar training is available in:

- Introduction to Low Impact Development
- Planning and Design
- Construction
- Inspection
- Operation and Maintenance
- Monitoring

TRIECA: Canada's Premier Stormwater and Erosion and Sediment Control Conference

Further training opportunities available through TRIECA. This conference held every March brings together leading experts, influencers and distinguished research partners. Together, these participants play a defining role in shaping the future direction of the stormwater and erosion and sediment control industries.

The conference format includes two full days of concurrent speaker sessions. Renowned speakers from across North America will present the latest technological innovations, case study findings and academic research. TRIECA also features an industry tradeshow, offering delegates the opportunity to speak directly with representatives from a wide variety of leading solutions providers.

Introduction to Low Impact Development

Overcoming Low Impact Development Barriers



Although relatively new, LID techniques are quickly gaining traction in Canada. Those looking to implement LID for the first time need to understand what typical barriers they may encounter so they can avoid common pitfalls that hold up projects.

This course demonstrates how LID is different than traditional stormwater practices, and why it is becoming a necessary part of our infrastructure. It will explain how to overcome common barriers in planning, design, construction, assumption, operations and maintenance to successfully implement LID projects.

The course can be customized to address specific barriers you are encountering within your organization.



Low Impact Development Bus Tours



LID is an innovative approach to managing stormwater. This tour will feature visits to cutting-edge, in-the-ground LID sites in the Greater Toronto Area. Participants will see made-in-Ontario stormwater technologies installed in parking lots, public lands and road rights-of-way. This experiential learning experience will focus on the construction, operations, maintenance, and monitoring of real-world LID projects. Along the way, your tour leader will discuss the financial, social, aesthetic and environmental benefits of LID.

Introduction to Low Impact Development



This course has been developed to introduce participants to the concept of LID. It is intended for developers, consultants, municipal staff, landowners or anyone looking to gain a general knowledge of sustainable stormwater planning and practices. The course is comprised of four modules:

1. Evolution of stormwater management and the progression to LID.
2. Principles of LID and non-structural site design strategies.
3. LID practices, including general descriptions, special considerations and an overview of typical stormwater performance.
4. Financial benefits of LID and useful guides and tools that can be used to determine the costs of an LID project.

Instructors were knowledgeable about the subject matter and used real world examples. I would strongly recommend this training to anyone implementing LID projects.

-Course Participant

Planning and Design

Low Impact Development Design of Infiltration Practices



This interactive, instructor led, full-day training session aims to provide guidance, resources and 'real-life Ontario' examples of the design of LID Infiltration Practices for cold climates. Intended for practitioners with a moderate understanding of LID and stormwater design, the session outlines the general process from desktop analysis, through design and construction. The session's modules will include:

1. Stormwater Fundamentals
2. Infiltration Options
3. Site Evaluation
4. Reconnaissance
5. Pre-Design Requirements
6. Detailed Design Requirements
7. Financial Considerations
8. Importance of Construction Supervision.

Landscape Planning for Low Impact Development: Bioretention



Bioretention is a form of LID that incorporates a vegetated component which supports the treatment, evapotranspiration and infiltration of stormwater. Landscape designers have an important role to play at all stages of the LID planning and design process. A successful landscape plan integrates the bioretention practice into the urban fabric while protecting natural heritage features and functions. This course will be of interest to professionals involved in landscape planning, detailed design, and/or review of bioretention practices from large-scale subdivision developments to small parking lot retrofits. An experienced instructor will present valuable lessons learned from examples in Ontario, with a focus on the design process, guidelines, and materials and techniques.

Register Online

www.sustainabletechnologies.ca

Planting Design for Low Impact Development: Bioretention



Vegetation supports the treatment, evapotranspiration and infiltration of stormwater and provides aesthetic and ecological value in the landscape. Planting design has a significant impact on the success of bioretention, as well as public perception and acceptance of LID practices in the urban environment. This course will be of interest to anyone involved in planting design, plant selection, drawing review, or planting installation. An experienced instructor will present valuable lessons learned from LID projects in Ontario.



Design of Infiltration Practices: Low Impact Development Technical Training



This course provides participants with the technical training required to design LID infiltration practices and guides them through the steps of the design process. It is intended for developers, consultants, municipalities, landowners or anyone with a general understanding of LID, looking to enhance their knowledge and learn how to design LID infiltration practices and the process required. This course is comprised of five modules:

1. The science of infiltration
2. Infiltration best practices
3. Conducting a site evaluation and field reconnaissance
4. Creating a detailed design
5. Operation and maintenance of LID infiltration practices

Construction

How to Properly Construct Low Impact Development Stormwater Management



LID, an innovative stormwater management approach that treats, infiltrates, filters, and retains runoff at the source, is quickly becoming the new norm in Ontario. Construction of LID practices involves techniques and specifications that differ from traditional stormwater management construction practices.

Failing to follow proper LID construction methods can result in barren bioretention landscapes, clogged infiltration practices, uneven permeable pavements, and ultimately costly post-construction repairs.

This course is applicable to anyone involved in the design, construction, and inspection of LID, whether it is in a large subdivision development or a small parking lot retrofit. Instructors will take participants through each step of the LID construction highlighting potential errors and explaining proper techniques. Participants will also receive recommendations for specifications and tender contracts. The experienced instructors will present valuable lessons learned from examples in Ontario and similar cold climate regions.



Modern and reliable infrastructure drives our economy. It contributes to our province's wealth and productivity, and it helps us attract investment and create jobs.

-Ontario Ministry of Infrastructure



Inspection, Operations, Maintenance and Monitoring

Low Impact Development Inspection, Maintenance and Operation



Municipalities already face significant challenges in tracking, inspecting and maintaining their own conventional stormwater infrastructure and ensuring practices on private property are adequately maintained. Integrating LID best management practices into stormwater infrastructure programs presents several additional problems, including:

- Lack of experience with inspection and maintenance of LID best management practices;
- Legal arrangements necessary to ensure inspection and maintenance on private property;
- Distributed, decentralized, small-scale practices require more effort to manage them; and
- Lack of detailed guidance and templates for program design and implementation.

Experienced instructors will present valuable lessons learned from examples in Southern Ontario.



Monitoring of Low Impact Development



Environmental Compliance Authorizations (ECAs) and other approval permits frequently stipulate that monitoring activities be included as part of the operation of any LID feature. Monitoring can help verify that an LID feature has been both properly designed and constructed, and functions as intended. Failing to properly monitor LID practices can result in assuming ownership of under-performing stormwater practices which are unattractive, unsafe and noncompliant.

This course is useful for anyone involved in the inspection, maintenance, ownership or performance verification of one or more LID practices, ranging in scale from small parking lot retrofits to large LID treatment approaches used in multiple LID features that service entire subdivision developments. Instructors will provide course participants with comprehensive content on developing a monitoring program through the design, construction, assumption and warranty periods. Tips, tricks, potential errors and proper monitoring techniques will be reviewed, and advanced approaches for analyzing performance verification data will be covered.

Participants will also receive recommendations for streamlined approaches to monitoring that will satisfy the needs of regulatory authorities. The experienced instructors will present valuable lessons learned from examples in Ontario and similar cold climate regions where successful monitoring has been carried out across 20+ sites.

Erosion and Sediment Control

Erosion and Sediment Control (ESC)

Effective planning and implementation of ESC practices and approaches during construction is critical to the protection of the natural environment.

We offer online, in-class and field training geared toward industry professionals involved in ESC design, installation and inspection.

Erosion and Sediment Control Field Training



This one day field training is hosted at the Erosion and Sediment Control (ESC) Field Training Facility located at The Living City Campus. The training consists of a series of field stations, each designed to demonstrate a particular type of ESC practice (i.e. perimeter controls, check structures, slope stabilization, etc.). The training is led by representatives from product manufacturers, installers and distribution companies which ensures first-hand knowledge about the specific products and techniques being demonstrated. Participants will come away with a greater knowledge of proper installation techniques, methodologies and tools and will have a better understanding of inspection and maintenance requirements, both of which will contribute to improved performance of ESC practices in the field.

Certified Inspector Sediment and Erosion Control (CISEC)



CIESC Inc. administers an international certification program that recognizes the abilities, skills, experience, and knowledge of inspectors who have demonstrated their proficiency in observing, inspecting, and reporting on the implementation of erosion and sediment control measures.

The 1.5 day training is open to anyone and consists of the following four modules:

1. Background information for inspectors
2. Inspecting Best Management Practices
3. Regulations and compliance
4. Conducting site inspections

Participants who wish to pursue the CAN-CISEC certification are then required to sit for the certification exam. Please note that participants must meet specific eligibility requirements and must apply to write the exam.



Register Online

www.sustainabletechnologies.ca

Erosion and Sediment Control

Erosion and Sediment Control For Contractors



The practice of erosion and sediment control (ESC) during construction is a critical component necessary for the protection of the natural environment including sensitive water bodies, terrestrial habitat and aquatic ecosystems. The success of any well designed ESC plan rests with the supervisors and individuals responsible for the installation and maintenance of the proposed ESC measures. Proper knowledge and training for these individuals is a key step toward improving industry practices.

This one day program will include the following modules:

1. Construction related impacts
2. Roles and responsibilities
3. Key legislation and legal implications
4. Fundamentals of ESC (key definitions, types of erosion, factors affecting erosion, erosion control versus sediment control)
5. Understanding best management practices
6. Winter preparedness
7. Work site isolation plans

Participants will come away with a better understanding of the importance, and the rationale for good erosion and sediment control practices, an increased knowledge of the various types of best management or mitigation measures available and an increased awareness of the basic principles that are fundamental to good erosion and sediment control.

The ESC for Contractors course is geared toward industry professionals who are responsible for overseeing construction activities and personnel who are involved in the day-to-day implementation and maintenance of ESC practices. These professionals may include construction site foreman, supervisors, managers and labourers.

Improving Agency Education and Capacity for Erosion and Sediment Control Review



The practice of erosion and sediment control (E&SC) during construction is a critical component necessary for the protection of the natural environment including sensitive water bodies, terrestrial habitat and aquatic ecosystems. Success of an E&SC strategy on any construction site relies on the many individuals who have a role in the process including engineering consultants who design the plans, review agencies who review and comment on the plans, contractors who install and maintain the practices and inspectors who insure the plan and contingency measures are in place. A recent Erosion and Sediment Control Research Study (March, 2016), commissioned by Lake Simcoe Region Conservation (LSRCA), identified that "education and training was noted as one of the most important aspects of increasing awareness and capabilities" regarding E&SC performance.

This workshop is designed for agency staff who are involved in the review of E&SC plans and reports. The training is intended to increase knowledge and build capacity within review agencies to ensure a basic level of understanding exists and to promote a consistent approach to reviewing E&SC plans across the Province, while recognizing there may be a need for additional measures to adhere to local rules/regulations/context. This one day workshop will provide an overview of E&SC fundamentals, will inform participants about the range of best management practices that can be implemented on construction sites and will provide an opportunity to review and discuss both good and bad examples of E&SC plans and to share experiences with other CAs. In addition, two local CA perspectives will be presented as examples of how E&SC is being managed in their respective jurisdictions.

**Join us for the STEP Monthly
webinar series. Learn more at:
www.sustainabletechnologies.ca**

Erosion and Sediment Control

Introduction to Erosion and Sediment Control E-Learning Course



This course has been developed to introduce participants to the concepts of Erosion and Sediment Control (ESC). It is intended for contractors, developers, consultants, municipal staff, landowners or anyone looking to gain a general knowledge of erosion and sediment control concepts and best management practices. The course is comprised of eight modules:

1. Potential impacts of construction activities
2. ESC fundamentals
3. Erosion control practices
4. Sediment control practices
5. In-water and near water works
6. Pollution prevention
7. Winter preparedness
8. Legislation.

Polymers for Construction Site Erosion and Sediment Control E-Learning Course



This course has been developed to familiarize participants with the concepts of polymers and how they can be used for Erosion and Sediment Control (ESC) on construction sites. It is intended for developers, consultants, municipalities, landowners or anyone looking to learn about polymers and apply them for ESC. This course consists of six modules:

1. Basic concepts of polymers
2. Soil stabilization with anionic polyacrylamide (PAM),
3. PAM based stormwater clarification applications
4. additional PAM enhanced sediment controls
5. PAM assisted pond dredging
6. Anionic PAM application guidance for urban construction.



We use energy to heat, cool and light our buildings, run appliances, fuel vehicles, and manufacture the products we use every day. The types of energy we consume for these uses, and the efficiency with which it is used, govern the extent to which our activities contribute to greenhouse gas emissions, and ultimately, to climate change.

Our energy workshops are geared toward both homeowners and professionals who are interested in expanding their knowledge of renewable energy systems.



Solar and Wind Energy Electric System Introduction



The Solar and Wind Energy Electric System Introduction workshop is designed to introduce participants to the criteria for the selection of a solar electric (photovoltaic) or wind energy system.

Participants will explore the fundamentals of photovoltaic and wind energy, including: theory, siting and site selection, components, best practices, costing, and a summary of Ontario's photovoltaic Micro-FIT incentive program. The instructor will also conduct a tour of photovoltaic and wind energy demonstrations located on site.

Modules for this course include:

1. What is renewable energy?
2. Electricity basics
3. Solar energy fundamentals
4. Wind energy fundamentals

Off-Grid and Emergency Back-up Systems



The Off Grid and Emergency Back Up Systems workshop connects the fundamentals of photovoltaic and wind energy production with the components required for back up systems for off-grid systems or emergency back up energy systems for homes.

The topics covered in this course include charge controllers, batteries, inverters and generators, and are applicable to battery-based back-up power systems. In the afternoon, participants will assemble the components of a small cabin sized system as a practicum.

This course is comprised of 5 modules:

1. Off grid applications
2. PV system types
3. Off grid design considerations
4. System components
5. System sizing

Monitoring

TRCA's Environmental Monitoring team provides technical training opportunities to help transfer knowledge to environmental professionals, and improve the accuracy and standardization of ecological data collected in Ontario.

Our training workshops are designed to demonstrate the standardized environmental monitoring techniques and sampling protocols used by environmental agencies and consultants province-wide. They are generally comprised of a combination of classroom lectures and hands-on field exercises.

Class 2 Backpack Electrofishing Crew Leader Certification Course



This course is offered as a one day training workshop designed to certify crew leaders in the use of backpack Electrofishing equipment.

The main emphasis of this course is the safe use of backpack electroshocking units. The topics covered will include protective equipment, safe procedures and backups or failsafes. The course will also include the fundamentals of electrical theory. There is also a practical component to the course for which participants will be required to demonstrate safe electrofishing practices in the field. Instruction will be provided by a Class 1 OMNR certified instructor and meets OMNR policy standards.

Participants should be prepared for field work. A field lunch will be provided. Participants are required to bring their own leak free, non-breathable chest waders, as well as polarized sunglasses.

Ontario Stream Assessment Protocol



This five-day course is designed to train and certify users in a variety of standardized stream assessment techniques for evaluating habitat, benthos and fish communities in Ontario's wadeable streams.

The methods taught are documented in the OSAP Manual and are provincially recognized as standards by the Ontario Ministry of Natural Resources and Forestry and federally recognized by Fisheries and Oceans Canada. Like the modular OSAP manual, the training is organized into the following complementary units:

1. Identifying and documenting site locations
2. Benthos Sampling
3. Temperature sampling
4. Fish community sampling, including Class 2 backpack electrofishing certification
5. Characterizing physical processes and in-stream structure
6. Data management

Introductory (i.e. Level 1) benthos identification (OBBN) and Level 1 and Level 2 fish identification courses are offered concurrently on the weekend preceding the OSAP course.

This course is intended for field crews and resource managers involved in stream surveys and management. Registration preference will be given to professionals in the field who have need of using OSAP protocol in the calendar year the course is offered. Please be advised that registration usually fills up quickly.

