St. Clair Conservation

Annual Report 2017

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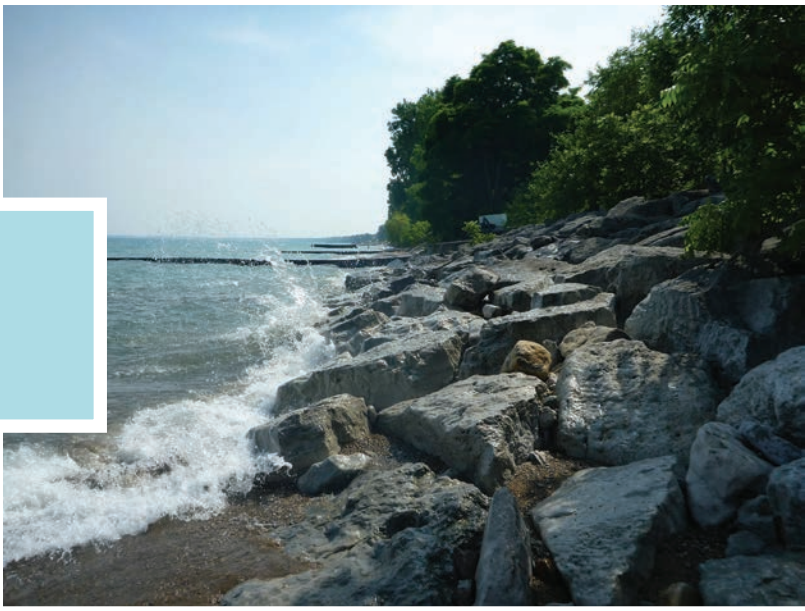


Our Watershed

Covers 4,100km^2
Made up of 14 subwatersheds
Home to 167,000 people
Across 17 municipalities
And 3 counties

Who Are We?

The St. Clair Region Conservation Authority (SCRCA) was established in 1961 under the *Conservation Authorities Act* to manage and conserve renewable natural resources within the watersheds of our region.

The SCRCA operates under the direction of a Board of Directors appointed by our 17 member municipalities. The jurisdiction of the SCRCA includes the Sydenham River watershed and the watersheds of a number of watercourses emptying into Lake Huron, the St. Clair River, and Lake St. Clair. Our vision is a healthy and sustainable natural environment for the St. Clair Region.

Modernization of the Conservation Authorities Act

In 2015, the Province of Ontario initiated a review of the *Conservation Authorities Act* to modernize the 1946 legislation. After two years of evaluation and input from stakeholders, the revised Act was passed in late 2017. The updated Act more clearly defines the watershed management role, governance, and funding mechanisms for Ontario's 36 Conservation Authorities.

A Message from Our Chair

At the St. Clair Region Conservation Authority, we strive to provide programs that further our vision of a healthy and sustainable natural environment for the region. Effective watershed management requires that the environment be considered as a whole, with the understanding that our objectives cannot be accomplished alone. That is why we place a strong emphasis on our partnerships with local landowners, organizations, and municipalities. By engaging these stakeholders, we are able to educate others on the environmental issues faced by the region and foster a culture of environmental stewardship.

Our integrated approach to watershed management is reflected not only in our partnerships but in the strong connections that exist between our programs – projects that help Species at Risk can also reduce flooding and help protect water quality, which in turn enhances recreational opportunities. In 2016, we evaluated our core programs to identify opportunities to more effectively implement our objectives. We then used our findings to develop a Strategic Plan that is guiding our path forward. As an organization, we are always working to enhance and adapt our programs to ensure we are meeting the needs of our watershed and municipalities in the most financially responsible way possible. 2017 was another excellent year for the Authority; our generous partners and dedicated staff ensured the success of our programs and have laid the groundwork for future projects.

Steve Arnold
Chair, Board of Directors

Our Goals

Goal 1 – Develop and maintain programs that will protect life and property from natural hazards such as flooding and erosion

Goal 2 – Protect, manage, and restore our natural systems including woodlands, wetlands, waterways, and lakes

Goal 3 – Provide recreation and education opportunities for the public to enjoy and learn from our natural environment

Goal 4 – Build a stronger and more valued organization through business excellence

Each year, project partners, municipal representatives, and Authority Board Members participate in our annual bus tour where we are able to highlight some of our current projects. This tour provides stakeholders a better understanding of the ways in which the Authority works with the community to further the safety and health of our watershed.

Our Board of Directors

The Conservation Authority is governed by a Board of Directors appointed by the member municipalities within the jurisdiction of the St. Clair Region Conservation Authority. The 20 Authority Directors vote annually to select a Chair, Vice Chair, and Executive Committee. The Board met six times in 2017 and is responsible for establishing the policy and procedures under which the Conservation Authority operates. Our Board Members provide a crucial link between our organization and the municipalities we serve.

Board Members

Betty Ann MacKinnon, Township of Adelaide-Metcalfe
Frank Nemcek, Municipality of Brooke-Alvinston
Joe Faas, Municipality of Chatham-Kent
Jeff Wesley, Municipality of Chatham-Kent
Alan Broad, Township of Dawn-Euphemia
Kevin Marriott, Twp. of Enniskillen/Village of Oil Springs
Gerry Rupke, Municipality of Lambton Shores
Dan McMillan, Township of Middlesex Centre
John McCharles, Town of Petrolia
Muriel Wright, Town of Plympton-Wyoming
Larry Gordon, Village of Point Edward
Mike Kelch, City of Sarnia
Cindy Scholten, City of Sarnia
Andy Bruziewicz, City of Sarnia
Don McCallum, Mun. of SW Middlesex/Village of Newbury
Steve Arnold, Township of St. Clair
Steve Miller, Township of St. Clair
Norm Giffen, Township of Strathroy-Caradoc
Tony Bruinink, Township of Strathroy-Caradoc
Jerry Westgate, Township of Warwick

Executive Committee

Steve Arnold, Chair
Andy Bruziewicz, Vice Chair
Joe Faas
Larry Gordon
Berry Ann MacKinnon
Cindy Scholten
Muriel Wright
Jeff Wesley

Our staff collects surface water quantity data throughout the year – we monitor precipitation and meteorological conditions in the watershed using provincially provided data as well as information collected from our own meteorological equipment (left). From November to May, staff performs biweekly snow surveys at five sites to determine the snow-water equivalent (right). This information is then shared with the Snow Survey Program through the Ministry of Natural Resources and Forestry Surface Water Monitoring Centre and is critical for year-round water management in our watershed and throughout the province.

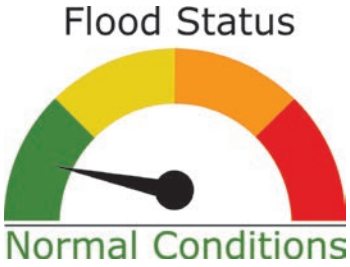
Protecting Life and Property

Flood Operations

Flooding is a natural process. While the Authority has done much to reduce the risk to life and property, some flooding in developed and undeveloped areas is still inevitable. The Authority, therefore, operates a flood warning program designed to warn residents in flood-prone areas. Through a network of 11 stream gauges, five snow sampling sites, ice monitoring, and meteorological data, our staff monitors ice and stream flow conditions. Should a flood be imminent, the Authority issues a bulletin to the Municipal Flood Coordinators and the media are contacted, at which time officials take appropriate action.

There are four flood statuses:

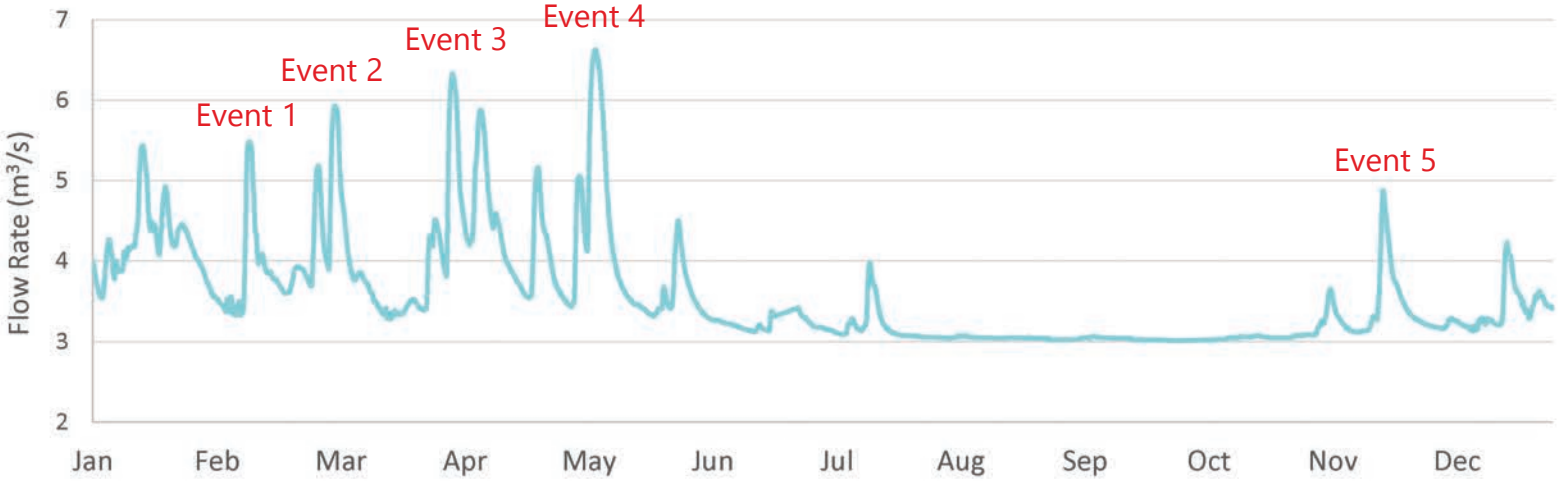
1. Normal Conditions (no flood conditions exist)
2. Watershed Conditions Statement
    i. Water Safety (watercourses could pose a danger, flooding not expected)
    ii. Flood Outlook (early notice of potential for flooding)
3. Flood Watch (flooding is possible in some areas)
4. Flood Warning (flooding is imminent or occurring)

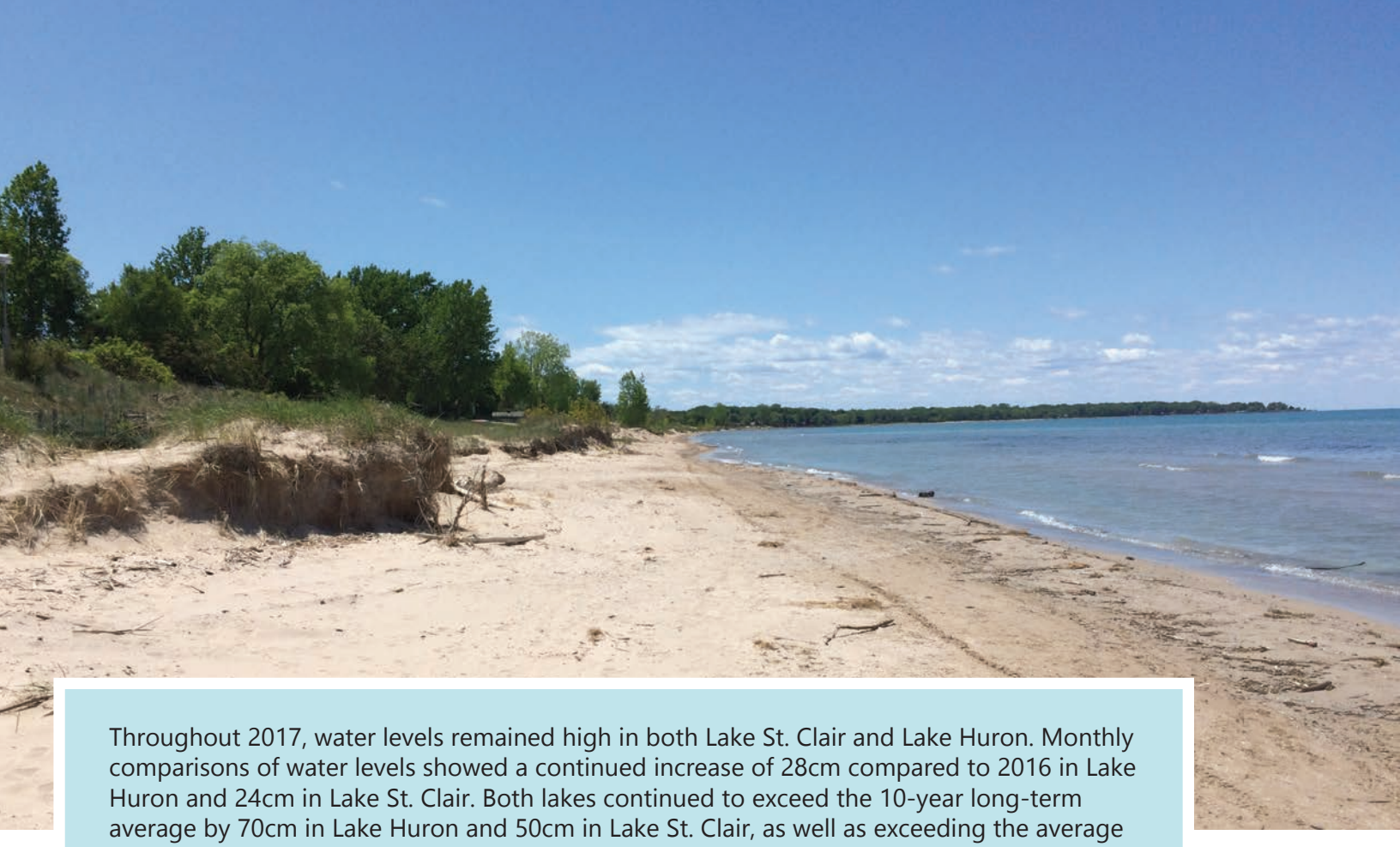


High water levels on the Sydenham River during the May 2017 flood event at the stream gauge station in Florence. During peak flows, this event was at "Flood Watch" status.

2017 Flood Events

The Authority monitors stream conditions (e.g. flow rate, water level) at 11 stream gauge stations throughout the watershed. There were five flood events in 2017 during which the Authority issued eight flood status bulletins. The graph below depicts the change in the volumetric flow rate over the course of 2017 at the stream gauge station on the Sydenham River in Florence.





Throughout 2017, water levels remained high in both Lake St. Clair and Lake Huron. Monthly comparisons of water levels showed a continued increase of 28cm compared to 2016 in Lake Huron and 24cm in Lake St. Clair. Both lakes continued to exceed the 10-year long-term average by 70cm in Lake Huron and 50cm in Lake St. Clair, as well as exceeding the average level for the entire period of record (100 years) by 50cm.

Great Lakes Water Levels

Lake levels are an important factor in managing our flood and erosion control programs. In addition to shoreline erosion impacts, high lake levels can foster enhanced flood risks in the southern portions of the watershed characterized by flat terrain. Water levels in the lower Sydenham River (Wallaceburg and Dresden, for example), are actually dictated by the water level in Lake St. Clair. The higher the lake level, the less room there is in the lower reaches of the Sydenham River to accommodate increased flows from storms and spring snow melt.

Responding to Conditions in Our Watershed

In addition to the Flood Warning Program, the Authority also issues warnings for:

- **Shoreline Erosion and Flooding –** The Authority issues warnings for potential property damage due to wave action along southern Lake Huron, the St. Clair River, and northeastern Lake St. Clair shorelines. There were no warnings issued in 2017.
- **Low Water Response –** The Authority monitors watershed conditions using Low Water Indicators to determine whether we are in a drought. Under drought conditions, the Authority meets with the Low Water Response Committee to issue a Level I, II, or III Low Water Condition. There were no Low Water Conditions declared in 2017.

The Authority is partnering with the Lambton Water Centre at Lambton College for an exciting and innovative project that will modernize flood forecasting in the St. Clair region. The project will involve the installation of a camera overlooking the confluence of the north and east branches of the Sydenham River (shown above) to allow for real-time monitoring of flood and ice conditions in the town of Wallaceburg. It will also consist of a mobile water level logger and precipitation gauge, that will allow staff to monitor the movement of precipitation through the watershed and research the effects of climate change. The project is expected to be operational in early 2018.

Expanding our Network of Meteorological Monitoring Equipment

Through a data sharing agreement with the Surface Water Monitoring Centre at the Ministry of Natural Resources and Forestry, our staff obtained meteorological equipment that will improve the monitoring of precipitation and flow conditions across our watershed. The equipment includes air and water temperature sensors, ultrasonic snow depth sensors, data loggers, and a weighing precipitation bucket. By expanding our network of equipment, our staff will have more information to use when forecasting flood events as well as long-term changes in trends attributed to climate change.

Staff installing new meteorological equipment at the A.W. Campbell Conservation Area in Alvinston.

The W. Darcy McKeough Dam and Floodway were built to protect the community of Wallaceburg and portions of the former Townships of Chatham and Sombra from severe flooding. Since 1984, the dam has been operated six times. The Conservation Authority maintains this important infrastructure to ensure it functions efficiently and effectively when a flood event requires its operation. Based on recommendations from the Dam Safety Review Assessment completed in 2016, five maintenance and repair activities were carried out in 2017.

Erosion Control Projects

The Authority secured $816,000 through the Water and Erosion Control Infrastructure (WECI) program run by the Ministry of Natural Resources and Forestry for 2017/18 erosion control projects. The WECI funds were used for the following nine projects:

- Courtright Waterfront Park Shoreline Restoration
- Brights Grove Shoreline Protection (Helen Ave. to Kenwick St.)
- Esli Dodge Dam Repair (Concrete Cable, Retaining Wall)
- L.C. Henderson Weir Spillway Repair
- McKeough Dam:
  - Drop Structure Downstream Erosion Control
  - Vegetation Management Plan
  - Watercourse Obstruction Removal
  - McKeough Sill Repair
  - Wing Wall Repair

Henderson Weir surfacing has been improved with erosion control matting and gravel surfacing.

West Nile Virus Control

Lambton County Community Health Services contracted the Authority for another year to treat catch basins to prevent mosquito larvae from developing into adult biting flies, thereby reducing the risk of West Nile Virus spreading throughout the community. Our staff treated 16,000 catch basins throughout Sarnia-Lambton and Aawmjiwnaang First Nation.

Water resources staff calibrating instrumentation that measures the water level at one of nine test wells.

Groundwater Monitoring

In an effort to better understand Ontario's groundwater resources, the Ministry of the Environment and Climate Change implemented the Provincial Groundwater Monitoring Network to monitor water quality and quantity in a number of test wells. The Network is a cooperative effort of the Conservation Authorities in Ontario, on behalf of the Ministry of the Environment and Climate Change. Water levels are monitored at nine groundwater wells and the water quality at eight groundwater wells. The data gathered are reported in the Authority's Watershed Report Card, a document that is released every five years.

Drinking Water Source Protection

After almost of decade of research and public consultation, the Thames-Sydenham and Region Source Protection Plan was approved by the province and is now law. The purpose of the provincial *Clean Water Act* (2006) is to protect existing and future sources of municipal drinking water. Protecting water at the source is the first barrier in a multi-barrier approach to providing a safe, clean supply of water.

The Source Protection Plan contains local policies that address a range of drinking water threats to municipal drinking water supplies. Currently, the Thames-Sydenham Region is in the policy implementation phase and Risk Management Officials are proceeding with the identification and mitigation of threats to municipal water supplies through the development of Risk Management Plans. While the responsibility for Risk Management services lies with municipalities, Conservation Authority staff had been contracted to provide this service by a number of municipalities in the Source Protection Region.

High lake levels resulted in continued erosion of the Lake Huron shoreline in 2017. Shoreline protection requires prior written permission from the Conservation Authority and is the best approach when it comes to ensuring safety for the landowner, their neighbours, and their properties. Unauthorized installation of shoreline protection can be detrimental and cause erosion to adjacent properties.

Promoting Safe Development and Healthy Communities

While municipalities encourage valuable development, it is important that new houses and businesses are located safely out of areas susceptible to natural hazards (e.g., flooding, slope failure, coastal erosion). It is also important that any development completed within a natural hazard area does not impact adjacent landowners or other landowners within the watershed.

As a watershed management agency acting under the Conservation Authorities Act, the St. Clair Region Conservation Authority:

- Is responsible for managing development within areas of natural hazards through Ontario Regulation 171/06 – *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*
- Provides natural hazard and surface/groundwater comments on municipal planning matters
- Responds to Property Information Requests from members of the public, lawyers, and real estate agents
- Supports, through an agreement, member municipalities with Natural Heritage advice to ensure municipal land-use planning and development activities adhere to provincial policies
- Provides review of drainage projects for municipalities to ensure there are no negative flooding and erosion impacts

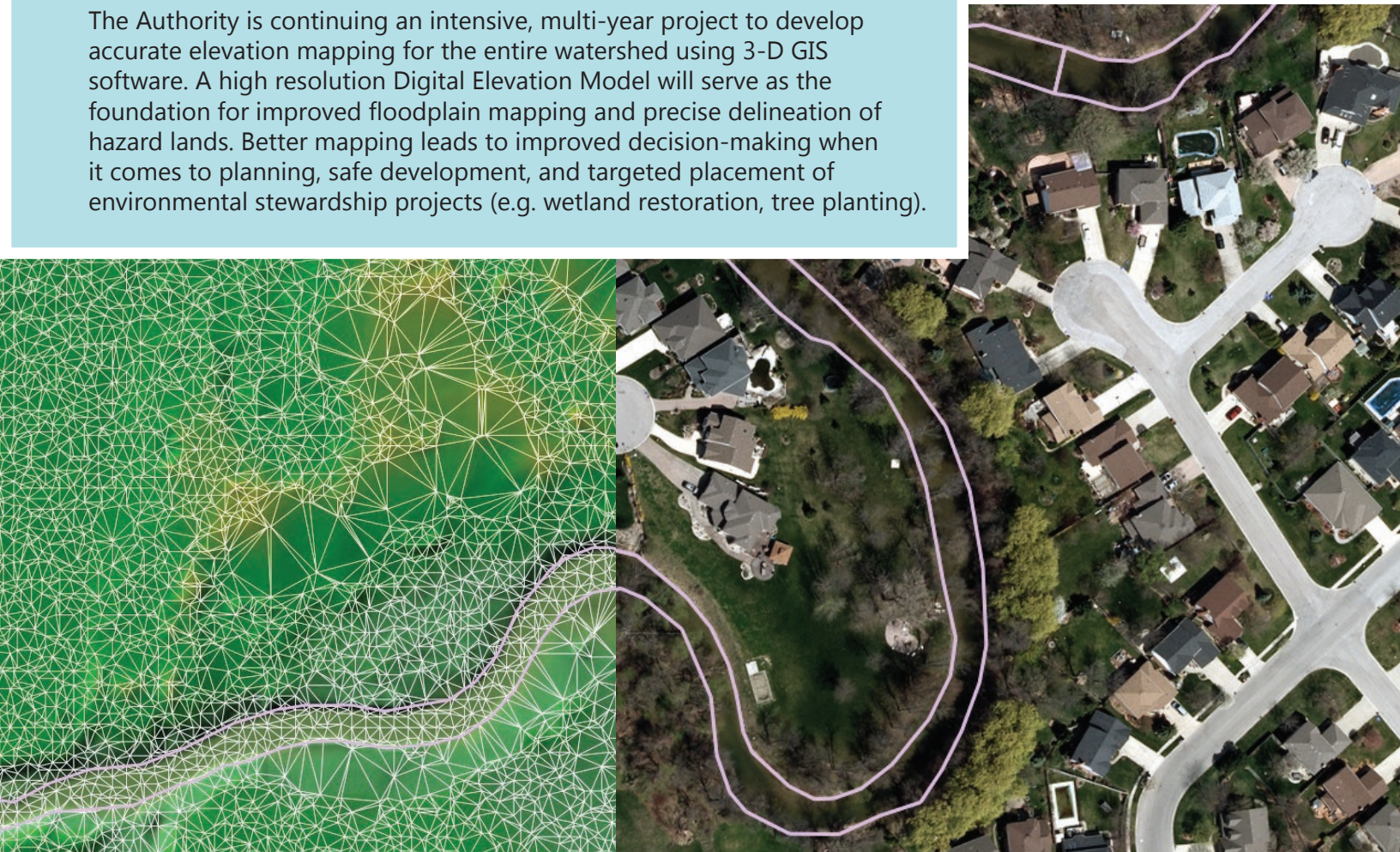
Planning and Regulations 2017 Activity

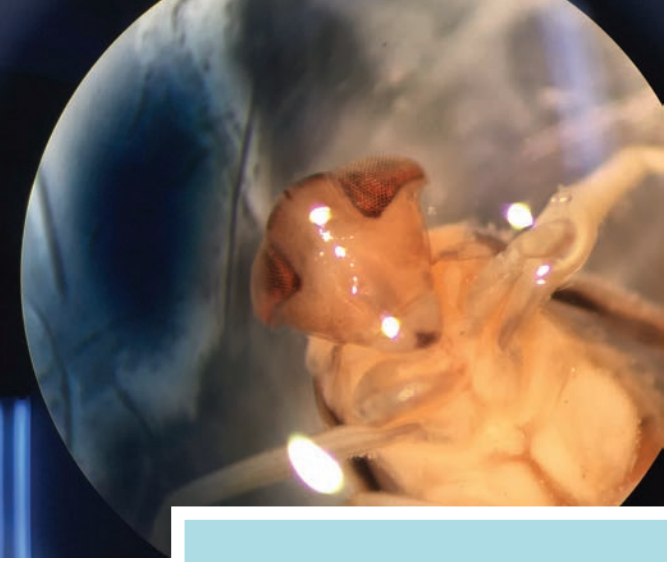
General Inquiries	23
Reviewing and advising on Official Plans, Official Plan Amendments, Zoning Bylaws, Zoning By-law Amendments and Subdivisions	60
Reviewing and advising on Severances and Variances	99
Applications under Ontario Regulation 171/06	196
Inquiries under Ontario Regulation 171/06	101
Non-Compliance Matters under Ontario Regulation 171/06	15
Legal Inquiries	54
Review of Environmental Studies and Development Assessment Reports including Terms of Reference	9
Hearings	1
Total Drainage Projects reviewed	110
Standard Compliance Requirements (SCRs) issued under the Drainage Act & Section 28 Regulations Team (DART) protocol	64
Drainage Letters of Review	45
Other	1

24% increase over 2016

67% increase in two years

The Authority is continuing an intensive, multi-year project to develop accurate elevation mapping for the entire watershed using 3-D GIS software. A high resolution Digital Elevation Model will serve as the foundation for improved floodplain mapping and precise delineation of hazard lands. Better mapping leads to improved decision-making when it comes to planning, safe development, and targeted placement of environmental stewardship projects (e.g. wetland restoration, tree planting).





Part of the Authority's surface water quality monitoring program involves collecting samples of benthic communities to serve as a biological indicator of watercourse health. Samples are collected using a D-net with the kick-and-sweep method, they are then processed under microscope in our lab.

Conserving the Health of Our Watershed

Monitoring Surface Water Quality

Every year, from March to November, our staff regularly collects surface water samples from 22 sites throughout the watershed for chemical analysis. The samples are shipped to the Ministry of the Environment and Climate Change and the Middlesex Health Unit to be analyzed for nutrients, *E. coli*, and metals. The data collected is shared with the following programs:

- Provincial Water Quality Monitoring Network
- Canada-Ontario Agreement on Great Lakes Water Quality (COA)
- Healthy Lake Huron – Lambton Shores Tributaries

What is a SAR?

A Species at Risk or SAR is a type of plant or animal that is native to a region but is in danger of either no longer being found in that area or becoming extinct.

Our staff also assesses the health of streams using biological indicators with known pollution tolerances. By sampling communities of aquatic bottom-dwelling invertebrates visible to the eye (aka "benthos") – including insects, worms, and crustaceans – we are able to learn about the health of a watercourse. Benthic samples are collected annually from 16 monitoring stations. In 2017, our biologists also collected data on the temperature regimes of eight watercourses. All of the water quality data our team collects is analyzed and reported in our Watershed Report Card, which is released every five years.

Mussels are filter feeders that stabilize and aerate the sediment. They are vital to the health of the Sydenham River ecosystem. Some mussel species can filter 40L of water per day and live to be 100 years old. Species from left to right: Round Pigtoe (endangered), Fatmucket, Purple Wartyback.

North Branch mussel sampling highlights from 2017:

- 28 surveys
- 14km of river
- 8,322 individuals observed
- 21 mussel species identified
- 5 SAR observed (Round Pigtoe, Salamander, Mapleleaf, Lilliput, and Rainbow)

Closing Gaps in Local Mussel Research

There are 41 freshwater mussel species native to Ontario and at least 34 of these species have historically been found in the Sydenham River. No other Canadian river has greater freshwater mussel diversity – it is considered one of the most species-rich watersheds in all of Canada. The Sydenham River is made up of two main branches, the East Branch and the North Branch. The East Branch has long been recognized as a hotspot for mussel diversity, whereas the North Branch has been understudied by comparison.

To work towards closing these knowledge gaps, our biologists conducted 28 mussel surveys covering 14km of the North Branch in 2017 and plan to study another 14km in 2018. This year alone, staff added over 8,000 new data points to the North Branch of the Sydenham. This project is being funded by the Ontario Trillium Foundation and the Habitat Stewardship Program for Species at Risk.

To sample fish communities in a watercourse, our biology staff members typically use a seine net to collect the fish. They identify each individual, record the data, then release the fish back into the waterway.

Fish Monitoring

There are approximately 160 native freshwater fish species in Ontario; the Sydenham River is home to at least 82 of these species. Habitat loss, pollution, and invasive species threaten our native fish. Our biology staff performs fish community surveys to gain important information on species distribution and watershed health. The data collected are compiled and shared with other agencies so that the information can be used to direct policies and further research efforts. Support for this work comes from Fisheries and Oceans Canada as well as the Friends of the St. Clair River through funds from the Ontario Trillium Foundation.

Highlights from 2017 fish sampling:

- 17 sites sampled
- 6,688 individuals observed
- 50+ fish species identified
- 2 SAR observed at 6 sites (Blackstripe Topminnow, Spotted Sucker)
- 3 invasive species observed at 7 sites (Round Goby, Tubenose Goby, Common Carp)

A BioBlitz is a detailed study of biodiversity in a specific location over a certain period of time. This summer, our biology staff organized three educational aquatic BioBlitzes open to the public with funding from the TD Friends of the Environment Foundation. Staff and participants studied fish, mussels, and other stream life.

In 2017, staff released 416 Species at Risk Spiny Softshell Turtle (left) and Northern Map Turtle (right) hatchlings.

Researching and Supporting Reptiles at Risk

Turtles at Risk

There are eight species of turtle native to Ontario, seven of which are considered Species at Risk. In an effort to support turtle populations – in particular, the endangered Spiny Softshell Turtle – our biologists rescue turtle eggs they encounter that are under imminent threat. Our team then works with Salthaven Wildlife Rehabilitation and Education Centre as well as the Upper Thames River Conservation Authority throughout the nesting season to incubate the recovered eggs. Incubating eggs gets these turtles past their first hurdle and gives them a chance at survival. In 2017, our team released 416 turtle hatchlings – each cohort being returned to the same location where their eggs were originally found. To celebrate and to teach the public about Ontario's reptiles, staff held a "Turtle Birthday Party" at the A.W. Campbell Conservation Area in August. Our biologists brought some newly hatched turtles to the event for people to meet before they were released back into the wild.

Education is a key part of the solution – the more people learn about our local reptile species, the more they appreciate and understand that reptiles are a vital part of the ecosystem.

Snakes at Risk

Human persecution, road mortality, and habitat loss are major threats to Ontario's 15 snake species. Each year our biology department monitors and works to support local populations – the endangered Eastern Foxsnake being a target species – by installing artificial habitat structures on Authority lands and the properties of interested landowners. In 2017, our staff installed and performed regular surveys of over 100 coverboards to monitor the distribution of the species in our region. It was also a very successful year for our nesting box program; a total of 175 Foxsnake eggs were observed in just two nesting boxes. This high density of eggs was the result of communal nesting, which underscores the lack of suitable natural nesting habitat in our region.

Forested swamps (left) are a type of wetland commonly studied by our biology staff. Wetlands in our region are home to hundreds of species of plants and animals, including amphibians like the Gray Treefrog (top-right) and Eastern Red-Backed Salamander (bottom-right; an example of a leadback phase). Populations of woodland amphibians are threatened by habitat loss, including woodlot removal and the draining of breeding ponds.

Studying Wetlands

Wetlands are areas where the ground is seasonally saturated. There are four main types of wetlands: marshes, swamps, fens, and bogs. Not only do wetlands help to protect our landscape from flooding and capture nutrient runoff, they also contain biological treasures. In 2017, our staff completed evaluations of six wetland complexes covering approximately 145 hectares through a contract with the Ontario Ministry of Natural Resources and Forestry. By evaluating wetlands, it allows us to identify, map, and better understand their local, regional and provincial significance.

Restoring Wetlands

This year, our team retired three acres of marginal farmland on an agricultural property owned by the Authority in order to restore it to wetland habitat. The project included the construction of wetland ponds, planting 1,000 tree seedlings, and the creation of tallgrass prairie habitat. Funding for this wetland restoration project came from Union Gas and Wildlife Habitat Canada.

27 projects completed in 2017:

- 3 equipment modification grants
- 2 cover crop grants (198.4 ha)
- 14 tree planting projects (20.1 ha)
- 8 wetland projects (6.93 ha)
- $323,875 in total value (84% grants)

Creating Healthy Watersheds

Our Healthy Watersheds Program is an initiative that provides landowners with technical and financial assistance to improve and protect rural water quality and soil health. Our staff actively seeks grants that will bring funding into the region to support the conservation efforts of landowners. Projects include wetland creation/rehabilitation, sediment traps, agricultural erosion control structures, cover crops, buffer strips, riparian/stream bank protection, wildlife habitat creation, windbreaks, reforestation, and native grassland habitat.

Connecting Landowners with Environmental Stewardship Funding

In 2017, our staff secured $273,210 in grants with participating landowners contributing an additional $50,665 to the success of 27 projects. Over the last 16 years, the Conservation Authority has distributed more than $2.7 million in grants to landowners, resulting in over 850 projects. The following are the sources of funding obtained for stewardship projects in 2017:

$	75,500	50 Million Tree Program (Forests Ontario)
$	4,610	BadgerWay (OSCIA)
$	11,000	Canada-Ontario Agreement (OMAFRA)
$	34,700	Ducks Unlimited Canada
$	18,000	Friends of the St. Clair River (Ontario Trillium Foundation)
$	9,200	Habitat Stewardship Program – Prevention Stream (ECCC)
$	52,000	Habitat Stewardship Program – Species at Risk Stream (ECCC)
$	8,100	Lambton County Tree Cutting Bylaw
$	17,500	Lambton Shores Healthy Lake Huron (MOECC)
$	750	Middlesex Stewardship Trust Fund
$	10,000	Ontario Community Environment Fund (MOECC)
$	31,850	Species at Risk Stewardship Fund (MNRF)

Growth of a tree seedling afforestation project from 2016 (left) to 2017 (right). Tree survival assessments are completed on a portion of projects each year. Survival rates in 2017 averaged 87% for one-year sites and 86% for projects completed over the last five years.

Greening Our Watershed

Tree Seedling Program

The Authority offers a tree seedling planting and 3-year maintenance program for large-scale afforestation and windbreak projects. Staff works to secure grants on behalf of landowners to help offset the cost of these projects.

74,000 seedlings and
325 large stock trees planted by our staff in 2017

Large Stock Tree Program

Each year, our conservation services staff works with local nurseries to purchase large stock trees in bulk. These trees are supplied to private landowners for plantations and windbreaks, as well as municipalities for road-side plantings.

6,400 seedlings and
700 large stock trees supplied to landowners in 2017

Providing Woodlot Management Services

Our qualified forestry staff members:

- Provide landowners technical assistance on woodlot management
- Create Woodlot Management Plans that meet the specific goals of landowners
- Are certified to prepare and/or approve plans created through the Managed Forest Tax Incentive Program (MFTIP)

In 2017, our MFTIP certified staff completed:

- 2 new plans, managing 50 acres of forest
- 5 renewals, managing 255 acres of forest

The Authority continues to administer the Woodlands Conservation By-law on behalf of the County of Lambton. This partnership not only assists with the regulatory aspect of the by-law, but has expanded local outreach and education related to conserving woodlands. Staff has found an increase in inquiries by landowners with regards to woodlot issues and how they relate to the by-law.

Large stock tree delivery to our storage facility in 2017.

Tree Seed Collector Mentorship Program participants learned how to properly collect and process seed from various tree species during the training workshop.

Collecting Local Tree Seed

Just as it is important to select the correct species for a project's site conditions, it is also important that trees are sourced from seed produced in that same geographic region. This ensures the trees are genetically adapted to the local conditions and allows the trees to grow to their greatest potential.

2,400 litres of local tree seed collected by our staff in 2017

To support local forestry, our conservation services staff collects tree seed from native species throughout the watershed and ship the seed to wholesale nursery stock growers. Tree seed collected in 2017 will be used in our 2018 and 2019 afforestation programs.

Supporting the Sustainability of Local Forestry

There are very few organizations or private individuals collecting tree seed in Southern Ontario and there is a need for collectors in our region. As such, our staff worked to develop a Tree Seed Collector Mentorship Program that trains interested individuals on proper seed collection and processing techniques. The Authority then mentors the participants and assists them with selling their seed to growers. This new program was made possible through funding from Enbridge.

In 2017, the Authority partnered with Lambton Public Health for a schoolyard greening initiative called Tomorrow's Greener Schools Today – Lambton. Through the program we planted 40 trees with students from five schools (left). Our staff also organized two TD Tree Days, in Sarnia and Strathroy, where over 100 volunteers planted 300 trees (right). These projects were funded through TD Friends of the Environment grants.

Planting cover crops is an example of a Best Management Practice. Not only do cover crops improve the health of the soil, they anchor it in place when the soil would otherwise be bare – keeping it on the field and out of watercourses.

Healthy Lake Huron

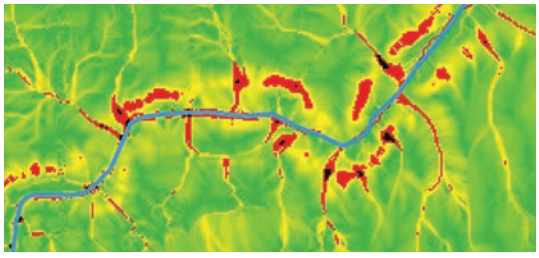
The Healthy Lake Huron – Clean Water, Clean Beaches (HLH) campaign is led by the governments of Canada and Ontario in partnership with municipal governments, public health units, conservation authorities, and other local organizations. The objective of HLH is to coordinate actions aimed at improving water quality along the southeast shores of Lake Huron from Sarnia to Tobermory. A focus of the program is reducing excess phosphorus and incidences of high levels of *E. coli* from entering the water.

The Lambton Shores Tributaries watershed within our jurisdiction was identified as one of five target watersheds. Our component of the HLH program is funded through Environment and Climate Change Canada; Ministry of the Environment and Climate Change COA; and Ministry of Agriculture, Food and Rural Affairs COA. Some of the activities we carried out through the HLH initiative in 2017 included:

- **Community Engagement –** 6th Annual Great Canadian Shoreline Cleanup at Centre Ipperwash Beach; Dunes and Gardens workshop; watershed health station at Agriculture in the Classroom; newsletters distributed to farmers discussing cover crops, soil health, and water quality
- **Monitoring –** Monthly and storm event water quality sampling to evaluate the impact of nutrient runoff entering Lake Huron; 15 storm events were captured in 2017

During a storm event, water samples are collected from Shashawandah Creek at 2-hour intervals using an automatic sampler. Note the change in suspended sediment over the course of this storm event (left).

In 2017, our staff identified areas of high erosion potential in the Shashawandah Headwaters of Lambton Shores using GIS modelling. This information will help to predict where gullies are likely to occur and assist our staff when working with landowners to reduce erosion and minimize impacts on water quality.



Landowner Outreach Events: Each year, our staff organizes events to spread awareness about issues related to water quality, soil health, and pollinator health in our watershed. This year we held eight landowner outreach events, which were attended by over 400 people. These events included a Soil Health Discussion Panel, a Twilight Pasture Tour, and a soil health talk by renowned author and professor David R. Montgomery. Each event is an opportunity for landowners to discuss the latest research with experts and share their own experiences with their peers. These outreach events are made possible through funding from grants like the Great Lakes Agricultural Stewardship Initiative through the Ontario Soil and Crop Improvement Association.

Our GIS specialists performed an analysis of the riparian vegetation within the Brown Creek subwatershed. This information will help our stewardship staff when working with landowners to identify priority areas to implement Best Management Practices.

Lake Erie Domestic Action Plan: Partnering in Phosphorus Control

In response to the ever increasing algal bloom issues in Lake Erie, the governments of Canada and Ontario have announced a phosphorus reduction target of 40% by 2025. To achieve this ambitious goal, a Domestic Action Plan for Lake Erie is being prepared that will identify a range of on-the-ground actions designed to reduce excess nutrient loads to the lake and decrease toxic algal blooms. The Authority has provided input into the strategy and is represented on the Agriculture Sector Working Group. Conservation Authorities figure prominently throughout the draft document as a significant partner in implementation. Many of our programs already support the goals of this initiative and will become increasingly important once the Action Plan is released in 2018.

Our watershed ultimately drains into Lake St. Clair, which is upstream of Lake Erie. The actions we take in our watershed are part of the solution downstream.

St. Clair River Area of Concern

In 1987, the St. Clair River was identified as one of 43 Areas of Concern (AOC) in the Great Lakes Basin by the governments of Canada and the United States. AOCs are locations where local historical pollution severely limited the use and enjoyment of a water body. Municipal and industrial discharges along with habitat loss contributed to the designation of the St. Clair River as an AOC.

The goal of the AOC program is to implement a Remedial Action Plan (RAP) to restore the environmental challenges (also called Beneficial Use Impairments or BUIs) that were identified for the St. Clair River. The St. Clair Region Conservation Authority plays an important role in this program by coordinating and managing projects in collaboration with the federal and provincial government, First Nations, industry, and local community groups.

Current Status of the BUIs	
Not Impaired	5
Requires Further Assessment	2
Impaired	4
Re-designation Pending	3

2017 Status Updates

In 2017, the re-designation of the BUIs, "Beach Closings," "Bird or Animal Deformities or Reproductive Problems," and "Restrictions on Dredging" to "Not Impaired" status was approved by the Canadian RAP Implementation Committee (CRIC) and the Bi-National Public Advisory Council (BPAC). These three BUIs are continuing to move through the re-designation process.

In partnership with the AOC Program, the Authority completed the construction phase of the Ministry of the Environment and Climate Change COA-funded Aamjiwnaang First Nation Shoreline Naturalization Project in the fall of 2017. The project involved the installation of habitat pods and replacement of failing steel sheetpile with armour stone. In addition to decreasing the impact of shoreline erosion, the naturalization project will offer the First Nation community greater shoreline access and opportunity to celebrate their cultural relationship with water.

The AOC RAP Coordinator participated in outreach events throughout 2017, which included:

- Go Wild Grow Wild Expo
- AOC Science Symposium
- Authority Annual Bus Tour
- Aamjiwnaang Earth Day Celebration
- Aamjiwnaang First Nation EnviroFest
- USA BPAC Re-designation Celebration Event

Conservation Lands to Explore

The St. Clair Region Conservation Authority and its Foundation own more than 2,100 hectares of land including beaches along Lake Huron, campgrounds, day use parks, wetlands, and forests. A wide range of recreational activities are available on these lands such as swimming, boating, hiking, bird watching, camping, fishing, and hunting. Our team is continually making improvements to our conservation areas to ensure the best experience for our visitors. In 2017, upgrades were made to our system of trails, campsite hydro, washrooms, playground equipment, roads, picnic areas, storage facilities, and the Highland Glen boat launch.

We are fortunate to have a dedicated group of volunteers that assist our staff in organizing events at our three campgrounds. These events include bagel breakfasts, bingo, kid's crafts, wagon rides, Canada Day fireworks, fishing derbies, and live entertainment.

Our Conservation Lands:

- 15 Conservation Areas
- Manage 17 Foundation properties
- Manage 7 natural areas for Lambton County
- Over 40km of hiking trails

Our Campgrounds:

- 3 regional campgrounds
- 522 campsites
- 421 seasonal campers
- Employ over 20 seasonal staff
- Financially self-sufficient with $1.2 million gross revenue in 2017

Special Events 2017: Our annual Geocaching Adventure held at the Henderson Conservation Area was attended by over 50 people. This event offers participants the chance to explore the conservation area but with a geocaching twist.

About 700 people came out to our annual Maple Syrup Festival held at the A.W. Campbell Conservation Area. Visitors were able to experience the different methods of syrup production used throughout history and enjoy scenic horse-drawn wagon rides through the conservation area.

Fostering Environmental Awareness

Our team reaches out to children with a simple message – what can you do to protect our watershed? Conservation education staff has developed over 25 programs to introduce students to nature and empower them to make a difference. We offer hands-on programs that are curriculum-based and provide students an opportunity to discover how they can contribute to a healthier environment. Our education staff offers outdoor and in-class programs for elementary and secondary schools. In 2017, 11,800 students participated in our conservation education classes – over the last 10 years, our education staff has reached more than 115,000 children in our region.

Expanding Our Programs for High School Students

In the past few years, our team has developed strong programming to better reach students at the high school level. This has consisted of two main pathways: expanding the high school programs we offer and becoming involved at the school board level with the Specialist High Skills Major (SHSM) program. This has enabled our staff to provide students with more meaningful experiential learning opportunities and to build stronger partnerships within the school community.

2017 expansions to our high school programs include:

- Freshwater Mussel Identification Workshop
- Principles of Drainage Workshop
- Nutrient Management Workshop
- Introduction to Stream Assessment Protocol Workshop
- Healing Hike Workshop
- Innovation, Creativity and Entrepreneurship Training Workshop

Workshops offered at the Great Lakes Student Conference included (left to right): Fish Sampling, Aamjiwnaang First Nation Water Ceremony, Soil Conservation.

Our team was also involved in special events including the Chatham-Kent & Lambton Children's Water Festival; Sarnia Kid's Funfest; Lambton Upland Game Bird Youth Day; Artwalk; Agriculture in the Classroom (Wyoming, Forest, Brigden); and the Forest Fall Fair.

This fall, our biology and education staff collaborated to organize two hands-on outdoor education events that introduced students to water quality indicators and Ontario's reptile Species at Risk.

Our team works to reduce the cost to schools and students through donations and grants. Funding support for our Conservation Education Program in 2017 was provided by:

- Sarnia-Lambton Environmental Association
- Union Gas
- DuPont Clear into the Future Grant
- Friends of the St. Clair River
- Healthy Kids Community Challenge
- Plains Midstream Canada
- Ministry of Environment and Climate Change Canada
- Environment Canada
- St. Clair Region Conservation Foundation

Special Event: Great Lakes SHSM Student Conference

In an effort to increase Great Lakes literacy, our staff organized a Great Lakes SHSM Student Conference with the Lambton Kent District School Board (LKDSB) through support from the Ministry of Environment and Climate Change. Over 70 students from four LKDSB high schools attended the conference. Students had the opportunity to learn from experts regarding issues surrounding the Great Lakes, to discover possible career paths, and to explore cultural connections to water.

The success of the conference was due, in large part, to the workshop leaders that provided their expertise. The six workshops offered were:

- Water Quality with Pollutech
- First Nation Cultural Connection to Water with Aamjiwnaang First Nation
- Species at Risk with Sciensational Snakes
- Habitat Restoration with Return the Landscape
- Fish Sampling with biologists from the St. Clair Region Conservation Authority
- Soil Erosion and Nutrient Runoff with Ontario Ministry of Agriculture, Food and Rural Affairs

Conservation Foundation

Who Are We?

The St. Clair Region Conservation Foundation is a registered, charitable organization. Our purpose is to raise funds to support the conservation programs of the St. Clair Region Conservation Authority. Programs such as protecting communities from flooding and erosion dangers, educating children about nature and environmental concerns, tree planting, and protection of wetlands, soils and forests are all aided through the efforts of the Foundation.

The Foundation committed $90,000 to support the following Conservation Authority Programs in 2017:

- Conservation Education – $50,000
- Scholarships – $3,000
- Memorial Forest Tree Planting – $7,000
- Trails – $7,000
- Watershed Report Cards – $10,000
- Conservation Intern Position – $8,000
- 3-D Mapping Project – $5,000

Foundation Board of Directors

Duncan Skinner, President
Norm Giffen, Vice President
Lyn Goddard, Treasurer
Bill Bilton
Ken Brooks
Ralph Coe
Ottavio Colosomo
Rex Crawford
John Simmons
Steve Arnold
Archie Kerr

Raising Funds for Community Conservation

The St. Clair Region Conservation Foundation raises funds to support programs and projects for the Conservation Authority. We sincerely thank the following organizations for their continued support of Conservation Education Programs in 2017: Sarnia-Lambton Environmental Association $30,000 (River Bottom Critter, Go with the Flow Groundwater), Union Gas $5,000 (Spring Water Awareness), Friends of the St. Clair River $2,000 (River RAP), Healthy Kids Community Challenge $8,500. Our hard-working volunteers also helped to raise $15,000 through our Bingo Program in Sarnia. The proceeds were used to support conservation education, trails, and visitor services throughout Lambton County in 2017.

This April, 86 canoes and kayaks participated in our Annual Sydenham River Canoe and Kayak Race. Thanks to all those who made donations we raised $3,284 for Conservation Education. Dick Buchanan and Jack Inch won the award for the most money raised and the fastest time for the 17km competitive race was won by Oliver McMillan and Chris Prater at 1 hour 22 minutes and 52 seconds.

Our Conservation Scholarship Program rewards graduating high school students that are continuing their post-secondary studies in a conservation-related field. In June, $3,000 was awarded to four deserving students across the St. Clair region.

A.W. Campbell Memorial Scholarships – $1,000 awards:
Monique Benedict, Strathroy and District Collegiate Institute;
Emily Fraser, Great Lakes Secondary School

Mary Jo Arnold Conservation Scholarship – $500 award:
Nicole Delmage, North Lambton Secondary School

Tony Stranak Conservation Scholarship – $500 award:
Jillian Ball, Lambton Kent Composite School

Memorial Forests

Through the Foundation's Memorial Forest Program, any individual can make a donation to have a tree planted in the memory of a loved one. Over the year, 110 trees were planted through the program.

In partnership with Denning's Funeral Home, the Foundation has established the Denning's Memorial Forest Program. Through the program, Denning's makes donations on behalf of the families they serve, which are used to support conservation education and tree planting efforts throughout the region. In 2017, we expanded our partnership to serve families in the West Elgin and Chatham-Kent area as well as Strathroy. Denning's donated a total of $11,300 to the program in 2017.

Over 400 people attended the three dedication ceremonies held in 2017.

Conserving Land

The Foundation accepts land donations that further the objectives of the Authority by preserving important natural areas. To date, the Foundation has received 17 land donations totalling 461 hectares. In 2017, 7 hectares of land was donated to the Foundation by Jack and Sally Foster. The property, now known as the Bannerstone Conservation Lands, will be maintained as a natural area of mixed forest and grassland habitat. It will also serve as a demonstration site for woodlot Best Management Practices. This land donation, and others like it, have significant conservation benefits for our region.

Ecological Gifts: To date, three land donations to the Foundation have qualified as an Ecological Gift through Environment and Climate Change Canada. Canada's Ecological Gifts Program provides a way for Canadians with ecologically sensitive land to protect nature and leave a legacy for future generations. Made possible by the terms of the Income Tax Act of Canada, it offers significant tax benefits to landowners who donate land or a partial interest in land to a qualified recipient. Recipients, such as the Conservation Foundation, ensure that the land's biodiversity and environmental heritage are conserved in perpetuity.

Our Partners in Conservation

We are stronger and can accomplish more when we engage our community and align ourselves with others that have similar goals. Each year the Authority actively seeks additional grants, donations, and contracts to bring funds that support conservation into our region. We thank the many organizations that contributed over $2 million in additional funding to the success of our conservation programs in 2017.

Conservation Awards were presented by Steve Arnold, Chair, and Andy Bruziewicz, Vice Chair, to (from left to right): the Municipality of Strathroy-Caradoc (Joanne Vanderheyden); Brandon Jordan; and the Municipality of Brooke-Alvinston (Don McGugan) to celebrate and acknowledge their contributions to the environmental health of our region.

Environment and Climate Change Canada – $183,300
Habitat Stewardship Program Prevention Stream – $18,800
Habitat Stewardship Program SAR Stream – $99,000
Healthy Lake Huron – $10,000
St. Clair River Area of Concern – $55,500

Ministry of Agriculture, Food and Rural Affairs – $148,000
Healthy Lake Huron (outreach and monitoring) – $20,000
Watershed-wide Outreach and Education – $128,000

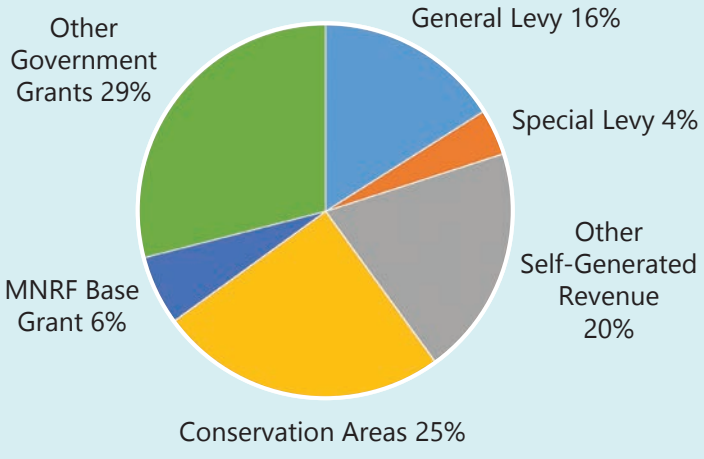
Ministry of Natural Resources and Forestry – $942,400
Canada-Ontario Agreement – $20,000
Species at Risk Stewardship Fund – $70,400
Summer Employment Opportunity Program – $6,000
Wetland Evaluations – $30,000
Water and Erosion Control Infrastructure – $816,000

Ministry of the Environment and Climate Change – $373,500
Drinking Water Source Protection – $175,000
Healthy Lake Huron (stewardship and monitoring) – $60,000
High School Great Lakes SHSM Student Conference – $12,500
Shoreline Protection – $25,000
St. Clair River Area of Concern – $65,000
Ontario Community Environment Fund – $36,000

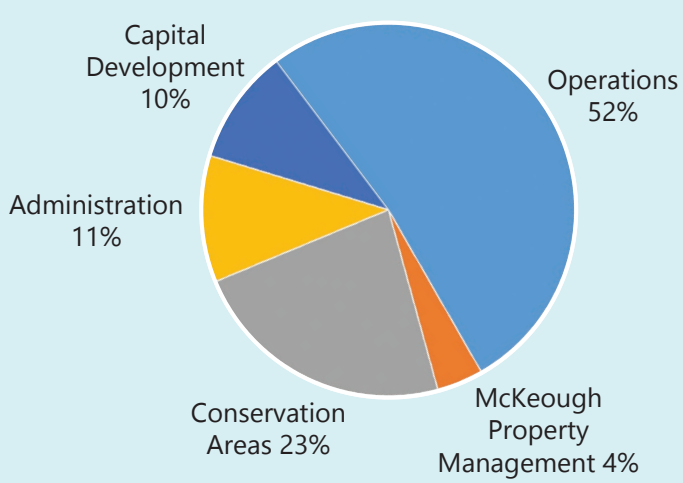
St. Clair Region Conservation Foundation – $90,000
Direct Project Support – $38,000
Friends of the St. Clair River – $2,000
Sarnia Bingo Program – $15,000
Sarnia-Lambton Environmental Association – $30,000
Union Gas – $5,000

Other Partners – $310,800
50 Million Tree Program (Forests Ontario) – $75,500
Carolinian Canada Coalition – $1,800
Ducks Unlimited Canada – $34,700
EI DuPont Clear into the Future Grant – $6,200
Enbridge – $20,000
Fisheries and Oceans Canada – $8,900
Friends of the St. Clair River (Ontario Trillium Foundation) – $53,600
Ontario Nature – $2,800
Ontario Power Generation Regional Biodiversity Program – $29,000
Ontario Soil and Crop Improvement Association – $21,600
Lambton Public Health (TDFEF) – $5,000
Rural Lambton Stewardship Network (DFO) – $27,900
TD Friends of the Environment Foundation – $11,800
Union Gas – $12,000

2017 Revenues – $4,944,113



2017 Expenditures – $5,089,853*



*Deficit offset by reserves

Our Team at St. Clair Conservation

Administration Office

Lisa Atkinson, GIS/Photogrammetry Technician
Laura Biancolin, Agricultural Outreach Technician
Donna Blue, St. Clair River RAP Coordinator (Jan – Jun)
Kevan Baker, Director of Lands
Rick Battson, Director of Communications (Jan – Aug)
Erin Carroll, Manager of Biology
Stephen Clark, Water Resources Specialist
Dallas Cundick, Environmental Planner/Regulations Officer
Emily De Cloet, Water Resources Technician
Melissa Deisley, Regulations Officer
Marlene Dorrestyn, Administrative Assistant
Nicole Drumm, Communications Technician
Chris Durand, IT/GIS Coordinator
Ashley Fletcher, Admin Assistant/Board Coordinator (Jun – Dec)
Patricia Hayman, Director of Planning
Sarah Hodgkiss, Planning Ecologist
Sarah Kellestine, Payroll and Accounting Clerk
Heather Long, Receptionist/Administration Clerk (Jan – Apr)
Brian McDougall, General Manager
Erica Ogden, Planner
Tim Payne, Forest Management Specialist
Tracy Prince, Director of Finance
Girish Sankar, Director of Water Resources
Alison Seidler, GIS Specialist
Jeff Sharp, Conservation Services Technician
Steve Shaw, Manager of Conservation Services
Kelli Smith, Watershed Biologist
Jessica Van Zwol, Healthy Watershed Specialist
Greg Wilcox, Biological Technician

Drinking Water Source Protection
John Campbell, Source Water Protection Database Specialist
Deb Kirk, Administrative Assistant
Linda Nicks, Hydrogeologist

Field Offices

McKeough Floodway
Shane White, Superintendent

A.W. Campbell Conservation Area
Mike Tizzard, Superintendent
Don Skinner, Assistant Superintendent

Lorne C. Henderson Conservation Area
Terry Barrie, Superintendent
Mark Bakelaar, Assistant Superintendent
Sharon Nethercott, Conservation Education Coordinator
Melissa Gill, Conservation Education/Community Partnership Technician

Warwick Conservation Area
Bill Turner, Superintendent
Glenn Baxter, Assistant Superintendent

McLean Conservation Lands
Scott O'Brien, Superintendent

Staff Retirements

Heather Long, Receptionist and Administration Clerk, retired in April after five years with the Authority. Her hard work and warm conversation will be missed. Rick Battson, Director of Communications, retired in August after 30 years of outreach and education in our community. We thank Rick for his years of dedicated service and will work to carry on his legacy of excellence. We wish Heather and Rick all the best in their next chapters.

St. Clair Region Conservation Authority
205 Mill Pond Crescent
Strathroy, ON N7G 3P9
t. 519-245-3710
f. 519-245-3348
stclair@scrca.on.ca

Member of

Conservation ONTARIO
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www.scrca.on.ca