



Central
Lake Ontario
Conservation

A WATERSHED MOMENT

2012 YEAR IN REVIEW

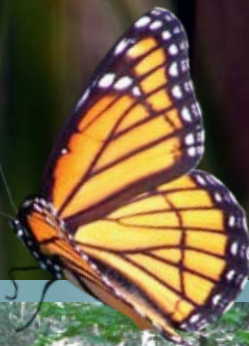


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Welcome Message from the Chair

It has been a pleasure to serve as Chair of Central Lake Ontario Conservation In 2012 and I would like to share a number of this year's highlights.

2012 Highlights:

- Completed Phase 2 of the Purple Woods Heritage Hall construction and opened the building for the 37th annual Maple Syrup Festival.
- The 900 metre Discovery Trail was completed providing a fully accessible link through Purple Woods and upgrades to the production system were initiated for the 2013 season.
- Completed the Lynde Creek Watershed Plan and drafts of the Oshawa Creek and Black/ Harmony/Farewell Creek Watershed Plans and completed Phase 2 of the Bowmanville/ Soper Watershed Plan- Watershed Management Alternatives.
- Completed the Natural Heritage System mapping tool for our small watersheds.
- Mapped a continuous Natural Heritage System for Durham Region, consolidating the Natural Heritage System work completed by the 5 Durham Region CAs.
- Staff continue to implement CLOCA's Invasive Species Management Plan, delivering workshops conducting management activities and providing expertise to provincial invasive species initiatives.

- The Central Lake Ontario Conservation Authority Land Acquisition Strategy 2012, was completed.
- Acquired 306 acres (124 hectares) of land, adding 90 acres to our holdings in Long Sault, 11 acres in Enniskillen, receiving a generous donation of 37 acres in the central portion of the ORM Regional Corridor, and gaining a foothold in the Oshawa Creek Headwaters Area with the securement of 168 acres which includes 43 acres of the Provincially Significant Enfield Wetland Complex. This brings CLOCA's total landholdings to 5,876 acres (2,378 hectares).
- Staff have completed the draft Regulation and Plan Review Policy and Procedural Manual, reviewed Plan Review and Regulation Fees and completed CLOCA's Large Scale Commercial Fill Policy.
- The CTC Source Protection Plan was completed and submitted to the Province.
- Completed land transfer of the Oshawa Creek Valleyland and Trail System to the City of Oshawa.
- Completed the Long Sault Conservation Area Darlington Forest Tree Thinning project.
- Created a Lake Ontario Shoreline Erosion report to assess erosion rates and property issues in our jurisdiction.
- Participated in the development of a Low Impact Development (LID) Discussion Paper dated March 2012 to raise awareness of the use of LIDs by municipalities and developers.
- Hosted the 15th annual Durham Children's Groundwater Festival. Since 1998 we have engaged more than 60,000 grade 4 students in Durham Region.
- Staff continue to work collaboratively with the Valley's 2000 Community by providing technical assistance in support of the Bowmanville Fishway project implementation.
- Hosted our first ever outdoor movie night at the Purple Woods Heritage Hall attracting an audience of 400 people.

It is important to note that the projects within this report would not be possible without the support of our community partners: Region of Durham, member municipalities, community stakeholders and watershed residents. Thank you for your support and we look forward to working with all of you in 2013.

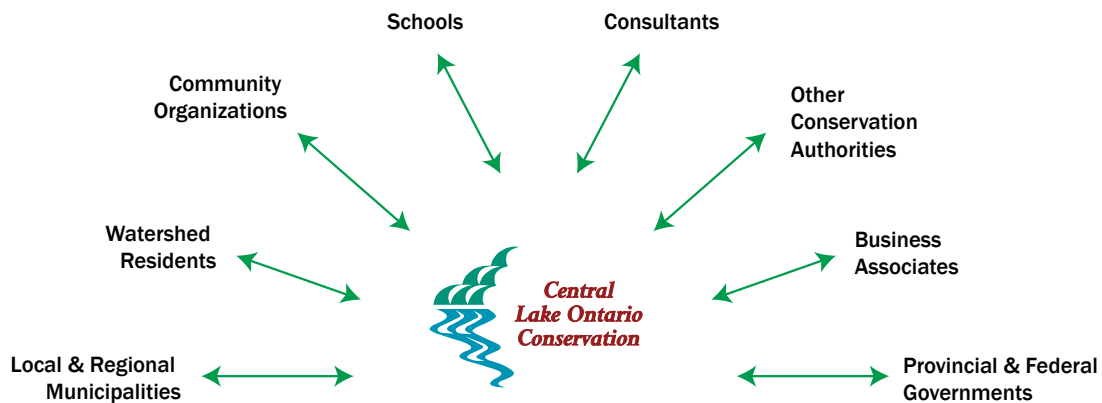
Pat Perkins
Chair, Central Lake Ontario Conservation

Who We Are

The Central Lake Ontario Conservation Authority was established in 1958 by the Government of Ontario at the request of the municipalities located within the watersheds of the following creek systems: Bennett, Black, Bowmanville Corbett, Darlington, Farewell, Goodman, Harmony, Lynde, Oshawa, Pringle, Robinson, Soper, Tooley and Westside.

Our Mission

“To increase the awareness, understanding, wise use and enhancement of our watershed resources for the benefit of the natural environment in partnership with the Region of Durham including: Cities of Oshawa and Pickering, Towns of Ajax and Whitby, Municipality of Clarington, Townships of Scugog and Uxbridge and our watershed Communities.”



2012 Board of Directors

TOWN OF AJAX
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MUNICIPALITY OF CLARINGTON
Councillor R. Hooper
Councillor M. Novak
Councillor C. Traill

CITY OF OSHAWA
Councillor B. Chapman
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CITY OF PICKERING
Councillor P. Rodrigues

TOWNSHIPS OF SCUGOG & UXBRIDGE
Councillor L. Corrigan

TOWN OF WHITBY
Councillor L. Coe
Councillor J. Drumm
Councillor D. Mitchell
Mayor P. Perkins



Front Row (left to right): Councillor Joe Drumm, Councillor Larry Corrigan, Councillor Bob Chapman, Mayor Pat Perkins (Chair), Councillor Mary Novak, Councillor Amy England, Councillor Corinna Traill

Back Row (left to right): Councillor Don Mitchell, Councillor Shaun Collier, Councillor Lorne Coe, Councillor John Neal, Councillor Ron Hooper, Councillor Peter Rodrigues, Councillor Tito-Dante Marimpietri (Vice-Chair), Russ Powell (CAO)

Working in Partnership





WATERSHED MANAGEMENT

Watershed Management

Watershed Planning examines the natural environment and human activities, assessing their relationships to determine how best to manage the watershed to ensure future generations benefit from a healthy and sustainable natural environment.

Past watershed conditions, current conditions and anticipated future changes in the watershed are analyzed and assessed; recommendations are made to achieve the desired watershed goals, targets and objectives; and consultation with stakeholders and the public is conducted at integral times during Plan preparation.

CLOCA staff have been working on preparing watershed plans for CLOCA's 4 large watersheds, Lynde Creek, Oshawa Creek, Black/Harmony/Farewell Creek, and Bowmanville/Soper Creek. These Watershed Plans are prepared in compliance with the legislative requirements of the Oak Ridges Moraine Conservation Plan to satisfy the Region's legislative commitments in accordance with the Plan.

In 2012, significant milestones (described below) were reached in the development of watershed plans for each of these watersheds.

Lynde Creek Watershed Management Plan – Final May 2012



The Lynde Creek Watershed Plan was completed and approved by the CLOCA Board of Directors in May 2012. The goal of the Lynde Creek Watershed Plan is to achieve healthy natural systems which can positively respond to landscape changes while sustaining ecological health and integrity. To attain this goal, the Plan provides a comprehensive, integrated and long-term approach to managing the watershed including recommendations which will protect, restore and enhance those natural features and functions necessary for a healthy watershed. Recognizing that implementing the recommendations of the watershed plan is not the sole responsibility of any one

WATERSHED MANAGEMENT

organization, the plan is presented in a manner in which all stakeholders can easily use and reference. This includes a strong implementation component offering a suite of tools and actions which stakeholders can use to work toward achieving watershed goals and targets. Also included, is a plan for measuring success in implementing the watershed plan and in achieving the identified healthy watershed targets.

The Lynde Creek Watershed Plan has been prepared in consultation with watershed stakeholders, input from which, has contributed to the watershed plan, its recommendations and implementation plan. At each phase of watershed plan development, Public Information Centres were hosted; meetings and information sessions were held with key stakeholders including the Region, local Municipalities, environmental consultants, and the development industry.

The information and recommendations contained within this Plan are scientifically based and will support watershed managers and decision makers in making informed decisions when considering watershed health. This Plan contributes significantly to Authority programs and will guide future watershed resource management decisions. The Lynde Creek Watershed Plan will be the definitive tool used by CLOCA, municipalities, planning authorities, agencies and all other stakeholders to guide decisions regarding the effective management of watershed resources in response to a changing environment.

Oshawa Creek and Black/Harmony and Farewell Creek Watershed Plans – Draft October 2012



This past year, work on the watershed plans for the Oshawa Creek Watershed and the Black/Harmony/Farewell Creek Watershed culminated with the release of a draft watershed plan for each watershed in October. A Public Information Centre (PIC) was held in November and there was a strong showing at this PIC with a broad cross-representation of landowners, residents, businesses, and agencies present. The public were encouraged to review the draft watershed plans and provide comments.

These watershed plans are similar in structure to the Lynde Creek Watershed Plan, providing baseline information of watershed health, setting goals and objectives, providing watershed targets to be achieved to maintain a healthy watershed, identifying key

stakeholders to undertake work to fulfill the watershed plan recommendations, offering a suite of tools supporting effective watershed plan implementation, establishing a monitoring program to monitor change over time and cumulative impact, and identifying private and public stewardship, education and restoration opportunities.



Bowmanville/ Soper Creek Watershed Plan – Phase 2 Watershed Management Alternatives

With completion of the Existing Conditions Report documenting the current health of the watershed and establishing baseline watershed characteristics, work on Phase 2 Watershed Management Alternatives was started and completed for the Bowmanville/Soper Creek Watershed in 2012. Healthy watershed targets to achieve desired watershed conditions are set in this Phase and modeling is done which determines how the watershed will respond to future changes including growth and climate change. In all, eight alternative management options were developed and evaluated to determine which option would achieve the targets. This included water budget modeling which characterized future growth impacts on the water budget and evaluated the impact of growth on imperviousness within the watershed. These models and the eight alternative management options were presented to the public at a Public Information Centre held in November. In addition, stakeholder sessions with the Region and Municipality of Clarington were also conducted. Completion of Phase 2 work satisfies the legislative requirements outlined in the Oak Ridges Moraine Conservation Plan requiring assessment of the impact of future growth and change within the watershed.





NATURAL HERITAGE

Natural Heritage System for CLOCA's Small Watersheds

A Natural Heritage System (NHS) is an ecologically based delineation of natural features and functions that will, over the long term, provide for an ecologically resilient and self-sustaining system. Identification and protection of a NHS is a critical step in ensuring healthy watersheds and it also provides a baseline from which ecological changes and trends can be monitored.

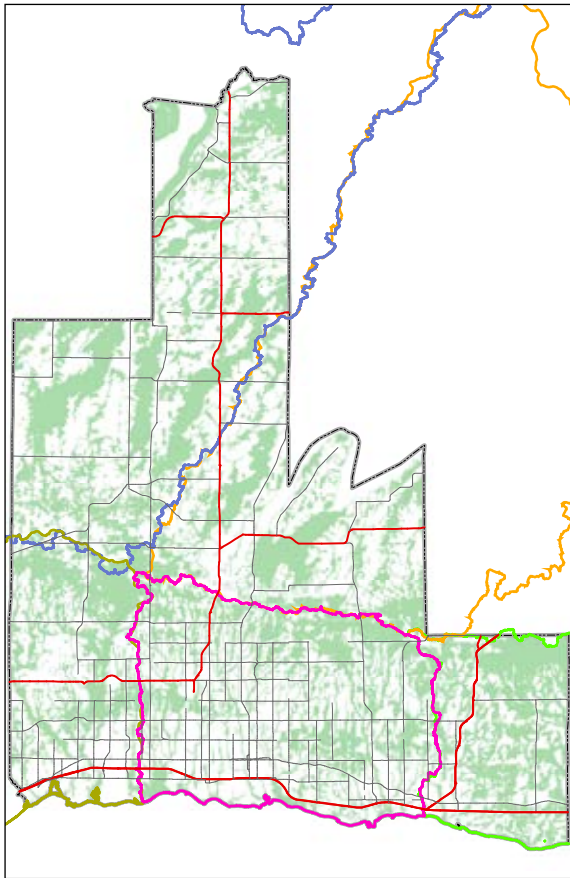
Following identification and mapping of the Natural Heritage System for CLOCA's large watersheds (Lynde, Oshawa, Black/Harmony/Farewell and Bowmanville/Soper), staff worked to complete mapping of the NHS for CLOCA's entire jurisdiction. This year, the NHS mapping for CLOCA's small watersheds was completed, resulting in the identification of a healthy, connected natural system made up of existing connectable features and corridors and areas identified for natural cover regeneration across CLOCA's jurisdiction. This mapping is based upon CLOCA's approved Natural Heritage System methodology entitled: "Developing CLOCA's Natural Heritage System: A Methodology". The NHS will be used to inform and support watershed restoration decisions and other Authority programs including; plan review, watershed monitoring, stewardship and education.

Mapping a Continuous Natural Heritage System for the Region of Durham

The 5 Durham Region Conservation Authorities have produced Natural Heritage System (NHS) mapping for their respective Conservation Authority (CA). These individual products have not been amalgamated with the NHSs of their neighbouring CAs. A need to consolidate the individual Conservation Authority NHS mapping products into one map for the Region of Durham and the lower tier Municipalities was identified. CLOCA undertook the task of coordinating this project to provide an overall continuous NHS map for Durham Region. This "high-level desk top" exercise created a seamless NHS along the CA watershed boundaries within the Region of Durham, without compromising the NHS methodologies used by the individual CAs.

This map represents the best scientifically defensible information describing a Regional Natural Heritage System which supports a diversity of native terrestrial, wetland and aquatic species, communities and habitats. It can be used to support land use policy development, mapping and decision making. It is valuable as a screening tool for plan review and can be used in further refinement of Regional and Municipal Natural Heritage System mapping. For our environmental and community stakeholders,

this product is an effective communication tool providing a visual representation of the Natural Heritage System in the Region of Durham.



Continuous NHS map of Durham Region

While CLOCA led this project, staff from Ganaraska Region, Kawartha Region, Lake Simcoe Region, and Toronto Region Conservation Authorities played an integral role, providing the data and information, reviewing the methodology and approving the final product. This project could not have been done without the cooperation and support of our partner Conservation Authorities.

McLaughlin Bay Restoration Project

This year, two key project components were completed: the McLaughlin Bay Historical Background Report, and the McLaughlin Bay: Existing Conditions & Restoration Opportunities report.

The historical report, which was funded by Ontario Parks, is an account of the conditions at McLaughlin Bay Marsh since settlement in the late 1700s. It includes accounts from local archives, interviews with long-time area residents, and maps/photos of the Bay from the past 200 years.

The existing conditions report is an extension of the historical report and focuses on interpreting biological and physical data collected at the Bay through the Durham Region Coastal Wetland Monitoring Project. It provides valuable insight into the current

influences that landuse is having on water quality, vegetation growth, and wildlife habitat quality in the wetland.

- Together, these reports confirm that the shoreline at McLaughlin Bay has undergone major alterations over the last 200 years. Although extensive upland restoration has been carried out in the McLaughlin Bay Wildlife Reserve to the west, water quality is poor exhibiting high salt content and turbidity, wildlife diversity is low and there is little aquatic vegetation within the Bay. Like other coastal wetlands, McLaughlin Bay has suffered as a result of controlled water levels in Lake Ontario.
- The barrier beach is very dynamic and shifts over time.
- Some dredging may have occurred in the Bay in the past, and historical air photos suggest that the west shoreline was straightened in the 1960s.
- Agriculture was the dominant land use in the McLaughlin Bay watershed in the past.
- McLaughlin Bay is jointly owned by the Ontario Ministry of Natural Resources – Ontario Parks, the Canada Trust Company (managed by General Motors of Canada Limited), the City of Oshawa, and the Municipality of Clarington.
- Reasons for the high wetland turbidity include the presence of Common Carp, sediment re-suspension from wave action, and possibly seasonal algal blooms.
- Aquatic vegetation cover has decreased significantly since the mid-1900s.
- Wildlife diversity is low as a result of lack of habitat.
- There is little water exchange between Lake Ontario and McLaughlin Bay, contributing to poor water quality.
- The wetland bathymetry is bowl-shaped, i.e., deepest in the middle, and depths range between 0–3m, depending on the time of year and the weather in a given year.
- Water levels tend to decrease in the wetland over the year.
- Sediments in the Bay are not contaminated. There is a mix of soil types, including silt, clay, sand, cobble, and some organic content.
- Numerous sections of the shoreline have become undercut and are eroding.
- The next step in this project is the preparation of a restoration strategy, which will be completed in the spring of 2013.



Aerial view of McLaughlin Bay

MONITORING

Aquatic Monitoring

During the aquatic field season of 2012, Central Lake Ontario Conservation staff focused monitoring efforts on the Oshawa Creek watershed collecting information on water temperature, benthos (aquatic bugs) and fisheries in creeks and marshes, the latter as part of the Durham Region Coastal Wetland Monitoring Project.

Temperature is an important factor with respect to habitat suitability for fish and other aquatic organisms. Seventy-four portable water temperature data loggers were installed in various locations in May and remained in the creeks until winter. Temperature data is useful for understanding current conditions in our streams, but continued monitoring will allow us to track future changes occurring as a result of issues such as alterations in land use and climate change.

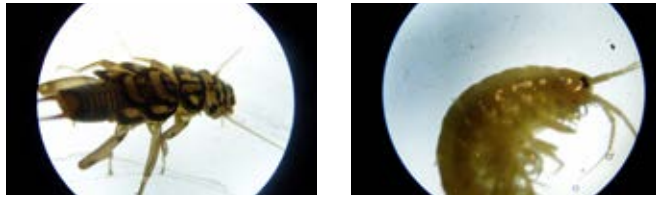


Portable water temperature logger

Staff collected benthos from 19 stream locations located throughout the CLOCA jurisdiction. “Aquatic bugs” play an important role in monitoring water quality within our watersheds. Depending on the species and quantity of benthos found, we can determine whether or not the watershed is experiencing any impacts from stresses such as pollution, changes in water temperature or land use.



Summer staff collecting benthos using a kick net.



Left: Stonefly under microscope. Right: scud under microscope

Spawning surveys were conducted noting observations of presence of adult fish in a likely spawning area, active spawning and/or signs that spawning has occurred. In 2012, spawning surveys focused on Rainbow Trout and White Sucker.

Spawning surveys provide useful information for identifying critical spawning habitat and provides additional information regarding habitat quality.



Photo shows a Rainbow Trout during the spawning run.



Photo shows a Rainbow Trout swimming upstream from Lake Ontario to spawn.

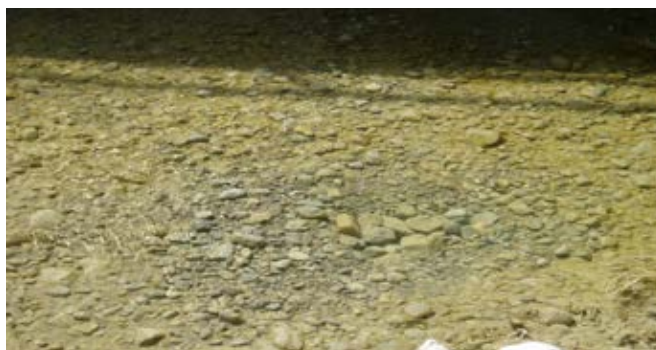


Photo shows a redd that has been created by spawning rainbow trout. Notice the lack of algae.



A large group of Rainbow Trout taking a break from their migration.

In order to help determine aquatic ecosystem health and monitor it over time, CLOCA conducts fisheries assessments. Fisheries stream sampling took place largely during July and August at 56 locations generally within the Oshawa Creek watershed. In addition, a total of 6 Long-term monitoring sites were conducted within 6 different watersheds.

Trout are known to require good water quality; Brook Trout, also known as speckled trout (a cold-water species) in particular occur in clear, cool, well-oxygenated waters (Scott and Crossman, 1973). Brook Trout are commonly used as indicators of a healthy aquatic ecosystem.



CLOCA staff using a backpack electrofisher to conduct fisheries sampling.



Brook Trout

For more information regarding CLOCA's Aquatic Monitoring Program please refer to the 2012 Aquatic Monitoring Program report available on the CLOCA website.

MONITORING

Terrestrial Monitoring

The Terrestrial Watershed Monitoring program is designed to monitor the ecological integrity of the watershed, focusing on Forests, Wetlands and Non-forested communities. In 2012 ten plots were established throughout the Oshawa Creek watershed; five forest, three wetland, and two non-forested plots. One of the ecological parameters measured is native species richness and percent of native species richness. The Forest, Non-forested and Wetland communities in the Oshawa Creek Watershed were 69%, 35% and 78% respectively for this parameter. Dog-strangling vine (*Cynanchum rossicum*) was the most frequently occurring invasive species in five of the plots. The second was Common Buckthorn (*Rhamnus cathartica*) being observed at four of the plots.

CLOCA staff also participated in three special monitoring projects in 2012 which are more refined in scope and provide data and insight for future management programs.

1. CLOCA continued to monitor the success of transplanting over 200 regionally rare plant species in 2010; Fringe-tip closed gentian (*Gentiana andrewsii*), Fringed gentian (*Gentianopsis crinita*), Slender-leaved gerardia (*Gerardia tenuifolia*) and Large yellow lady's slipper (*Cypripedium calceolus var. pubescens*). Each of these plants have varying flowering times, and two of the four species (both Gentian's) flower biennially. In 2011, 35 plants were observed but in 2012 over 840 plants were documented, primarily Fringed-gentian.



Top left to right: fringe-tip closed gentian, field of fringed gentian, close-up of fringed gentian; bottom left to right, field of fringed gentian, close-up of gerardia)

2. Surficial groundwater levels and ground vegetation are being monitored at Heber Down Conservation Area at the Heber Down Provincial Significant Wetland complex to establish a baseline to assess long-term changes. As this is a long term monitoring program, it is too early to discern any results.
3. To gain more information on the natural features present

within the Natural Heritage System(NHS), CLOCA staff implemented the Natural Heritage System Inventory Pilot Project. Staff visited several private landowners within the Lynde Creek watershed to ground-truth the functional Natural Heritage System, inventorying 70ha of the NHS.



White Cedar Organic Mixed Swamp

For a more in-depth discussion of the information regarding CLOCA's terrestrial monitoring data please refer to the 2012 Terrestrial Monitoring report available on the CLOCA website.

Wildlife Monitoring

This year, for the second time since the watershed wildlife monitoring program commenced, bird monitoring was conducted in the Oshawa Creek watershed. One of the highlights from this survey included a Canada Warbler observation in the Oshawa Valleylands; this species is listed as Special Concern in Ontario and Threatened in Canada. Owl surveys, which were done for the first time in this watershed, revealed an Eastern Screech-owl residing at Purple Woods C.A. No other owls were recorded during the surveys; however, Great Horned owls were heard calling in the Columbus/Harmony area during nighttime amphibian surveys in the watershed.

Roadside amphibian surveys were conducted for the first time in the Oshawa Creek watershed revealing a number of high quality amphibian habitats throughout the north half of the watershed. Full choruses of Wood Frog, Spring Peeper, Gray Treefrog, and American Toad were heard at several sites. An incidental observation, made during the preparation for these surveys, was of 3 River Otters.



River otter

This species has been observed elsewhere in the jurisdiction, but this is a new sighting for the Oshawa Creek watershed.

The Forest Bird Monitoring Program surveys are conducted annually within the Heber Down and Long Sault Conservation Areas. As usual, these higher quality forest sites attract forest obligates such as Black-throated Green Warbler, Broad-winged Hawk, Pileated Woodpecker, and Northern Waterthrush.

Several Species at Risk (SAR) were observed in the CLOCA jurisdiction in 2012, some of which are new additions from the Federal and Provincial SAR lists. These species include:

- Canada Warbler (Threatened – Canada; Special Concern – Ontario)
- Eastern Wood-pewee (Special Concern – Canada)
- Eastern Meadowlark (Threatened – Canada; Threatened – Ontario)
- Barn Swallow (Threatened – Canada; Threatened – Ontario)
- Bobolink (Threatened – Canada; Threatened – Ontario)
- Wood Thrush (Threatened – Canada)

For a more in-depth discussion of the wildlife data gathered throughout the year, please refer to the 2012 Wildlife Monitoring Report, available on the CLOCA website.

Durham Region Coastal Wetland Monitoring Program

The year 2012 marked the 11th year of data collection for the Durham Region Coastal Wetland Monitoring Program (DRCWMP). Activities in 2012 included the monitoring of bird, amphibian, fish, macroinvertebrate and submerged aquatic vegetation communities, as well as water quality and water levels. Additional monitoring included the Ecological Land Classification of McLaughlin Bay Marsh and its surrounding habitat, and visual surveys for turtles. Lack of precipitation in 2012 resulted in many of the marshes having very shallow water from mid-summer to fall. Low water levels provide less habitat for aquatic wildlife, which may have resulted in a less successful breeding season. However, low water levels allowed for vegetation regrowth, which aids in maintaining vegetation diversity. Warm temperatures in the spring initiated an early breeding season for frogs and toads. An abundance of Wood Frogs, one of the first species to begin breeding, could be heard calling from several marshes in mid-March.

Dynamic water levels are an important and vital element in coastal wetland health. Great Lakes coastal wetlands require extreme fluctuations in water levels to sustain their high levels of biodiversity. These fluctuations maintain high vegetation species diversity and a balance of submerged and emergent vegetation habitat. This diversity in vegetation species and communities provides critical habitat for many wetland dependent wildlife species. Since Great Lakes water level regulation began in 1958,

fluctuations have been insufficient to keep vegetation communities regenerating, such that *Typha* species (cattails) have become the dominant emergent plant in most marshes. As part of many coastal wetland restoration strategies, control structures which allow for the manipulation of water levels are often used to mimic historical water level fluctuations. Cranberry Marsh, Oshawa Second Marsh and Duffins Creek Marsh are three wetlands in Durham Region which have control structures in place. In 2012 the Cranberry Marsh Water Level Management Strategy document was completed. This document provides background information on the history of Cranberry Marsh and its management, and provides direction for future management of water levels based on ecological data collected through the DRCWMP.



Wood Frog



Cranberry Marsh water control structure

MONITORING

Provincial Groundwater Monitoring Program

The Provincial Groundwater Monitoring Network (PGMN) is a network of about 470 water wells across the province used to collect water level and water quality information. This program is a multi-agency effort between the province, municipalities and conservations authorities.

The PGMN is designed to collect ambient groundwater level and groundwater quality data from key aquifers in Ontario. The data collected provides baseline information for the various provincial and municipal programs including, but not limited to, source water protection (SWP), water taking assessment (PTTW), low water response, nutrient management, watershed management, development reviews and addressing conflicts related to groundwater interference. Data are also used to calibrate the hydrological model developed for the SWP Tier 1 water budget study.

The Central Lake Ontario Conservation Authority (CLOCA) initiated its PGMN program in 2002 and is currently collecting hourly water level data from 14 PGMN monitoring wells. Water quality samples are collected once a year (fall) and sent to the Ministry of Environment Laboratory for physical chemical analysis. Laboratory tests are performed in accordance with the protocol set by the Canadian Association for Environmental Analytical Laboratories (CAEAL).

In 2012, groundwater staff worked on data correction using barometric pressure and manual readings. CLOCA staff have also started working on the upload of groundwater data to the CLOCA CUASHI open source code hydrological database equipped with several analytical tools to make CLOCA groundwater data easily accessible to our member municipalities and partners. CLOCA is looking to add two wells in 2013 to the monitoring program to address gaps identified in a recent CLOCA Monitoring Network review. The search for appropriate wells was initiated in 2012.

Water Monitoring

The Central Lake Ontario Conservation Authority's (CLOCA) Water Monitoring Network is a collection of stream gauges, rain gauges, air and water temperature probes, groundwater monitoring wells, snow measurement sites and surface water and groundwater quality sites. This Water Monitoring Network and the valuable information collected from it, helps us better understand and predict the impacts of land use activities on water quantity. This knowledge allows us to make informed decisions about the management and protection of our water resources. The data is catalogued and analyzed to help us develop effective watershed wide management programs and policies like our state of the art Flood Forecasting and Warning System, Low Water Response and Source Water Protection programs.

Each year we review the location of monitoring equipment and its effectiveness in recording the required data. With the addition of a heated tipping bucket at Lynde Creek Kinsale site, the Airport location to monitor snowfall was evaluated and the decision was to move the Geonor precipitation gauge to a more suitable location to measure snowfall. After discussions, site meetings with City of Oshawa staff and a signed Lease Agreement, the existing tipping bucket rain gauge site at the Works Yards on Howden Road, was updated to a full monitoring site.

In 2012 the additional monitoring equipment was installed and now monitors rainfall, total precipitation and air temperature. The site is powered with a solar panel and chargeable battery.



Howden Yard



Whitby Yard

The gauging station at the Town of Whitby Works Yard was established a few years ago at the request of Town staff to access rainfall amounts. Originally, the Town wanted to have direct access to the data but a rooftop location wasn't suitable. The equipment was placed in the Works Yard on a metal post with CLOCA staff downloading and providing maintenance. The data is accessible through CLOCA's web site.

In 2012, the tipping bucket, temperature sensor and datalogger were moved to the corner of the Yard on a rigid wooden post to prevent false readings from wind and vibrations.

The winter of 2011/12 recorded lower than normal snowfall and the early spring with high temperatures mostly evaporated the snowpack with very little recharge of creeks or groundwater. The spring of 2012 was highlighted with below average rainfall throughout our watershed for the months of April and May with April's rainfall averaging 42% and May's rainfall averaging 54% of historic averages. These conditions caused baseflows in Lynde, Oshawa and Bowmanville creeks to drop below historical averages, requiring additional flow measurements. On May 9, 2012 CLOCA issued a press release stating the watershed has entered a Level 1 Low Water Condition. Conditions started to change with June's rainfall averaging 132% and July's rainfall averaging 122% of historic averages. These conditions caused baseflows in Lynde, Oshawa and Bowmanville creeks to recover above historical averages. With monthly rainfall averages through the rest of the year, alternating above and below normal, the baseflows within our creeks responded and stayed above the historical average. No further Low Water messages were issued.

The Provincial Surface Water Quality Monitoring Program (PWQMN) is a partnership with Ministry of Environment and local Conservation Authorities to perform water quality sampling of surface water across the province. Samples are currently collected at monthly intervals from April through November and are analyzed for a range of water quality indicators (including temperature, Ph, conductivity, turbidity, suspended solids, major ions, nutrients, metals and pesticides) in order to screen overall water quality.

The PWQMN program is funded through MOE and pays for the lab costs. CLOCA's contribution is staff time to collect the samples. CLOCA currently collects monthly (April through November) sampling at 9 sites across our watershed and conducts 2 or 3 sampling rounds at 10 additional sites across our watershed. The lab analysis is funded through Durham Region and local municipalities.

Invasive Species in our Watersheds

To help thwart the increasing threat of invasive species, CLOCA continues to implement its Invasive Species Management Strategy. The strategy focuses on prevention, education & outreach, best management practices and collaborating with a broad professional network that works on invasive species related issues. CLOCA staff had the opportunity to implement several of the Invasive Species pilot projects developed in preceding years. This included the removal of over 25 large garbage bags of Garlic Mustard, two trailer loads of European Frog-bit, and two truckloads of Yellow Iris.

In addition to hands-on management, some of the working groups' other accomplishments for 2012 include:

- Invasive Species mapping
- Workshops and workdays for the general public and for school groups
- Restoration initiatives

- Outreach initiatives at CLOCA's CA's and local events
- Survey of goldfish at 20 of Oshawa's storm water management ponds
- Creation of educational and entertaining videos



- Contributing to the development of Provincial BMP's
- Contributing to regional working groups
- Contributing to a variety of Ontario Invasive Plant Council (OIPC) committee's
- Partnering with OMNR Stewardship Rangers
- Attending and presenting at the OIPC Annual General Meeting



European Frog-bit Removal



Yellow Iris removal



PLANNING & REGULATION

Planning and Regulations

Comprehensive planning and regulation services are provided to residents, the development industry, the province and our municipal partners to ensure the formulation of policy documents and proposed development is undertaken with the environment and safety at the forefront. Staff work with hundreds of landowners each year on various planning issues.

Planning services include:

- Providing comments on behalf of the Province of Ontario on natural hazards, including areas susceptible to flooding, erosion and unstable slopes, under Section 3.1 of the Provincial Policy Statement (2005).
- Providing advisory comments on provincial planning initiatives and reviews.
- Providing advisory comments on municipally initiated Official Plan and Zoning By-law applications.
- Providing advisory comments on planning applications and technical reports initiated by private landowners and developers:
 - Official Plan and Zoning By-law Amendments
 - Draft plans of Subdivisions/Condominiums
 - Consents

- Minor Variances
- Site Plan
- Provide information to clients on natural heritage features and systems:
 - Wetlands
 - Shorelines of lakes, rivers and streams
 - Ravines, valley, river and stream corridors
 - Significant natural areas
 - Groundwater
 - Fish habitat protection.

Regulation Administration:

CLOCA also administers Ontario Regulation 42/06 under the Conservation Authorities Act, requiring technical reviews and permits for development proposals involving activities adjacent to watercourse, wetlands, shorelines and hazard lands, as well as any activity that causes interference with a watercourse or wetland.

Permissions are granted provided the Authority is of the opinion that the development will not have an adverse effect on the control of flooding, erosion, dynamic beaches or the pollution or conservation of land. Staff are also involved in public education and seeking compliance with the regulation.

Statistics 2012: Plan Review

In 2012, CLOCA provided planning advice, comments and/or clearances on 263 new or revised municipal policy documents or development applications as follows:

- 15 Official Plan Amendments
- 32 Zoning By-law Amendments
- 90 Site Plan Applications
- 64 Plans of Subdivision/condominiums
- 40 Land Divisions
- 22 Minor Variances

In addition, CLOCA also provided advice and comments on 33 Special Studies (EA's, Master Drainage/Environmental Servicing Plans, Secondary Plans, Good Forestry Practices applications).

In 2012, staff continued to participate in official plan reviews for the Municipality of Clarington and the Town of Whitby.

Ontario Regulation 42/06: Regulation of Development, Interference with Wetlands, Alteration to Shorelines and Watercourses

Under the authority of Ontario Regulation 42/06, staff issued 260 permits for activity/development within our Regulated Area. 5 Notices of Violation were issued for work done without the necessary approvals. All 5 violations have been resolved without the need for convictions before the courts. Staff also commented on 65 legal inquiries and provided 54 letters of advice for fisheries matters under our agreement with the Department of Fisheries and Oceans.

Staff have also been involved in the review and preparation of the Amending Regulation enabling delegation of permit approval to staff, permit extensions and the issuance of permits for time frames of 60 months.



Aerial mapping showing the Ontario Regulation 42/06 regulated area (yellow).

Draft Regulation and Plan Review Policy and Procedural Manual

In 2012, staff continued to receive comments on CLOCA's draft Regulation and Plan Review and Procedural Manual. Comments received have been considered and the formulation of a final recommended Manual continued throughout 2012.

Plan Review and Regulation Fee Review

In 2012, staff undertook a Plan Review and Regulation Fee Review. The fee review included consultation with the development industry. The Board of Directors approved a revised fee schedule and endorsed the principle of achieving 100% cost recovery for Plan Review and Regulation administration.

Provincial Policy Statement Review

Staff continued to provide advice to the province on their review of the 2005 Provincial Policy Statement (PPS). Staff collaborated with Conservation Ontario and attended a meeting with provincial staff to discuss the draft changes to the PPS.

Large Fill Policy

In 2012, staff collaborated with other conservation authorities and Conservation Ontario to develop a Large Fill Best Management Discussion Paper. The Discussion Paper provides information on how issues related to large fill sites can be addressed. Also in 2012, the Board of Directors approved a revised Large Fill Policy to incorporate several provisions to ensure issues related to large fill applications and operations are addressed.

Bluff and Valley Erosion Management Brochure

Staff developed a Bluff and Valley Erosion Management brochure which was approved by the Board of Directors. The approved brochure informs property owners along bluffs or valley slopes of erosion and slope stability issues and practices that they can carry out to ensure erosion rates are not accelerated.



Slope Erosion



GROUNDWATER RESOURCES

Groundwater Resources

Over the past decade, many Conservation Authorities including CLOCA, have recruited and developed expertise in groundwater management. This was likely in response to provincial programs developed in the post-Walkerton era and increasing expectations for this expertise by both the provincial government and municipalities. The CLOCA Groundwater Department continues to provide hydrogeological expertise and services internally to the various CLOCA departments, including but not limited to, providing support for hydrogeological report plan review, watershed planning report analyses and documentation, monitoring network data collection and analytical support, Permit to Take Water review (PTTW) environmental assessment support, and stewardship (watershed report card reporting, well decommissioning program administration).

The groundwater department also responds to direct groundwater service requests from Durham Region's Planning and Works departments as well as those from the Lower Tier municipalities. In 2012, staff reviewed and commented on 33 (compared to 6 in 2011) hydrogeological, EA or geotechnical studies submitted to the Planning department, coordinated 6 PTTW reviews and processed 12 private well projects (implemented 9) under CLOCA's well decommissioning and upgrade program.

Groundwater staff are also active members of the York Peel Durham Toronto – Conservation Authorities Moraine Coalition (YPDT-CAMC) and Conservation Ontario Geoscience Committees.

The Groundwater Department also leads the CLOCA Source Water Protection Program that has supported and continues to support the data collection and technical products and capabilities of the Authority for many of its other business units. CLOCA now leads the administration of the ongoing Lake Ontario Collaborative study.

Source Water Protection

The Clean Water Act (CWA, 2006) legislation was passed to help protect drinking water at the source that was developed in response to the Walkerton tragedy in 2000. A key focus of the Act is the preparation of locally-developed, science-based Assessment Reports and Source Protection Plans. Under the Act, there are legislated timelines associated with these products; 12 months following the acceptance of the Terms of Reference for the CLOSPA Assessment Report (August 17th, 2010) and approximately 24 months later (August 20th, 2012) for the CLOSPA Source Protection Plan. Extensions for the deadlines require authorization from the Minister of the Environment. The Program is governed by a Source Water Protection Committee (SPC) with membership from the major stakeholders within the Source Protection

Region; municipal, sectoral and 'other' (NGO's, academia, general public). The CTC SPC is made up of 21 members plus a Minister appointed Chair. The CTC Conservation Authority staff provide support to the SPC by developing the required products for the committee's review and approval.

Source Water Protection Plan and ongoing technical work

CLOCA is part of the CTC (Credit Valley, Toronto and Region, Central Lake Ontario) Source Water Protection Region. In October 2012, a Proposed Source Water Protection Plan for the CTC Source Protection Region was submitted to the Ministry of the Environment. The Plan consists of several policies to manage or eliminate significant threats to drinking water sources that were identified in the provincially approved Assessment Reports. For CLOCA, with no municipal wells, the focus for drinking water source protection is on Lake Ontario with 95% of the population served by this source. CLOCA staff on behalf of the CTC led the development of the policies to address the identified drinking water treats to the Lake Ontario supply. Staff are currently awaiting a decision from the Province regarding the approval of the Plan. A response is expected by March 2014.

In the interim, staff continue to work on several outstanding technical items such as database management, the development of implementation products for use by municipal staff, updating the website to include a 'where policies apply' searchable tool, and additional Lake Ontario modeling tasks identified by stakeholders during the consultation. C.A. staff also continue to support the Ministry of Environment and the municipalities in the transitioning to implementation.

Oak Ridges Moraine Groundwater Program

To provide a multi-agency, collaborative approach to collecting, analyzing and disseminating water resource data as a basis for effective stewardship of water resources. The YPDT-CAMC Groundwater Management Program is to build, maintain and provide to partnered agencies the regional geological and hydrogeological context for ongoing groundwater studies and management initiatives within the partnership area. In an iterative and collaborative approach, the YPDT-CAMC study team is working with its partners to build and maintain: a master database of water related information, a digital geological model of the subsurface, a numerical groundwater flow model, and finally, to coordinate special hydrogeological investigations and provide technical

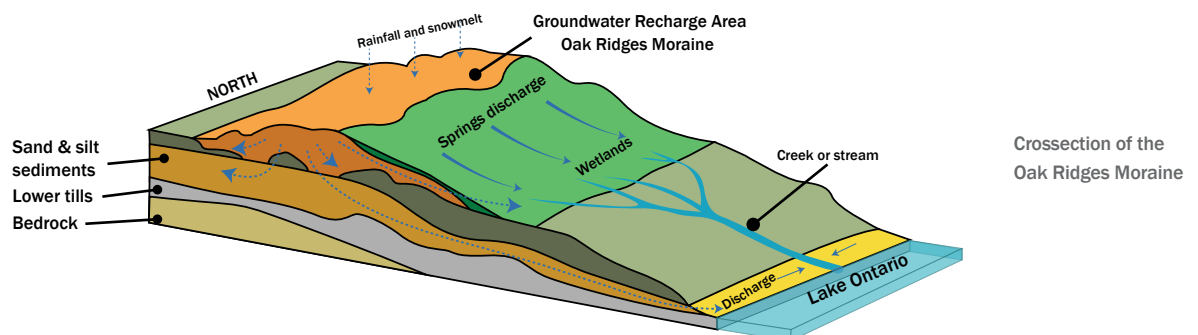
support to the partner agencies. As indicated CLOCA staff are active members who assist in the development of the various tools and products and apply these in support of CLOCA's various groundwater related business needs.

In 2012, considerable work continued on the development and advancement of the YPDT- CAMC database. With the successful migration of the database to an SQL (Structured Query Language) environment, the database was transferred to several key partners to test its usability and assess the replication of "partner" databases with the "master" database on the primary server located in Downsview. To assist with the use of the database, 2012 saw the production of a new Database Users Manual that guides users through the structure and thinking behind the design. Work on geological "fingerprinting" of subsurface layers, isotopic tracer analyses and the assessment of groundwater recharge approaches and estimates was done in 2012 and continues to provide the partner agencies with better insights and understanding of the groundwater system. YPDT-CAMC staff also led as overall Co-Chair and Technical Chair for the highly successful International Association of Hydrogeologists World Congress that attracted over 900 delegates held in Niagara Falls (September 2012) CLOCA staff served on the volunteer coordinating team.

Best Management Practices – Hydrogeological Guidelines for Development Plans

During 2012, CLOCA, Lake Simcoe Region and Nottawasaga Valley groundwater staff initiated the development of a Hydrogeological Assessment Conservation Authorities Guideline document to assist proponents and municipalities with technical hydrogeological study requirements in support of development plan applications. The purpose of the document is to attempt to standardize hydrogeological study requirements amongst Conservation Authorities involved in plan review in Ontario as the content and quality of these reports currently varies significantly.

The draft document was circulated by Conservation Ontario to the Conservation Authority technical and planning staff for review and comment in October 2012 and a revised copy has recently been re-circulated to Conservation Authority staff as well as to the York Peel Durham Toronto (YPDT-CAMC) Groundwater Group and selected municipal planners for final review. Preliminary feedback from the consulting community was positive. It is anticipated that these guidelines will be adopted by the majority of Conservation Authorities and be continuously updated and improved to meet ongoing local needs.





CONSERVATION AREAS & LAND HOLDINGS

Central Lake Ontario Conservation Authority Land Acquisition Strategy

In June, the CLOCA Board of Directors approved the Central Lake Ontario Conservation Authority Land Acquisition Strategy, 2012. This Strategy will guide the Authority's land acquisition program, identifying primary and secondary land acquisition target areas. Development of the target areas was based upon sound natural heritage system planning methods and watershed expertise, including CLOCA's Natural Heritage System model, watershed plans, conservation area plans and provincial land use plans. The Primary Land Acquisition Target Areas are the cornerstones of CLOCA's natural heritage system representing core habitat areas vital to ensure a functional natural heritage system continues to exist in the future. Five Primary Target Areas are identified on the Oak Ridges Moraine including: Long Sault Acquisition Target Area; Enniskillen Valley Acquisition Target Area, Oshawa Creek Headwaters Acquisition Target Area, Purple Woods Acquisition Target Area and Crow's Pass Acquisition Target Area. CLOCA currently has land holdings in each of these target areas.

Secondary Land Acquisition Target Areas support the Primary Target Areas and includes the Oak Ridges Moraine Regional Corridor Land Acquisition Target Area. This Target Area has

been divided into 3 units (central, east and west), identifying opportunities to support the long term goal of connecting CLOCA's five Oak Ridges Moraine Primary Target Areas and establishing a continuous natural corridor.

Land Acquisition- Over 300 acres of Land Added to CLOCA's Land Holdings on the Oak Ridges Moraine (ORM)

CLOCA was active in 2012, securing 5 land parcels for a total of just over 300 acres of land on the ORM. Details regarding the properties secured are as follows:

- CLOCA acquired a 168 acre parcel of land in the Oshawa Creek Headwaters. This parcel includes 43 ac of the Provincially Significant Enfield Wetland Complex and another 42 ac of associated upland habitat. The Enfield Provincially Significant Wetland (PSW) has the largest concentration of kettle wetlands in the eastern part of the ORM contributing baseflow to the headwaters of the Oshawa Creek supporting a sensitive and significant cold water fishery. This area has been identified by CLOCA as a core wildlife habitat area containing deep forest interior habitat vital to sensitive species. Acquisition of these lands protects the east-west movement of wildlife

CONSERVATION AREAS & HOLDINGS

across the Moraine and provides a foundation upon which further opportunities for public acquisition of the Enfield PSW can be pursued. These lands are within the ORM Natural Linkage Designation and are located within the Municipality of Clarington.

- CLOCA received a generous donation of 37 acres of land in the Township of Scugog (ORM Natural Linkage Designation). Known as the Lick Woods Tract, this land locked parcel is dominated by a mid-aged Sugar Maple deciduous forest. It is a core wildlife area within CLOCA's Natural Heritage System and part of a larger core forest area that exists within this narrow section of the Oak Ridges Moraine.
- The Long Sault Conservation area grew in size with the securement of 2 parcels – a 30 acre and a 60 acre parcel. These parcels are in the Municipality of Clarington and in the Natural Core Area Designation of the ORM. Both parcels are forested and are part of the larger Long Sault Forest. The 60 acre parcel possesses significant core habitat and headwater features worthy of protection. A mature Sugar Maple/Ash deciduous forest is found at its core and a young Red Pine and White Pine plantation exists along the north and west perimeter of the property. The 30 acre parcel is a young to mid-aged Sugar Maple forest with some pockets of mid-aged Hemlock. The age and quality of the forest in these parcels contributes significantly to the core forest habitat of the area. Securement of these lands protects significant wildlife habitat and significant forest resources on the ORM.
- Eleven acres were added to the Enniskillen Valleylands. These lands are located on the slopes of the ORM within the Enniskillen Valley and are found within the Municipality of Clarington and are contiguous with existing CLOCA landholdings. Wetland pockets are evident and a headwater tributary to the Bowmanville Creek originates from the slopes on this property. Other parts of these lands display evidence of past agricultural activity.

Purple Woods Heritage Hall

In 2012, Central Lake Ontario Conservation opened the doors to the new Purple Woods Heritage Hall, a 4,500 square foot community natural areas meeting place and education centre. The Hall was constructed to echo a rural Ontario heritage barn and was constructed with timbers recycled from old barns and an airplane hangar. It compliments the 41 acre site complete

with an operating sugar bush and panoramic views from the top of the Oak Ridges Moraine. Our highlights for the new building and site in 2012 include the following;

- Hosting 15 public events including an outdoor movie night, a Monarch Teacher Network Canada workshop and a Mother's Day Tea, engaging a total of 1,000 participants from April to October
- Hosting the 37th Maple Syrup Festival with more than 12,500 people in attendance during the month of March
- Creating a pollinator garden as an entrance feature and a teaching garden to support our education programs
- Planting 500 sugar maples and other native trees and shrubs to expand the sugarbush and enhance overall biodiversity of the site
- Hosting a community open house to assist with the development of a business plan for the new facility

Purple Woods Conservation Area

The final component of our Purple Woods Conservation Area redevelopment is the construction of the Discovery Trail; an accessible trail that connects the Heritage Hall to the Oak Ridges Trail and our Sugar Shack production facility. One of the major site challenges has always been the 25-meter change in elevation between the top and bottom of the site. The trail was designed to overcome the grade change without exceeding the maximum slope considered appropriate for people with mobility devices. This challenge was overcome by creating a 900 meter long, meandering, hard surfaced trail, with numerous rest stops, and proposed informative displays along the way. The Discovery Trail will promote CLOCA's mission of awareness, wise use, and enhancement of watershed resources, in partnership with the Region of Durham.

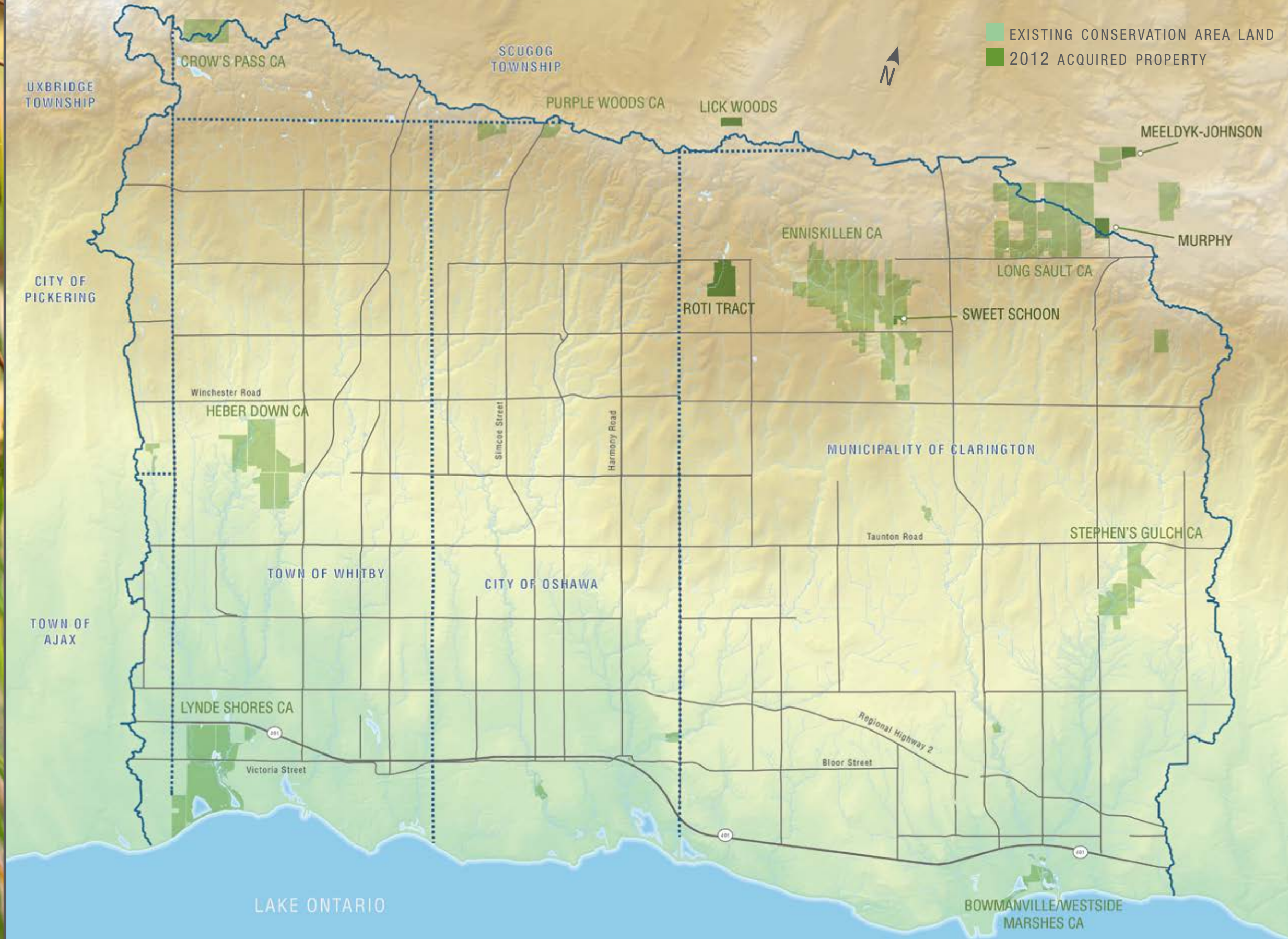
An outdoor classroom will be constructed in the summer of 2013 as a feature on the Discovery Trail. The classroom will allow education groups to gather and focus on planned activities at the start of an event, or to summarize the day's learning at the end. The outdoor classroom is based on native learning circles, and will provide a natural amphitheater of ledge rock that follows the natural contour of the land.

Redevelopment of the Purple Woods Conservation Area will enhance the visitor's overall experience and greatly improve the site as a truly unique destination for Durham Region.



Purple Woods Heritage Hall

CONSERVATION AREAS & LAND HOLDINGS



CONSERVATION AREAS & HOLDINGS

Improvements at the Purple Woods Conservation Area will allow the site to continue to meet the growing demand for the annual Maple Syrup Festival and to provide facilities for year-round education, outreach, and community events.

Purple Woods Maple Syrup Production

In addition to the opening of Heritage Hall, CLOCA undertook structural and electrical renovations to the Sugar Shack Production Facility to support the installation of new maple syrup production equipment. New, more efficient equipment will enhance production and improve the visitor experience. Purple Woods is a working sugar maple forest, with over 1,000 taps, pipeline, sap collection, and syrup making equipment. The equipment has worked well beyond the expected lifespan and replacement was mandatory for the health and safety of staff, as well as the general public.



In preparation of a new maple syrup evaporator, the Sugar Shack underwent extensive renovations including a new hydro line from Coates Road.

Renovations to the sugar shack that houses the sap storage and maple syrup making equipment, allows visitors to view more of the production system and accommodate larger crowds. The renovations improve food safety and facilitate efficient transfer and handling of sap and syrup as it works through the suction pump, filters, ultraviolet treatment, bulk sap storage, reverse osmosis filtering, wood fired evaporator, syrup finishing pans and bottling machine.

The renovations and equipment replacement required replacing the electrical feed between Coates Road and the Sugar Shack. Staff worked with Oshawa PUC, who installed a new transformer at the base of the hill in the sugar bush and provided approximately 600 meters of primary electrical cable laid from the northeast corner of the new parking lot (Coates Road) down into the Sugar Bush. The new cable provides staff with the ability to replace our former service that was over 50 years old and upgrade to a 200 amp panel to accommodate new maple syrup equipment.

The new Hurricane Force 5 wood fired evaporator enables maple syrup production staff to boil sap at a much faster rate, without sacrificing the quality of maple syrup that is produced. The wood

fired system and ambiance has been maintained, but the new evaporator is approximately 30% more efficient, providing staff with the ability to boil sap at approximately 120 gallons per hour as opposed to our old evaporator at 80 gallons per hour. The new equipment conforms to modern food safety requirements and the entire evaporator is hooded. The general public will be able to get within a few feet of the new evaporator and will observe the flow of sap from the bulk storage area and to the new evaporator.

Joseph Kolodzie Oshawa Creek Bike Path and Land Transfer to City of Oshawa



Working along the bike path.

The CLOCA Administration office property has an interesting history. A foundry operated on the property from the 1850's to 1890's, making farm implements. The site became a tannery in 1898 and operated on the property until 1977. In 1980, most of the buildings were destroyed by fire. Historic information and current site assessments revealed that sections of the property contain impacted soil and wastes from the former tannery and foundry operations. In 1998, the City of Oshawa received approval from the Ministry of Environment (MOE) under Section 46 of the Environmental Protection Act for use of the former Robson Lang Tannery Lands as a public trail (part of the Oshawa Creek Trail System).

Since that time, in conjunction with the MOE, the City and CLOCA have been closely monitoring the extent and level of contamination on this property to ensure that there are no opportunities for appreciable exposures to the contaminants in the soil for persons who use the paved trail for recreational uses such as walking and biking. The benefits of having the trail remain open to the public include the promotion of active and healthy lifestyles and supporting community vitality. The MOE, the City and CLOCA have worked to ensure that while the trail remains open, there is minimal to no risk to public health.

In 2010, the MOE completed a shallow soil sampling survey on the property and in the vicinity of the paved public trail. The MOE's site clean-up standards for soil quality have changed since the Section 46 Approval was granted by the MOE in 1998. Recent analysis has concluded that contamination along the trail now exceeds current MOE standards for soil contamination.

CONSERVATION AREAS & HOLDINGS

The City responded proactively to the soil analysis and installed a fence to mitigate potential risk for users of the trail system and removed impacted soil located near the public trail. The work was completed in the fall of 2012. The MOE, CLOCA, The City and Durham Region Health Department are committed to work collaboratively in the future, to reduce the risk of exposure to historic soil contamination along the public trail.

Heber Down CA

The 10 km of passive recreational trails at the Heber Down CA were very busy in 2012, providing the general public with another calendar year of healthy hiking. Feedback regarding the state of our trails at the Heber Down CA continues to be extremely positive. Significant trail upgrades/improvements (completed 2008 to 2010) require some attention regarding touch up and resurfacing on an annual basis, but have held up extremely well.

The laneway into Heber Down CA continues to remain on top of the list for operational challenges as we move forward at HDCA. Asphalt in portions of the laneway break up seasonally and create large potholes. Operations staff continue to monitor and fill potholes as required.



Heber Down CA laneway

Stephen's Gulch CA

Stephen's Gulch Conservation Area was added to the snow removal rotation this year and the parking lot was cleared on several occasions in an effort to make it available to the public during the winter months. Several of the trail bridge decks were removed and re-built in 2012 using environmentally sustainable materials.

Enniskillen CA

Trail network alterations and changes commenced in 2012 at the Enniskillen CA and will carry forward into 2013. Authority staff are establishing a loop trail network similar to what is present at the Heber Down CA. Trail connection work, as well as the removal of approximately 300m of boardwalk along an interior trail (that is being decommissioned) will carry forward into 2013. The boardwalk was in poor condition and had been constructed predominantly of pressure treated materials which have been removed and landfilled.

In May, 2012 road work was completed by the Municipality of Clarington on the section of Holt Road running north from Concession Road 7 into the Enniskillen Conservation Area. The former asphalt surface was in poor condition. The former surface was ground up, recycled and used as a base for the entrance laneway and capped with granular. Municipality of Clarington staff has advised that this surface will be cleaner and easier to maintain.



Boardwalk removal

Lynde Shores CA

In 2012, Conservation Areas staff continued with trail maintenance activities on the Levay's Lane Trail. Limestone screenings were imported, trails were re-graded and refurbished. Minor repairs were again completed on the Lynde Shores boardwalk throughout the summer months. The 133m long structure is certainly a destination point for our Conservation Area visitors. Authority staff are in the process of securing funding in order to relocate the existing boardwalk structure to the Levay's Lane Trail.



Lynde Shores boardwalk

CONSERVATION AREAS & HOLDINGS

Long Sault CA

Warmer than average seasonal temperatures yielded winter and early spring conditions that made entrance laneways, trails and parking lots very slippery. Routine maintenance activities associated with snow removal, salting and sanding have been necessary to keep our parking areas free and clear of snow and ice.

Bowmanville Westside Marshes CA

The Bowmanville Westside Marshes CA continues to increase in popularity. The trail network was maintained by Land Management & Operations staff throughout the spring, summer and fall months. The trails required some widening and bush hog work in order to assure that safe sight lines were in order and limestone screenings were imported to stabilize some minor rutting. The loop trail network continues to provide its users with a picturesque and peaceful escape situated within minutes of downtown Bowmanville.



Bowmanville/Westside Marshes CA

Long Sault Conservation Area Darlington Forest Tree Thinning



Darlington Forest Tree Thinning

Long Sault Conservation Area Management Plan recommends continuing the timber management of red pine plantations within the Area with the ultimate goal of regenerating the plantations into natural forests. The process of thinning the plantations not only allows for the remaining pine and spruce trees to grow larger, but also encourages the start of other tree seedlings that originate as seed blown in from nearby forest communities.

The Darlington Forest Tract of Long Sault was acquired from the Municipality of Clarington in exchange for urban valleyland in 2011. The property is 57 hectares (140 acres) of mixed forest and red pine plantation, and is located north of Regional Road 20 on the Manvers/Darlington township boundary. The plantations are more than 50 years old, and are in need of thinning to open up the canopy and allow remaining trees to grow.

Bob Penwell, of REP Forestry Services was retained to survey and mark the plantations for thinning. Approximately 6,600 Red pine, 50 White spruce, and 90 White pine trees were marked for harvesting. The trees average about 20 centimeter diameter at breast height. The thinning was tendered and awarded to Eng's Forest Products of Uxbridge. The harvest was completed in the fall of 2012.

CONSERVATION AREAS & HOLDINGS

CLOCA Memorial Bench Program

The CLOCA Memorial Bench Program is an initiative that commenced several years ago and has slowly gathered momentum. In 2012, memorial benches were installed by Land Management & Operations staff at the Long Sault CA, Lynde Shores CA and Hampton CA. The program works extremely well as it provides families mourning the loss of loved ones with a physical object to which they can associate and express their loss.

The memorial benches can be constructed of recycled plastic lumber or cedar. The cost of the bench, associated materials and staff time required for the installation is subsidized by the family. A memorial plaque with an inscription is placed on the bench.



A Memorial Bench installed at Hampton Conservation Area.

Conservation Area Enforcement Initiatives

CLOCA Operations/Enforcement staff worked rotating schedules throughout the busy summer months of 2012. The schedule allowed our staff to have a significant presence in our Conservation Areas on weekends throughout the summer of 2012, educating our Conservation Area users about Conservation Areas Ontario Regulation 101/90 and issues that we are experiencing.

Pay & Display Vandalism

Throughout the course of a calendar year, Operations staff deal with approximately 3 to 5 vandalism oriented issues with these units.

The solar powered pay and display unit at the Long Sault CA was vandalized in March 2012 forcing it to be out of commission for a period of approximately 2 weeks. The unit was kicked, had debris jammed into the coin slots and the wire harness connecting the solar panel with the unit was cut. Repairs were completed by Mackay Meters in conjunction with Authority staff. Additional precautions were added in an effort to shield the cable and the machine is once again fully functional.

Off-Road Vehicles

Recreational off-road vehicles have been entering the St. Mary's property located to the northeast of the main parking lot at Stephen's Gulch Conservation Area. Authority staff noticed that they have been accessing Conservation Authority lands at the north end of the Stephen's Gulch Conservation Area.

Authority staff has been corresponding with St. Mary's land management staff, Durham Regional Police Service staff and the Municipality of Clarington By-Law Enforcement staff in an effort to bring these issues under control.

Dogs Off Leash

Dog off leash complaints/encounters continue to escalate. Enforcement staff has been advised to give special attention to "dog off leash" issues in an effort to ensure the safety of all of our Conservation Area Users.

Unsanctioned Hunting Activities

CLOCA Provincial Enforcement Officers worked closely with enforcement staff from the Ministry of Natural Resources and the Durham Regional Police Service regarding reports of hunting at the Lynde Shores Conservation Area. Between October 2012 and January 2013, CLOCA enforcement staff fielded a number of hunting oriented complaints adjacent to the Lynde Shores CA. An individual was charged and convicted for hunting in a Conservation Area in December 2012. Authority staff continue to monitor activities in the area. Enforcement staff again corresponded closely with the Durham Regional Police Service (DRPS) in order to ensure that all of our Conservation Areas are safe and enjoyable for public use.

Again in 2012, numerous complaints were fielded by areas staff regarding increased popularity of indecent activities at the Lynde Shores Conservation Area, specifically along Halls Road in Whitby. These complaints were forwarded to DRPS for follow up. DRPS completed a "plain clothes investigation" in August, 2012 and reported approximately 30 separate charges for trespassing were issued.

Small Drinking Water Systems Regulation

The Authority is officially down to only two registered small drinking water systems; the Enniskillen Conservation Area Education Centre and the new Purple Woods Heritage Hall. Our systems have been inspected by the Durham Region Health Department and we are operating in accordance with Ontario Regulation 318/08 and 319/08.

Appropriate water treatment systems have been installed in accordance with these regulations and regular monitoring / sampling schedules are being followed.



ENGINEERING

Flood Forecasting and Warning System

The Central Lake Ontario Conservation Authority monitors, on an ongoing basis, weather forecasts and watershed conditions at locations across the watershed. Water level and related information is recorded through our extensive monitoring network, which includes stream gauges, rain gauges, snow course sites and staff gauges. These measurements, weather forecasts and radar information on temperatures and rainfall predictions, along with historic data, are all taken into consideration when developing a flood forecast.



Flooding at Taunton Road and Mary Street.

In total 8 messages were issued in 2012:

- 3 Watershed Conditions Statement – Water Safety
- 4 Watershed Conditions Statement – Flood Outlook
- 1 Flood Watch

In February 2012 CLOCA rolled out a suite of web products for lower and upper tier municipal partners and emergency responders. The intent of these products is to provide our partners with access to data and information collected and processed by CLOCA staff and programs.

The three products now available are:

1. Flood Forecasting & Warning Web Application
2. CAUHSI (Consortium of Universities for the Advancement of Hydrologic Science) Data Management Module (refer to page 35 for more information)
3. Geoserver

Also in February 2012, CLOCA began using the new terminology for flood and water safety messages developed by a committee of representatives of Conservation Authorities, Conservation Ontario, the Ministry of Natural Resources, Environment Canada and other agencies.

When flooding is possible or about to occur, the Central Lake Ontario Conservation Authority issues flood messages to municipal emergency management officials, school boards, police, fire and the media. Flood messages are also posted in the Flood Status section of the Central Lake Ontario Conservation Authority website.

CLOCA issues four levels of flood and water safety messages and now uses the following terminology:

- **Watershed Conditions Statement (Previously High Water Safety Bulletin):** a general notice of weather conditions that could pose a risk to personal safety or which have the potential to lead to flooding.
- **Watershed Conditions Statement – Water Safety: High flows, unsafe banks, melting ice or other factors could be dangerous for recreational users such as anglers, canoeists, hikers, children, pets, etc.** Flooding is not expected
- **Watershed Conditions Statement – Flood Outlook:** Early notice of the potential for flooding based on weather forecasts calling for heavy rain, snow melt, high winds or other conditions that could result in high runoff or ice jams, lakeshore flooding or erosion
- **Flood Watch (Previously Flood Advisory):** Flooding is possible in specific watercourses or municipalities. Municipalities, emergency services and individual landowners in flood-prone areas should prepare.
- **Flood Warning (No change):** Flooding is imminent or already occurring in specific watercourses or municipalities. Municipalities and individuals should take action to deal with flood conditions. This may include road closures and evacuations.

Regulatory Flood Control Facilities

The Regulatory floodline is one component that determines the Regulated area within CLOCA and assists in determining development setbacks. The Regulatory floodline for creeks in our jurisdiction is defined by the peak flows resulting from the greater of either a 100-year return period storm or Hurricane Hazel. As a component of our development review, we also assess and manage the impacts of urban development by investigating the change in peak flows produced from “return-period” rainfall events up to and including the 100 year storm. Traditionally, we, along with other authorities have not considered development impacts from a larger flood standard event like Hurricane Hazel. This is in part because of the assumption that land use change would not affect peak flows. The assumption is based on the fact that when Hurricane Hazel occurred, soils were completely saturated. It is assumed that impervious surfaces would produce the same runoff response as saturated soils on agricultural lands or natural areas.

Our watershed has seen tremendous urbanization in the past 50 years and the urban limits are expanding and will continue to expand to the allowable limits. Our watersheds have developed

from the outlets at Lake Ontario, northerly, into the headwater areas. As we update our hydrologic models to reflect these current and future land use changes, we are finding there is in fact an increase in the Regulatory peak flows. Conversations with other Conservation Authorities are revealing that we are not alone in our findings. Across the GTA, the latest hydrologic models are consistently showing that upstream urban development is causing increases of regulatory peak flow through the watersheds. This, in turn, results in a swelling of the Regulatory floodplain, putting downstream landowners into hazard areas.

Stormwater management facilities are used to mitigate the impacts for the “return period” rainfall events, but the technical guidance provided by the MNR prohibits the use of stormwater management facilities in the establishment of flood hazard limits (River and Stream Systems: Flooding Hazard Limit, sections 4.1 and 4.6). This leaves us, as well as other CA's, in a difficult position. In order to protect downstream landowners from flood hazards, we must restrict development which causes significant conflict with municipal planning initiatives. If development is not restricted, we will continue to see resulting downstream impacts. CLOCA staff continue to discuss the issue of regulatory flood control for urban development with other Conservation Authorities, lower and upper tier municipalities and the development community. We initiated a series of meetings with the planning and engineering staff of the Municipality of Clarington, City of Oshawa, Town of Whitby, Region of Durham, a variety of professionals in the development community, the Durham Chapter Building Industry and Land Development (BILD) Association and Ministry of Natural Resources.

Although there is still work to do to ensure a consistent and acceptable approach to regulatory flood control is achieved across the province, Conservation Authorities are obligated to continue managing urban development and flooding issues. Throughout the meetings and discussions, there is clear support to include flood control ponds as an option for managing the impacts of urban development. In this regard, regulatory flood control ponds are considered to be a necessary mechanism to incorporate into development plans. This will prevent delays in the development process, and will enable CA's municipalities, provincial agencies, and the development community to work cooperatively together to formalize an appropriate resolution.

Lake Ontario Shoreline Erosion – Crystal Beach Road

Erosion along the Lake Ontario shoreline results from several processes including wave action, sediment transport (or the interruption of sediment transport) and flooding. Beaches, bluffs and marshes are all susceptible to these coastal processes. The continual impact of waves striking the shoreline leads to the disruption and weakening of the shoreline soils and eventual erosion. Sediment transport is a natural process along our coastal shorelines and is also linked to wave action. As waves

ENGINEERING

break and recede along the shoreline, a parallel shoreline current is created. The current enables a cycle where sediment is eroded and then deposited further down the shoreline. When this sediment transport pattern is interrupted by a groin (natural accumulation of large rubble) or other physical structure, the area down current becomes sediment starved and will experience exaggerated erosion. Flooding, whether the source is riverine or lake based, increases water levels, flows and velocities which leads to further erosion.

Works along Lake Ontario's shoreline are regulated by several different approval and regulatory agencies. Through Ontario Regulation 42/06, CLOCA is empowered to regulate shorelines and adjacent lands. All activities taking place within these regulated lands must ensure that new hazards are not created and existing hazards are not intensified. Anyone wishing to undertake a shoreline protection project on Lake Ontario will be required to fill out a permit application located on our website or at our administration office.

During the spring of 2012, windy weather events drove large waves into the Lake Ontario shoreline throughout the CLOCA watershed. Most years, large ice sheets would still have been present, and would have dissipated the wave energy. Unfortunately, there was no ice accumulation along the shoreline because of the unusually mild winter. Many reaches of the shoreline experienced erosion as a result, and landowners experienced property damage and erosion of the shoreline adjacent to their properties.

During the October meeting of the CLOCA Board of Directors, a delegate from the Thickson's Woods Land Trust spoke about the shoreline erosion at Crystal Beach Road. Staff from CLOCA met with Region of Durham Works staff and Thickson's Woods residents at the site. The shoreline at Crystal Beach Road has a series of shoreline erosion protection works including boulders, broken concrete and rebar, wooden retaining walls and concrete block retaining walls. The reach of shoreline that has currently failed was a section of wood retaining wall. The storm in the spring reportedly ripped the wall out and dumped some of the pressure treated wood onto the barrier beach of the Corbett Creek Marsh, almost a kilometre east of the site. The eroding shoreline is threatening Crystal Beach Road, the only access for local residents. The Regional water service is also located under the roadway, and is at risk from the shoreline erosion.

After meetings with CLOCA, Region of Durham Works Department, and residents, a coastal engineering consultant was retained by the Region. The consultant will conduct a shoreline assessment, and provide direction for placement of large boulders along the shoreline reach to provide protection of the roadway, as well as an indication of expectations for maintenance and longevity of the works. The assessment will also provide some indication of long-term management of the shoreline erosion processes. It is anticipated that work on the shoreline will be completed during the summer of 2013.

Low Impact Development Best Management Practices

Stormwater is generally managed in three stages on new development sites:

1. At the source, in the conveyance system, or at the "end-of-pipe". The source, otherwise referred to as the lot level, is the landscape surface where the rain falls (roof, lawn, or driveway).
2. The conveyance system is the storm sewer system and overland flow systems (roadways and ditches).
3. The end-of pipe systems are stormwater ponds, wetlands, oil grit separators or infiltration basins.

The implementation of these stormwater management measures has been encouraged through provincial planning, including the Oak Ridge Moraine Conservation Plan, Greenbelt Plan and the Lake Simcoe Protection Plan.

Historically, the emphasis has been placed on end-of pipe systems to manage stormwater. These facilities are visible, easy to access, and are typically municipally owned and operated. They also consume land and are expensive to construct and maintain. Conveyance controls include storm sewer exfiltration systems, bioswales, and catchbasin soak away pits. These systems have not been widely accepted because of uncertainty of cost and performance benefits.

Source controls have not been widely accepted because systems installed on private lands are not publicly monitored, operated, or maintained. There are, however, several simple lot level controls that do not require monitoring or maintenance. Some of these measures are the same systems people commonly use to conserve water where municipal water supply is not available. Rain barrels and cisterns collect rainwater and can be used for watering gardens and provide a non-potable water supply. Adding compost and increasing the topsoil layer on lawn areas, provides greater water holding capacity for the topsoil layer. When applied on an urban development site, these measures are now called LID's, or Low Impact Development measures.

The principle for Low Impact Development is that measures can be employed that mitigate the impact of urbanization. In particular, they offset the impact of increased imperviousness on development sites, and the response of rainfall to the impervious surfaces. Mitigative measures work to trap, reuse, or delay stormwater on the site, and provide a hydrologic response more similar to the pre development landuse conditions. Perhaps most importantly, the environment will benefit by providing a system that mimics natural functions particularly from a water budget perspective, and may allow for added groundwater recharge. Storm runoff rates will be reduced providing more protection and improved water quality to receiving watercourses. The reduction in runoff volume will also benefit the operational efficiency of stormwater quality treatment systems. Low Impact Development measures have now gained the confidence of developers and

municipalities, and CLOCA continues to encourage and promote these systems now being implemented in our watersheds.

Floodplain Mapping Update

Floodplain maps are an important component of CLOCA's flood forecasting system and are essential for development review. Staff are working with our municipal partners to finalize modeling and mapping for the Westside, Bennett and Oshawa Creeks.

Highway 407 East

CLOCA staff from natural heritage, planning and the engineering departments have invested considerable time over the past several years with the review and comments associated with the Highway 407 East Environmental Assessment, and more recently the design for the Phase 1 highway works. CLOCA is a member of the Highway 407 East Environmental Advisory Committee, and also attends monthly Regulatory Agency meetings that include Ministry of Transportation (MTO) and their environmental and engineering consultants, Conservation Authorities, Environment Canada, Department of Fisheries and Oceans and Ministry of Natural Resources.

The proposed Highway 407 Phase 1 construction works will require about 30 stream crossings and the removal of several hectares of wetland and forest habitats. The Highway will also bisect our watersheds and will have an impact on natural corridors and our water systems. Although MTO and the consultant teams have been receptive to comments and concerns from CLOCA, the project will have impacts on our natural systems that will not be mitigated or compensated for. That being said, CLOCA and our neighbouring Conservation Authorities are committed

to ensuring the project is completed in the most environmentally sensitive manner as is practical. The Conservation Authorities need to remain involved through the design and construction stages of the project to ensure that the recommendations and directions provided in the Environmental Assessment are implemented.

Bowmanville Fishway

The Goodyear Dam was built on the Bowmanville Creek in 1910 to provide a source of water for the rubber processing operations of the Goodyear plant, now known as Veyance Canada Inc. In 1988, a fishway was incorporated into the dam to provide access to upstream areas for migrating species such as Chinook and Coho salmon, rainbow trout and lake run brown trout. The fishway is also operated as an impassable barrier for migrating sea lamprey, a Great Lakes invasive species.

In 2008, CLOCA funded a study for the analysis of alternatives and conceptual design of a fish passage system at Goodyear Dam. Since that time, a local community group, Valley's 2000, has tirelessly fundraised and obtained various grants to finance the final design drawings and construction of the preferred alternative, which is a natural bypass channel.

Construction was scheduled for July through September 2012, however unforeseen administrative circumstances prevented the project's commencement. Despite the cancellation of construction, droves of volunteers showed up at the dam to assist the fall salmon run in traversing the dam. The salmon lift made local news, brought community together and facilitated the re-emergence of the Bowmanville Anglers Association. Construction of the bypass has been scheduled for July 2013 and is expected to be completed by September 2013.



From left to right: Paul Hensen, Dave Lawson, Anthony Delio, Eldon Hirschfeld, Lou Simone and Derek Sikma at the Bowmanville Fishway. Photo courtesy of Charlie Hastings.



STEWARDSHIP

Private Well Decommissioning and Upgrade Program

Groundwater, although virtually invisible, is an abundant resource comprising about 30 percent of the earth's available freshwater. In Ontario, groundwater is an important resource mainly because it is an immediate source of clean drinking water for residential communities lacking access to municipal water supply systems. Groundwater also represents a steady source of water that sustains the flow in perennial streams, even during periods of prolonged dry conditions. Protection of the resource ensures good quality groundwater for both human consumption and ecological requirements.

Conversely, contaminated groundwater aquifers are often costly to remediate. Poorly maintained or abandoned wells are a direct vector for potential pollutants such as fertilizers, pesticides, de-icing salts and chemical spills to contaminate an aquifer. Contaminated groundwater can impact nearby water wells tapping the same or connected aquifers and pose health hazards to humans. It can also be released as seepage and springs to surface water bodies and cause adverse effects to aquatic habitats.

In 2004, the Region of Durham initiated a program in partnership with CLOCA to assist residents in the proper decommissioning of



A well after being decommissioned by CLOCA staff.

unused and abandoned wells on their property as well as upgrade improperly constructed active private wells to meet provincial standards (O. Reg 903). Under the program, CLOCA hydrogeologists provide technical assistance, evaluate applications and process the program's financial grants to qualified private well owners.

In 2012, the Well Decommissioning and Upgrade Program successfully assisted CLOCA residents in the decommissioning of eight inactive wells and upgrade of one active water well. Since 2004, the program has extended assistance in decommissioning a total of 55 unused wells and upgrading 26 active water wells.

In 2012, CLOCA hosted its first Water Well Maintenance Workshop for small private well owners to assist them with the care of their wells and drinking water supplies. The event was well attended by residents and staff from the Ministry of Environment and CLOCA provided the presentations.

Moraine Hero Award

The Moraine Hero Awards are given to recognize and celebrate people who help make the Oak Ridges Moraine a better place. Five awards are given to an individual, organization or agency that has contributed significantly to improving the ecology and hydrology of the moraine and the social well-being of people who live and work on or downstream of the Oak Ridges Moraine. The five awards are for Community, Landowner and Municipal Champions, Collaborative Efforts and Proactive Approaches.

CLOCA's CAO Russ Powell was the 2012 recipient of the Proactive Approaches award for his years of patience and determination in securing over 890 hectares (2,200 acres) of land on the Oak Ridges Moraine in Durham Region. Russ holds the Oak Ridges Moraine in high regard, both at home and at work, as a landowner and a steward, he has embraced the protection of this important landscape throughout his career. Russ has played a key role in many Oak Ridges Moraine initiatives, and was appointed by the Province to the Oak Ridges Moraine Foundation and continues to play an active role in the Conservation Authorities Moraine Coalition (CAMC).

Private and Public Land Tree Planting Programs

This program currently in its 7th year has sold 90,000 native trees and shrubs to an estimated 300 landowners across our jurisdiction. Designed to encourage rural private land tree planting we provide affordable, native tree and shrub seedlings grown and sourced locally. We advertise by posting flyers at local community information boards in rural communities, issuing a news release, posting on our website and distributing notices to past participants.

On Friday April 27th in collaboration with the Trees for Rural Roads Program, we coordinated the pickup of 6,680 native tree and shrub orders for 48 landowners at the Purple Woods Heritage Hall. These landowners were provided with instructions on tree handling and planting as well as receiving information on upcoming events for landowners and publications on best management practise for rural properties. This distribution provides us with a face to face opportunity to engage landowners and discuss local issues and concerns, continuing to build relationships with our neighbours, many who border our conservation lands.

Earth Day Event 2012



Earth Day 2012

On Saturday April 21, 2012, CLOCA staff, Royal Bank of Canada and Local CAW 222 and their partners hosted a public Earth Day Event at Purple Woods Conservation Area and the site surrounding the Heritage Hall. More than 90 volunteers from our surrounding community participated. In less than 2 hours volunteers constructed 4 habitat brush piles from invasive Scots pine, felled the day prior by our Areas staff; planted 500 Sugar maple seedlings to expand our sugar bush; planted a wind screen of 300 White spruce along Simcoe Street; and constructed some split rail fencing.

Community Tree Planting Events

Each year we receive requests from a variety of community groups and businesses across our jurisdiction to plant trees, primarily in honour of Earth Day. Our staff provide these groups with opportunities to plant trees on our properties, assisting with the implementation of various Conservation Area Management Plans.

This year Siemens employees in partnership with Tree Canada, 13th Whitby Scouts and the F.A.I.T.H. project planted 508 native trees and shrubs at the Cranberry West Tract. The 1st Enniskillen Scouts and CLOCA summer staff planted 1600 trees as part of our on-going stewardship work in partnership with the Ontario Heritage Trust for the Bortolazzo and Parish Tracts, properties associated with our landholdings in the Enniskillen Valley. Another 350 potted native trees shrubs were planted at Purple Woods in partnership with Tree Canada and TD Canada Trust Tree Day.

STEWARDSHIP

Trees for Rural Roads



Trees for Rural Roads 2012

Staff worked with the Municipality of Clarington and Ganaraska Region Conservation Stewardship staff to launch the first Trees for Rural Roads program in 2012. Clarington is taking steps toward the renewal of the majestic roadside trees that were planted in rural communities more than 100 years ago. Through the program the Municipality offered free trees to rural landowners who were willing to plant them along the roadsides inside their property line. We had a tremendous response with over 900 trees being ordered across Clarington.

The purpose of this program is to replace the roadside trees in decline. In the 1870s, the Ontario Government provided incentives to farmers should they plant roadsides with trees from their woodlots. The majority of trees planted were maples. This gave rise to an important element in the rural landscape as lines of stately maples were established alongside roads and farmer's fields. The legacy of maple trees is embedded in many people's memories and part of Clarington's rural aesthetic.

A variety of communication products were collectively developed including program guidelines, an application form, a promotional post card, planting guidelines, web page links and news releases.

The pick-up day was a great success held at the new Purple Woods Heritage Hall and gave us an opportunity to connect with landowners we have worked with in the past and meet some that we may be working with more in the future. It did not go unnoticed by those picking up their order from our tree and shrub program that other Durham Region municipalities would do well to offer their landowners a similar program. The size of the plant material and the no cost factor was likely a significant attraction.

Classroom Maple Seedling Program

It's always nice when a plan comes together, especially if the plan belongs to some students at one of our partner schools. In November we received a request from the Green Team at Sherwood Public School in Oshawa to grow tree seedlings in their classroom. While we had nothing in hand, but knew we would like to plant some sugar maple trees at Purple Woods, we contacted our partner Pine Needle Farms who donated a bag of winged maple keys. Staff attended a session with the Green Team, spending a lunch hour removing viable seeds from the casings and talking about all things green. The results were shared with Board members in the correspondence section of our agenda and are nothing short of amazing. The students placed the seeds in cold storage for the specified time, and planted them out, now caring for them in their classroom. We are expecting to have them visit us in 2013 at Purple Woods to plant their trees, and look forward to expanding the program to other schools in Oshawa.

Community Stream Stewards

On Saturday September 15th, 25 landowners, local groups, agencies, and other stakeholders were invited to spend the day taking a guided tour of the Bowmanville and Soper Creeks Watershed in the Municipality of Clarington. The event was hosted by the Community Stream Steward Program in partnership with the Central Lake Ontario Conservation Authority and Durham Land Stewardship Council.

Tour participants traveled by bus from the headwaters on the Oak Ridges Moraine, through rolling, rural landscapes, and into downtown Bowmanville. The tour offered a glimpse into the efforts of local landowners to protect and enhance habitat with reforestation and implementation of best management practices to restrict livestock from the creeks. We heard from a local agricultural business how stewardship and local food products support a successful business and tourist attraction. We also saw the role a community group can be as a catalyst and an implementer to resolve an environmental issue. Our tour participants saw many hands making light work of lifting large migrating salmon over the Veyance Dam. Their story of patience as they await final approvals for the construction of a fishway at that location helped us all learn the value of persistence toward healthy watersheds. The tour received financial support of the Government of Canada through Environment Canada.



EDUCATION

CLOCA Rain Barrel Fundraising Program

In an effort to raise funds for the Education Department, staff held a rain barrel fundraising sale. We purchased the barrels from RainBarrel.ca for \$40.00 each. The public were invited to preorder rain barrels from RainBarrel.ca for \$50.00 with the profits going back into our education programs. The pickup was done at the new Purple Woods Heritage Hall in conjunction with our Father's Day Monarch Madness event. Staff and volunteers were on hand to unload the truck and distribute barrels to customers.

Movie on the Ridge

As part of our efforts to develop a business plan for the Purple Woods Heritage Hall, a number of events were hosted in 2012 to determine use opportunities, expose our community to the facility and assist staff in developing operational policies. One of those programs was the first of its kind for us, an outdoor movie night complete with a giant screen, free popcorn and a visit from Dr. Seuss and the Lorax. With the cost of delivery a challenge to our operating budget, we sought a corporate donation through our new Watershed Corporate Heroes program. This program is delivered directly through our website to provide a quick reference to corporations looking to donate financial or in-kind



Movie on the Ridge

resources to projects and programs. On our website we profile some of our current corporate sponsors and showcase the diverse sponsorship opportunities and our recognition program. The corporate sponsor for this event was Covanta Energy Corporation. Response to a short but intense marketing plan resulted in registration of more than 400 individuals. This is the largest single day event we have ever hosted at any of our

EDUCATION

conservation areas and the response exceeded our original anticipated estimate. Our participants provided extremely positive feedback and we look forward to finding a Watershed Corporate Hero to sponsor our outdoor movie night in 2013.

In Your Watershed

Staff continued to deliver our outdoor education programs. Unfortunately conditions were not favourable for our snowshoe program, resulting in significant cancellations due to lack of snow. The tours of the sugar bush at Purple Woods were filled to capacity for the third consecutive year. Students are taken on a 1 hour tour of the sugar bush to learn about the history of maple syrup and the importance of the Oak Ridges Moraine. We continue to partner with Ducks Unlimited to deliver their Project Webfoot program. Schools are sponsored through the annual golf tournament at the Royal Ashburn Golf and Country Club.

Our overall bookings for 2012 were down due to poor winter weather conditions and teachers work to rule activities. The cost of bussing and limited budgets for field trips continues to be a barrier to classroom participation. Schools generally must charge \$5 to \$8 in addition to our program fee, to cover bussing costs. Two new Education programs were developed in 2012 with a focus on climate change and species at risk.

Purple Woods Maple Syrup Festival

With the completion of the Heritage Hall, 2012 was a year of excitement and achievement for our annual Maple Syrup Festival at the Purple Woods Conservation Area. Providing a "Pancake House" atmosphere, the festival celebrated its 37th year of community outreach with over 12,500 visitors in attendance. With its rustic charm and inviting design, the Heritage Hall provided a full service facility including a kitchen, eating and store area enhancing the overall experience. The festival was open Saturday March 10th through to Sunday March 18th as well as the weekends of March 24th /25th and March 31st / April 1st.

The Purple Woods Maple Syrup Festival has become a long time family tradition for Durham Region residents. Visitors were able to go back in time to see how syrup has been made over the past 400 years and then compare that with today's modern techniques.

Each year we strive to enhance our interpretive features which consist of Aunt Penny's Pioneer Cabin, First Nations and Early Settlers stations. Additional activities this year included wagon rides, nature crafts, demonstrations, shopping at the Heritage Store and the opportunity to taste real maple syrup on pancakes enthusiastically prepared by a variety of community service groups.

Corporate sponsorships are a significant part of our program to help offset the operational costs. Our list of sponsors include: the Region of Durham, Ontario Power Generation, Ontario Works - Environmental Assistance Program, Oshawa Skeet & Gun Club,

Superior Propane, CKDO 1350, 94.9 The Rock FM and KX96. This year we welcomed and were joined by Oshawa PUC Networks Inc., City of Oshawa and Williams Communication.

The 7th annual Community Food Drive collected over 75 kilograms of much needed food which was donated to Feed the Need in Durham. The Festival continues to provide an excellent volunteer opportunity especially for secondary students to achieve their community service requirements for graduation. We look forward to the growth and potential programs and services that the Purple Woods Conservation Area will have to offer our visitors in future festivals.



Enjoying some pancakes in Heritage Hall.



Some of our workers – Bud and Flick treated many visitors to a wagon ride through the Purple Woods forest.

Farm Connections

On April 3rd, 4th and 5th, Central Lake Ontario Conservation participated in the 6th annual Durham Farm Connections held at the Luther Vipond Arena in Whitby. Organized by the farming community, Farm Connections gives Grade 3 students the opportunity to be a “farmer for a day” and discover how farming puts food on their table. Consisting of eight activity centres, CLOCA hosts the Soil & Water Centre. Through the Soil & Water activity, students gain an increased awareness of watersheds and stewardship and what they can do to protect the environment.

A big thank you goes out to our volunteers Emily & Dale Noel along with Trent University Oshawa students Allison Nicholls, Edyn Rebryna and Jenn Sainovski for helping us staff the learning centre. More than 1,200 Grade 3 students attended the event along with 800 visiting the Wednesday evening public open house.



Volunteers Allison (left) and Edyn (right) at Farm Connections.

Durham Children’s Groundwater Festival

Celebrating its 15th anniversary, the Durham Children’s Groundwater Festival was held at Camp Samac in Oshawa September 24th through to the 28th with 5000 grade 4 students, teachers and parent volunteers in attendance. With over 35 hands-on learning centres, students were able to explore and discover the importance of water in their everyday lives, enabling them to carry important water conservation and protection messages back to their home and community.

Since 1998 approximately 60,000 grade 4 students have participated in the event and 6,550 secondary school students have hosted the learning centres. Our secondary school volunteer program provides trained youth coordinators at each of the centres, many of them having participated themselves as grade 4 students over the past 15 years. Their return as activity leaders not only inspires them to share their knowledge in a fun and exciting atmosphere, but offers a feeling of pride having come full circle.

In partnership with the Region of Durham Waste Management Department, two new activities were developed and offered to students in 2012. Region staff presented “Know before you throw” and “The 4r’s” which focused on recycling awareness and good waste management practices. Our “Litterless” Festival and Boomerang Lunch continues to be an overwhelming success in reducing our own waste. The other 26 Festivals across the province have adopted our lead with a mandatory litterless lunch program.

The festival organizing committee is already preparing for the 2013 Festival, continuing to enhance and develop the experience and tools offered to students, teachers and volunteers to become water stewards in their homes, school and community.

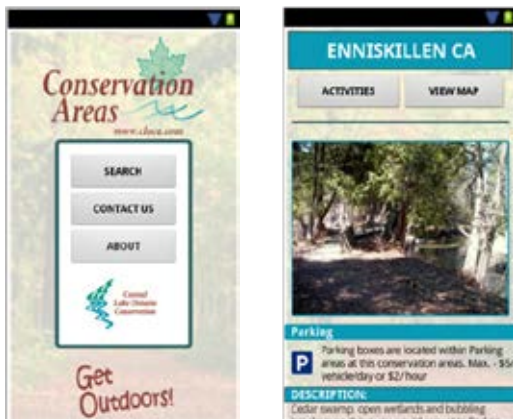


DCGF Wetland Wonderland Learning Centre

CORPORATE SERVICES

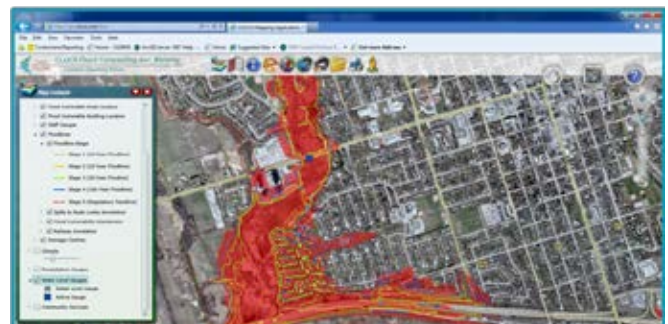
Corporate Services

CLOCA released its Conservation Areas Mobile Application in April so that visitors can access detailed information about our Conservation Areas, including recreational and volunteer opportunities, directions, and event information on their Google Android Smartphone or tablet. This application was recognized in the ESRI Corporation's ArcNews North Magazine which is a nationally syndicated publication available to all of their users.



Screen shots from the CLOCA Conservation Area Google Android Application.

CLOCA's Award Winning Flood Vulnerability Common Operating Picture



Flood Vulnerability Common Operating Picture web application screenshot.

The Flood Vulnerability Common Operating Picture and CUAHSI, work done through the GIS/IS Team and Engineering with help through the Ontario Job Creation Partnership Program, has been recognized for an award from URISA's (Urban and Regional Information Systems Association) "Be Spatial Best GIS Challenge Awards". URISA is the premiere non-profit organization for the use and integration of spatial information technologies to solve challenges in government agencies and improve the quality of life in urban and regional environments.

The Ontario Chapter has over 1,100 individual, group members and event supporters from all levels of government including GIS applications vendors, consultants, educators, students, and business professionals who provide educational programs and services related to spatial information systems and integrated solutions.

The Flood Vulnerability Common Operating Picture (COP) was designed, from the beginning, to meet the needs of CLOCA staff. The tools and functions of the COP were created by the GIS department with technical input from users and viewers of the final product. While CLOCA had existing infrastructure in terms of flood information gathering, the COP allowed for the combining of these tools into a single viewer to streamline data dissemination. Instead of relaying information between staff members within CLOCA, the COP allows end-users to quickly view the data from their own computers and make immediate and effective decisions. The COP allows CLOCA staff and municipal partners to view flood data. Staff can view, download and process data for their own unique needs to help in the decision making process. By creating the COP in a web-based environment, users will be able to access real-time information from their computers, mobile devices and anywhere there is internet access. The combination of a Silverlight Web-Mapping application, a web-based software server and an intricate hydrology database model has allowed the COP to integrate into CLOCA's business structure.

MS SharePoint

The Information Services team has been hard at work upgrading its existing MS SharePoint 2007 server to MS SharePoint 2010. Once upgraded, it was deployed to staff and training followed. Currently staff are utilizing MS SharePoint for document collaboration, vehicle bookings, vacation calendars, training and internet research. The deployment of MS SharePoint enables staff to securely access corporate resources and collaborate off and on site. MS SharePoint will continue to be utilized as the Authority's development platform of choice in order to provide staff with a similar look and feel for all of its applications.

CACMS (Conservation Authority Content Management System)

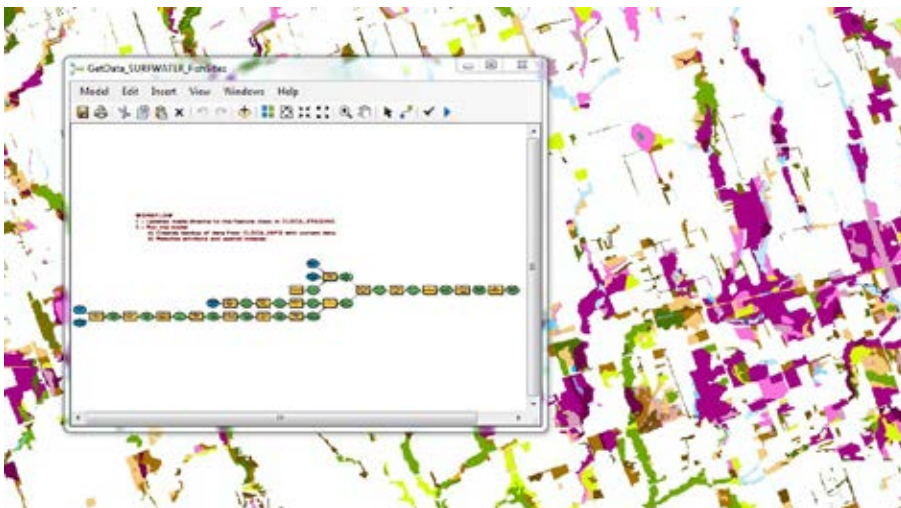
The information services team completed the upgrading of the Authority's content management system from the MS SharePoint 2007 platform to MS SharePoint 2010. During the upgrade process, the backend data structure was modified to improve the overall performance of the application. In addition, the improvements took advantage of new features available in MS SharePoint 2010 to improve the look and feel for end users along with searching and reporting.

CLOCA's Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI) Data Management Module

The CLOCA CUAHSI Data Management Module has been developed as a user front end tool interfacing with the CUAHSI Observational Data Model database and providing access to the underlying data model. To support the specific requirements and applications of CLOCA staff, the CUAHSI Data Management Module provides data import and acquisition, query, export, and reporting functionality. Applications include groundwater and surface water quantity and quality; baseflow; climate; and Low Water Response. Development of the application is ongoing in consultation with CLOCA's Engineering and Hydrogeological Departments. The main goal of the database and application is to centrally house and maintain CLOCA's temporal monitoring data. This will enhance access to the information internally and to our external partners.

Enterprise Geospatial Repository

The Authority relies heavily on location based information in its daily business processes. Having current, reliable and secure data storage that is accessible to all staff is vital. The Geographic Information Services team works with the various departments to ensure all of the geospatial data is up to CLOCA's standards, and as current as possible. The team continues to update the central repository where data cleanup and QA/QC is done without disruption to staff workplaces.



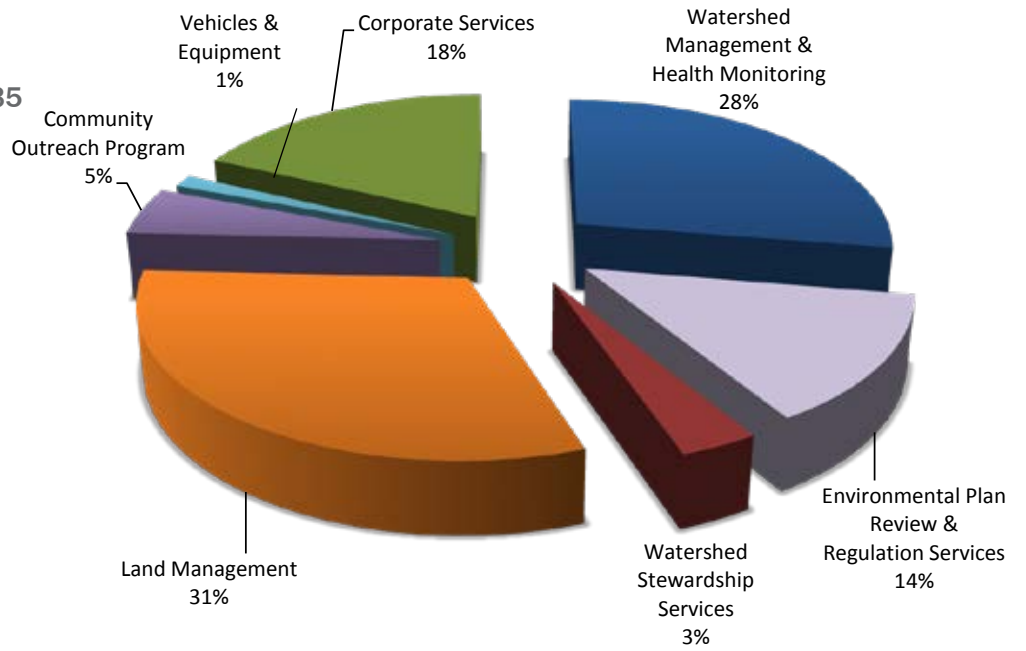
The prebuilt GIS (Geographic Information System) models ensure every update is done in the same standardized way, with each update there is a backup created with a dynamically assigned date for easy retrieval. The updates are then pushed out to CLOCA staff and partners. This provides staff with the necessary information required to make informed decisions related to plan review, permitting and natural heritage evaluations.

Left: Enterprise Geospatial Repository screenshot.

2012 Budget Summary

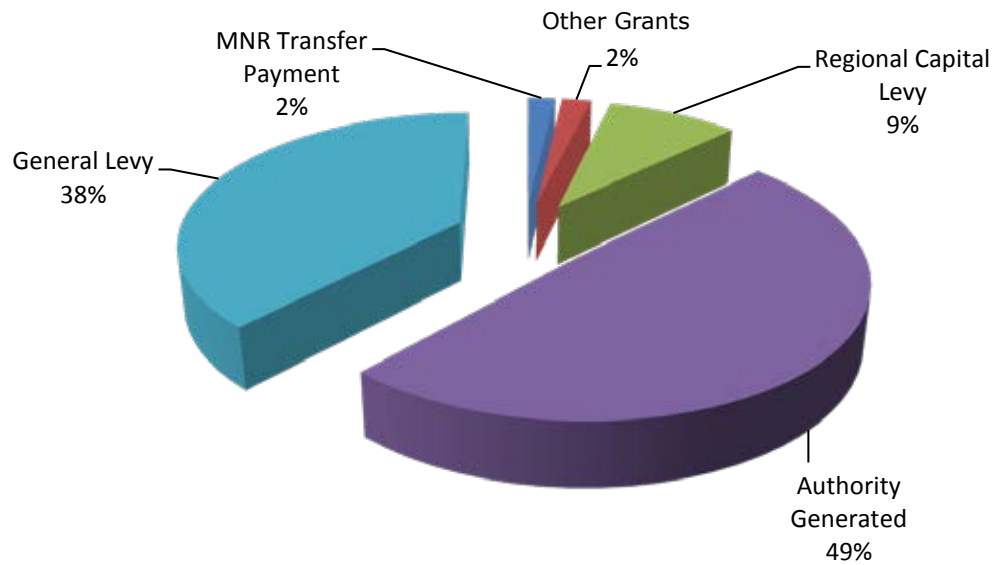
Expenditures

Total Expenditures: \$6,804,635



Revenue

Total Revenue: \$6,804,635

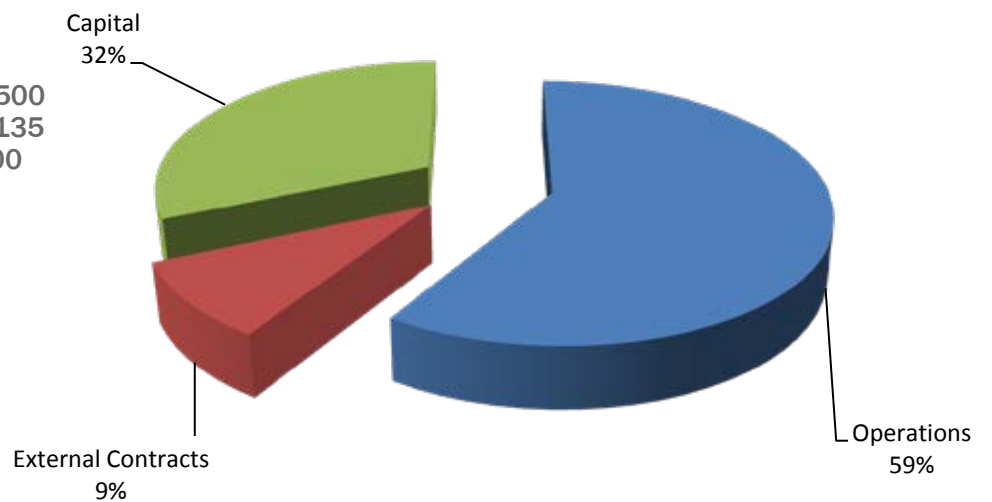


Capital & Operations

Total Capital: \$2,152,500

Total Operations: \$4,016,135

Total External Contracts: \$636,000



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