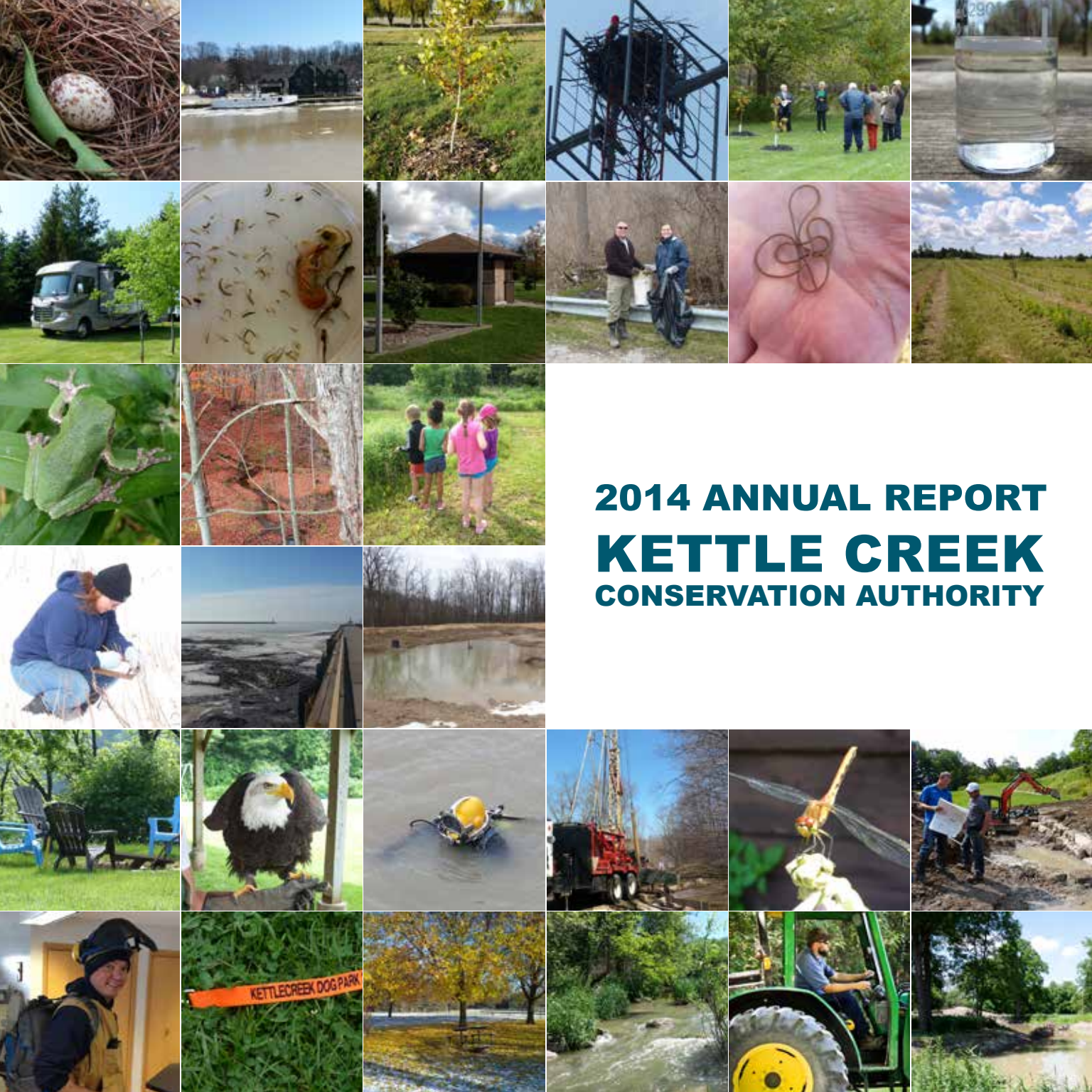




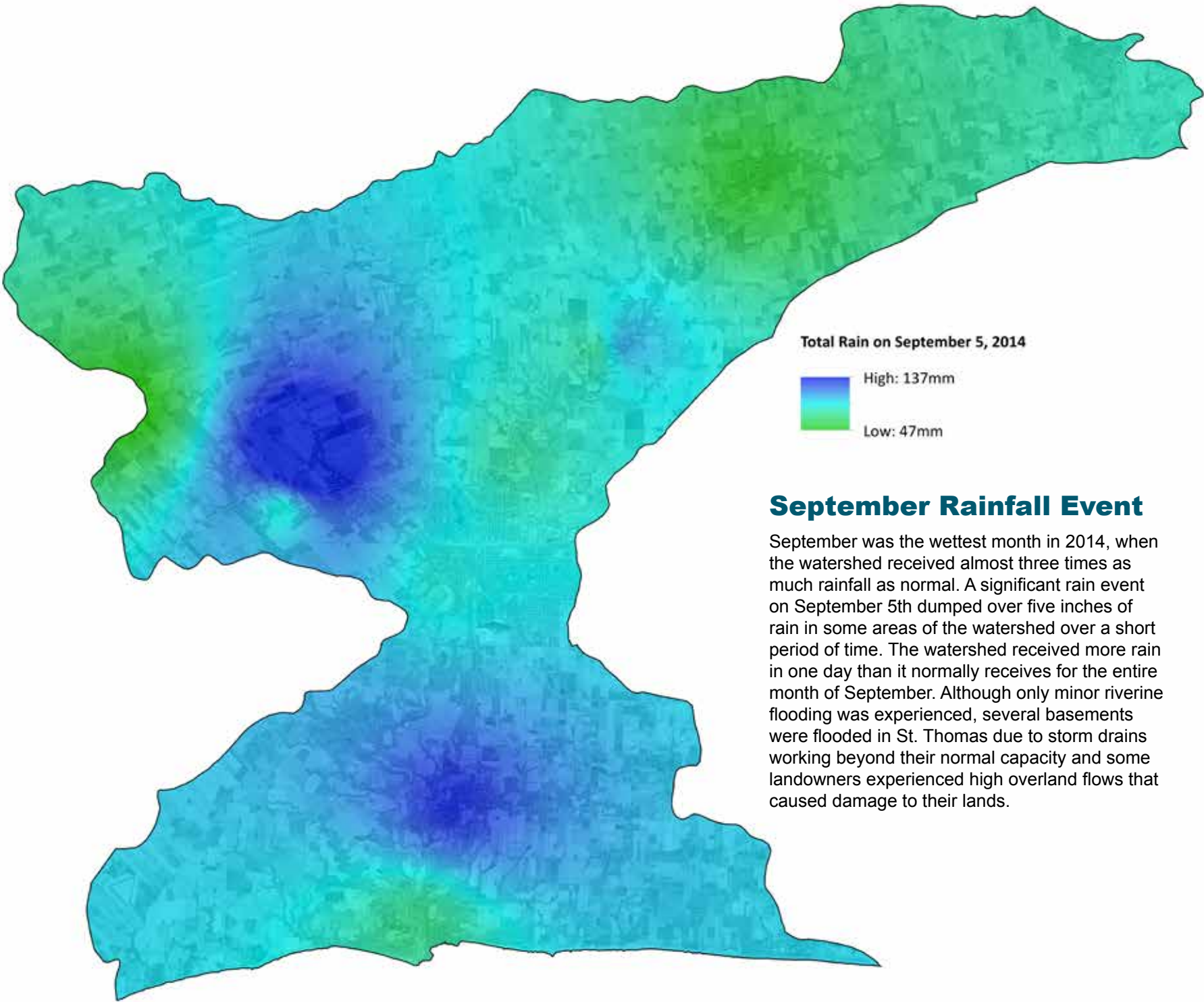
2014 ANNUAL REPORT
KETTLE CREEK
CONSERVATION AUTHORITY

The Kettle Creek Watershed

Situated entirely within the Carolinian Life Zone, the Kettle Creek watershed drains 520 square kilometres of agricultural, urban, and naturally vegetated lands to the north shore of Lake Erie at Port Stanley. Kettle Creek drops approximately 141 metres over its 80 kilometre length. The steep drop in elevation can cause flash flooding, fluctuating base flows and a high degree of erosion. The watershed is hourglass in shape and is made up of three subwatersheds: Dodd Creek, Upper Kettle Creek and Lower Kettle Creek. The main branch of Kettle Creek originates at Lake Whittaker, an 11 hectare groundwater-fed kettle lake. The physical geography of the Kettle Creek watershed is dominated by clay plain in the north and sand plain in the south. There are seven member municipalities associated with the Kettle Creek watershed: Middlesex Centre, London, Thames Centre, Malahide, Central Elgin, Southwold and St. Thomas.

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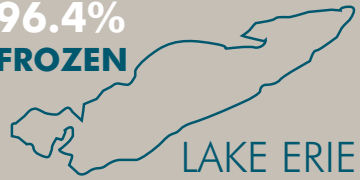


September Rainfall Event

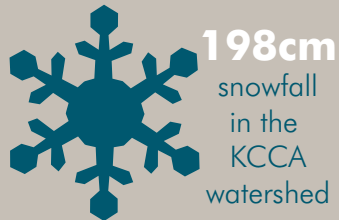
September was the wettest month in 2014, when the watershed received almost three times as much rainfall as normal. A significant rain event on September 5th dumped over five inches of rain in some areas of the watershed over a short period of time. The watershed received more rain in one day than it normally receives for the entire month of September. Although only minor riverine flooding was experienced, several basements were flooded in St. Thomas due to storm drains working beyond their normal capacity and some landowners experienced high overland flows that caused damage to their lands.

WINTER 2014

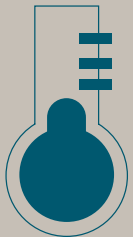
96.4%
FROZEN



MAY 11, 2014
NO ICE ON LAKE ERIE



February 12
2014
-28°C
lowest
temperature
recorded



33 CM (13 IN)
THICKNESS OF ICE
IN KETTLE CREEK
AT PORT STANLEY

Flood Forecasting and Low Water Response

The Kettle Creek Conservation Authority (KCCA) watershed experienced an extremely cold winter with significant snow pack conditions in 2014. Record breaking low temperatures contributed to the ice cover experienced throughout the watershed and by extension in the Great Lakes. At one point, 97% of all of the Great Lakes were frozen.

Ice cover monitoring was brought to the forefront in KCCA's flood forecasting program as accumulated ice in the Port Stanley Harbour as of March 17, 2014 was over 33 cm (13 in). While ice at this threshold was indicative of ice jamming conditions during a spring thaw/freshet event, the spring melt went smoothly.

KCCA issued only one Flood Watch in late February. The watershed held onto the existing snowpack until almost the end of March when the slowly melting snow helped to boost and maintain water levels moving into the summer months.

Although water levels fluctuated over the course of the spring and summer months, regular storm events provided enough rainfall accumulation to prevent the watershed from having to enter into a low water condition in 2014.

KCCA completed several repairs to both the Dalewood and Union Dams in 2014. Work originally started in November 2013 to the Dalewood Dam low flow valve system was completed in May 2014. The low flow valve system is essential for maintaining water levels in the upstream Dalewood Reservoir which is also a Provincially Significant Wetland. The low flow valve system is also used to augment base flows downstream in times of low water. KCCA received \$10,000 in funding through the Water and Erosion Control Infrastructure (WECI) program administered through the Ministry of Natural Resources and Forestry.

KCCA completed two repairs to the Union Dam in 2014. A minor washout caused by trapped debris in the spillway was quickly repaired in April. While undertaking a routine inspection of the Union Dam in November, the low flow valve broke in the open position which caused water levels to fluctuate in Union Pond. Unlike the Dalewood Dam which has stop logs, the low flow valve in the Union Dam is essential for diverting water away from the spillway since it is a fixed weir design. The low flow valve is also used to increase flows downstream under low water conditions.

For up-to-date flood information, watershed residents and businesses can visit the Authority's website at www.kettlecreekconservation.on.ca where they can register to receive automatic flood related emails, or connect with KCCA socially on Twitter @KettleCreekCA or on Facebook at www.facebook.com/KettleCreekCA.



Upper Kettle Creek ice jam at Highbury Avenue.

Planning and Regulations

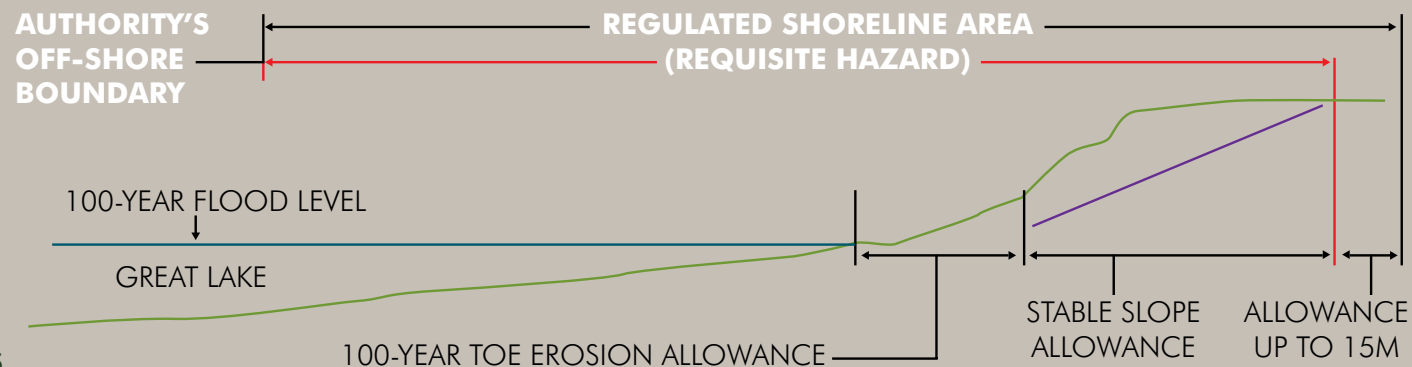
In 2014, the County of Elgin and its lower tier municipalities embraced an ecosystems approach to shoreline management of Lake Erie by collaborating on a Joint Shoreline Management Plan with the affected Conservation Authorities within Elgin (Lower Thames Valley Conservation Authority (LTVCA), Catfish Creek Conservation Authority (CCCA), Long Point Region Conservation Authority (LPRCA) & Kettle Creek Conservation Authority (KCCA).

An ecosystem approach to land use planning recognizes that “everything is connected to everything else”. By adopting this approach it will provide a better understanding of the connectivity of the coastal processes of Lake Erie within the four watersheds of Elgin County and will consider the greater picture of potential regional impacts caused by shoreline development activity.

KCCA was appointed the lead agency within this collaborative to administer the process and development of the Elgin County Shoreline Management Plan.

W.F Baird & Associates Coastal Engineers Ltd. was awarded the contract in June and began gathering data immediately throughout the summer months along the 90km reach of Lake Erie. The public was encouraged to provide input into the plan during three public open houses held in late August. It is anticipated that the new plan will be finalized and considered for adoption in 2015.

Regulation and development reviews continued to provide substantial input into land use planning and development applications. Twenty-five permits were issued under Ontario Regulation 181/06, showing a minor decrease from prior years. Two Notices of Violation were issued and one resulted in formal charges pursuant to Section 28 of the Conservation Authorities Act.



Rotational slope failure along Lake Erie shoreline 2013.

ST.THOMAS-ELGIN CHILDREN'S WATER FESTIVAL

MAY 13-16, 2014

>3500
GRADES 2-5
STUDENTS
ATTENDED



100/PER DAY
VOLUNTEERS

MORE THAN
80%
OF ONTARIANS

get their drinking
water from the
Great Lakes



Carolinian
FOREST FESTIVAL

over the last 7 years

>10,000
GRADES 6-7
STUDENTS
ATTENDED

Awareness and Education

KCCA coordinated the St. Thomas-Elgin Children's Water Festival in May 2014 at Pinafore Park in St. Thomas. Over 3,500 grades two to five students attended the Festival and participated in hands-on and interactive activity stations linked to the Ontario Curriculum. The activities taught students about stream and wetland critters, groundwater protection, and proper disposal of household hazardous waste. Ultimately, the goal of the Children's Water Festival is to motivate behavioural changes in the students and stress the importance of clean, safe water in their lives and communities.

The Carolinian Forest Festival was held for its seventh year bringing the total number of grades 6 and 7 students participating to approximately 10,000. Two new activity stations were introduced: 'Monarch Migration Madness', teaching students about the migration and life cycle of Monarchs, and 'I Spy with My Bird Eye', which taught students how to use binoculars and identify common Carolinian bird species.

Caroline Streib and Anita Rastapkevicius were awarded the Elgin County/Kettle Creek Agricultural Conservation Scholarship. A \$500 scholarship was awarded to each student. The scholarship is awarded to students pursuing agriculturally-related studies with an emphasis on compatibility with the natural environment at a post-secondary institution. KCCA, Elgin County Junior Farmers Alumni and the Elgin Federation of Agriculture continue to fundraise to ensure the scholarship can be awarded in perpetuity.

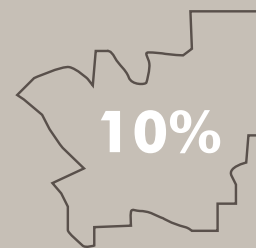
KCCA's Outdoor Education Program offered eight different programs to local school groups concentrating on wetland protection and creation.



St. Thomas-Elgin Children's Water Festival.



SURVEY RESULTS



ST. THOMAS RESIDENTS
LIVING NEXT TO A RAVINE



25%

DUMP YARD WASTE
INTO THE RAVINE



RESIDENTS' CONCERNS:

46% EROSION

37% DUMPING
WASTE

Stewardship

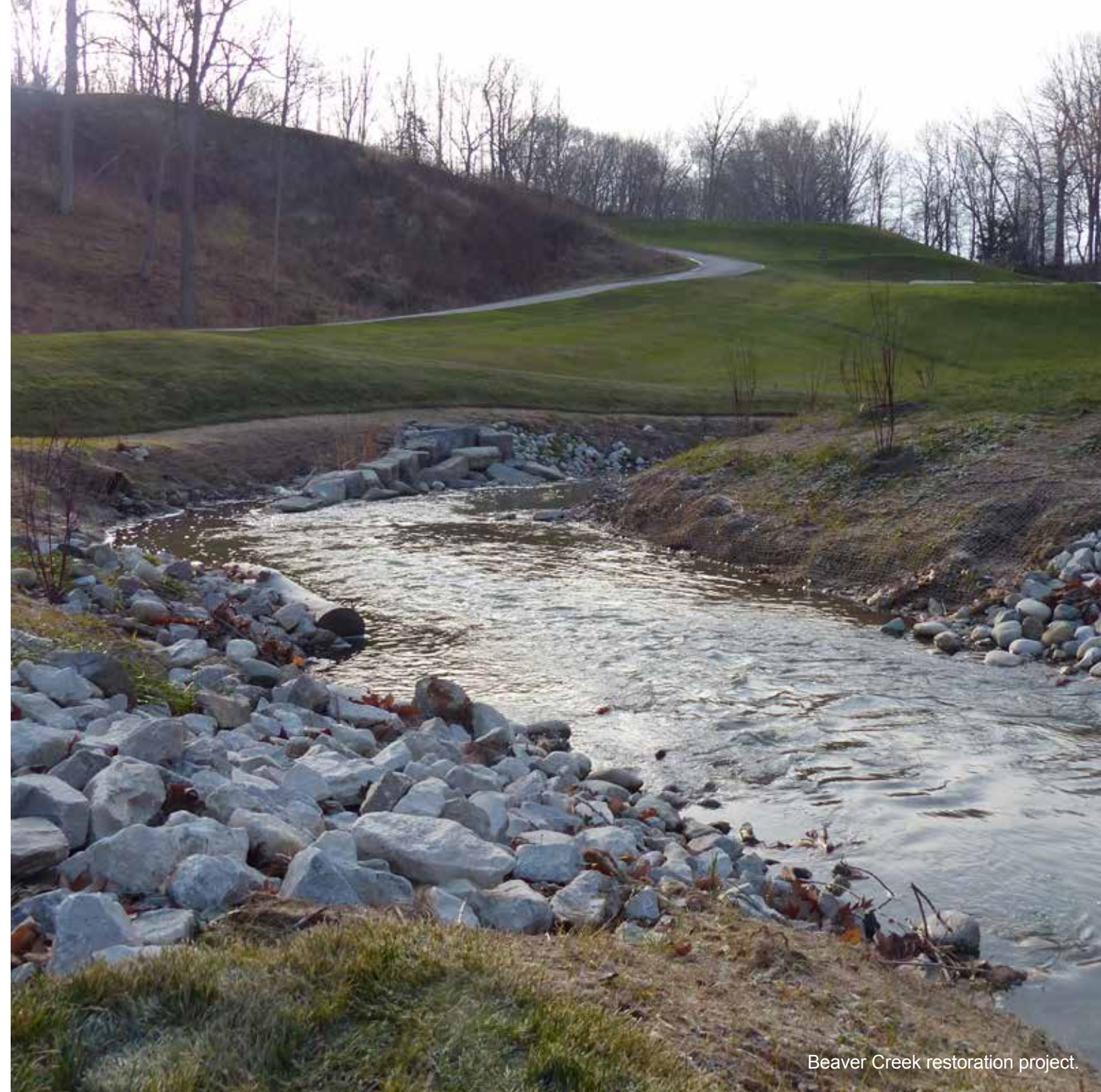
With less than 1% wetland cover in the watershed, KCCA has committed to increase wetland preservation and creation in the watershed. In 2014, four wetlands were created in the Kettle Creek watershed – three on private land and one at the City of St. Thomas' VA Barrie Park. Funding for the wetlands was provided by the Kettle Creek Clean Water Initiative, Elgin Clean Water Program (ECWP), Ducks Unlimited and the Dorothy Fay Palmer Estate.

Through funding from the Great Lakes Guardian Community Fund and the Recreational Fisheries Conservation Partnerships Program, KCCA completed two stream restoration projects at the St. Thomas Golf and Country Club. Beaver Creek, one of Kettle Creek's only cool water streams, meanders through the entire golf course. Streambank restoration and in-stream structures were installed along Holes #4 and #15 to reduce erosion and enhance fish and wildlife habitat.

KCCA initiated the Green Your Ravine campaign in the City of St. Thomas through the EcoAction Community Funding Program. The campaign included a Ravine Clean-Up, outreach at community events like the Horton Market and conducting a pre-project survey to assess landowners' perceptions and attitudes about living adjacent to a natural feature. The campaign will continue in 2015 with the distribution of a factsheet to all ravine landowners and informational signage posted adjacent to City ravines.

KCCA continues to work with the Ministry of Agriculture, Food and Rural Affairs to reduce phosphorus loadings to Lake Erie. KCCA hired a GIS/Photogrammetry Technician to complete mapping that will help to identify priority erosion areas in the Kettle Creek, Catfish Creek and Long Point Region watersheds. This mapping will assist in targeting BMPs to areas with high erosion potential. Staff also hosted a soil and water conservation workshop for landowners which included a farm tour showcasing various erosion control structures.

The Elgin Clean Water Program continues to be a great source of technical advice and funding for landowners. The Green Lane Community Trust Fund provided \$35,000 in funding for the program in 2014. Fifty-six projects have been completed to date through approximately \$165,000 in ECWP grants with total project costs exceeding \$650,000.



Beaver Creek restoration project.



CITY OF LONDON

36%
(80,935 TREES)
PLANTED
TOWARDS THE
MILLION
TREE
CHALLENGE

KCCA IS THE
TOP PLANTER
IN THE CHALLENGE

FOR EVERY
343
TREES / **KM²**
Asthma Rates Drop By
25%
IN YOUNG CHILDREN

Forestry

KCCA planted 40,000 seedlings in the watershed in 2014. Trees Ontario's 50 Million Tree Program provided funding assistance to landowners to plant 20,000 trees. Thanks to additional funding support from the City of London, KCCA was able to offer 25,000 trees free of charge to landowners in the City of London within KCCA's watershed boundaries. The trees bring the total number of trees planted in the City of London by KCCA to 80,935 or 36% of the total trees planted in the City's Million Tree Challenge.

The Greening Communities program expanded to include three municipalities in 2014 – the Municipality of Central Elgin, the City of St. Thomas and the Township of Malahide. Through this program, trees are provided to landowners in smaller quantities than what is offered through the regular seedling program. One-thousand seven hundred trees were planted by landowners through this program.

KCCA in conjunction with the Municipality of Central Elgin planted trees along municipal roadsides to replace those that have been lost over the years. Two hundred native, large stock trees were planted in May 2014.

KCCA partnered with the City of St. Thomas and TD Canada Trust to plant 120 large stock trees at Rosethorn Park through the nationwide TD Tree Days event in September.

KCCA conducted hazard tree assessments within its conservation areas using a new mobile GIS application. This application allows staff to map the location and species type of each hazardous tree in the field in real time. This data will be useful in targeting future areas for replanting and assessing trends of vulnerable areas or species within KCCA lands.



Nine acre tree planting site in the Upper Kettle Creek watershed.

6% 
increase
in number of campers from 2013


9,823
campers in 2014

 **2,527**
DAY-USE
PERMITS

 **22km**
of Trails Owned and Operated

 **A Hike
a Day...**

Did you know doctors have been prescribing hikes? Stepping Into Nature has been proven to provide health benefits such as: increased energy and immunity, increased weight loss and fitness, increased Vitamin D production, and reduced risk of diabetes, heart attacks, and cancer.

Conservation Areas

Dalewood and Lake Whittaker Conservation Areas' reputation as campgrounds of choice spread to organized RV clubs. "Great Lakes Good Sams" chapter visited in June and the "Golden Horseshoe Good Sams" chapter visited in September, firmly placing KCCA's campgrounds on the RV roadmap.

The popularity of KCCA's campgrounds is due in part to a reinvestment in the infrastructure. After a five-year period of electrical upgrades, the total number of 30-amp sites at Lake Whittaker is 88, with Dalewood offering 101. The 30-amp services on larger treed sites means there is a seasonal camper waiting list and on most long weekends the campgrounds are filled to capacity.

The new gatehouse at Dalewood Conservation Area was fully constructed in the spring of 2014. The new 800-square-foot building replaced the original gate shack that was constructed when the campground opened in 1977. The entrance to the campground was redone as well, allowing visitors access to the new drive-up window for immediate contact with gate attendant staff. The reviews were positive: accessible, functional and convenient.

The Kettle Creek Dog Park, a collaborative between KCCA, the Municipality of Central Elgin, and the City of St. Thomas was officially opened in July 2014. Located immediately adjacent to Dan Patterson Conservation Area, the park consists of five acres of a fenced off-leash area with three separate sections: one for small dogs, one for large dogs and an individual play area.

The St. Thomas Dog Owners' Association contributed \$10,000 to the construction of the park with the balance being contributed by the City of St. Thomas and the Municipality of Central Elgin. KCCA contributed the use of the land and will maintain the park on an ongoing basis.

Starting in July 2014 the Authority introduced a new Access and Signage Policy allowing the public to enter certain areas and trails without a permit provided they follow the posted rules and regulations. The new Access and Signage Policy recognizes the balance between encouraging the public to use the various conservation areas and protecting their sensitive environments.

In the past, users of all KCCA properties were required to purchase an \$8 day-use pass or a seasonal day-use pass for \$75 to access the various trails and day-use facilities. This pass is now only required at the following day-use areas and trails: Lake Whittaker Conservation Area Trail, Day-Use and Campground; Kirk Cousins Management Area and Trail; Dalewood Conservation Area Day-Use and Campground.

Permissive Use with no permit is now allowed for the Dalewood Hiking Trail, Dan Patterson Hiking Trail, and Union Pond Day-Use Area for legitimate posted uses during the hours of dawn to dusk.



Kettle Creek Dog Park.

Watershed Report Card Spotlight on Phosphorus

Lake Erie is under stress. The Lake Erie basin is surrounded by over 11 million people and is dominated by urbanization and agriculture. While Lake Erie's health suffers from multiple issues such as climate change and invasive aquatic species, the rising proportion of dissolved reactive and total phosphorus is seen as the primary cause of this decline.

Although nutrients, such as phosphorus, occur naturally in the environment and are essential to plant growth, human activity is causing high quantities of phosphorus to reach our watercourses. Phosphorus can come from a variety of sources including effluent from sewage treatment plants, surface runoff from agricultural, urban and suburban lands, livestock operations, industrial sources such as power plants and vehicle exhaust. Phosphorus can be found in fertilizers, pesticides, landfill effluent, septic systems and fecal matter.

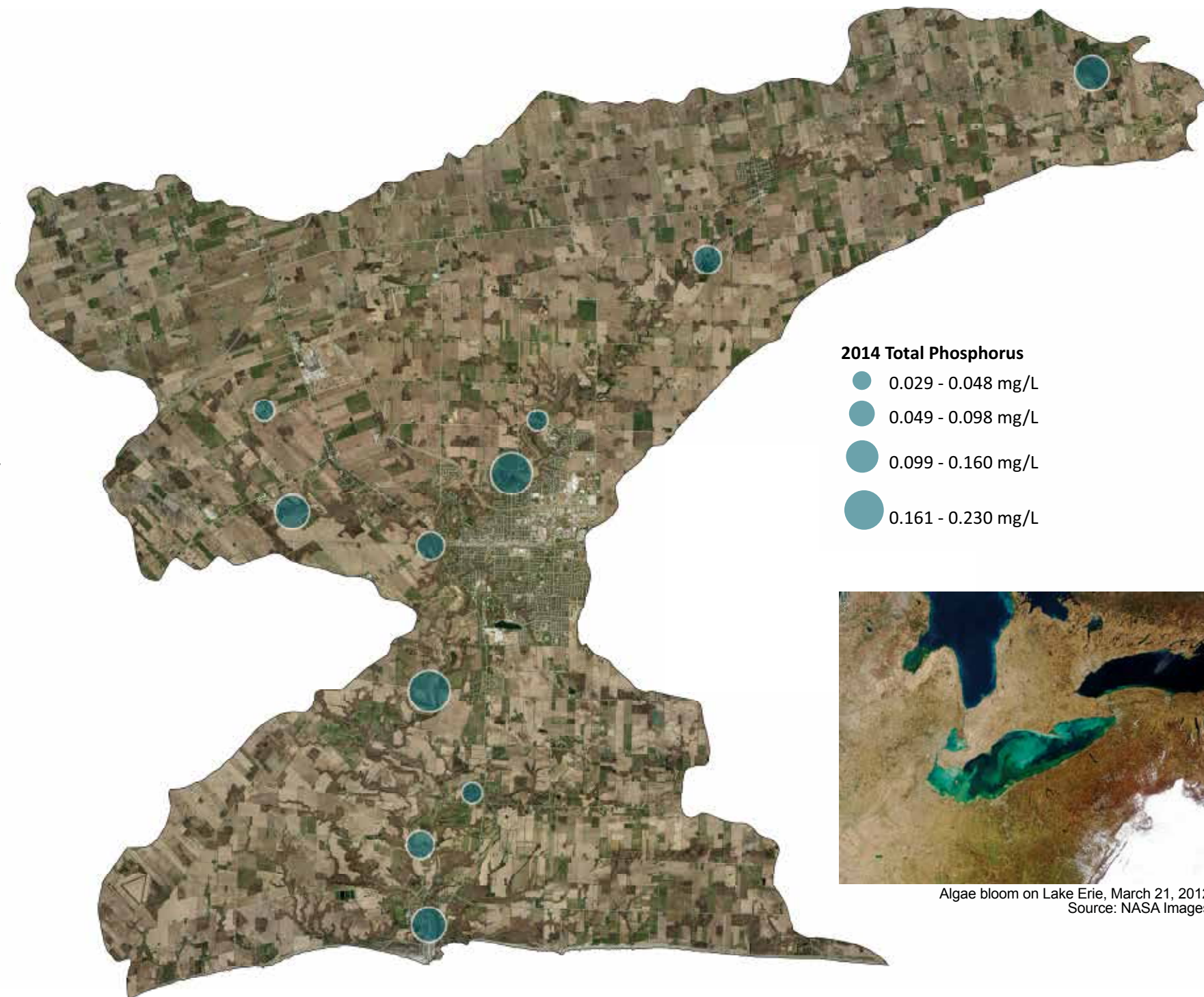
High levels of phosphorus spur the formation of algal blooms that can block sunlight to underwater plants. When the algal blooms die and decompose, they consume oxygen, resulting in "dead zones" in the water of low or no oxygen that can stress and even kill fish. Some species of blue-green algae (cyanobacteria) can be extremely toxic to humans, wildlife, livestock and pets.

The Kettle Creek watershed is a contributor of phosphorus to Lake Erie. KCCA staff collect monthly surface water samples at ten locations throughout the watershed during the ice-free season. In addition to phosphorus, these water samples are analysed for various water quality parameters such as general chemistry, nutrients, heavy metals and bacteria.

Over the last ten years, 95% of the phosphorus samples collected across the Kettle Creek watershed exceeded the Provincial Water Quality Objective (PWQO) of 0.03 mg/L. This objective is the limit for total phosphorus concentrations to prevent excessive plant growth in rivers and streams. One hundred percent of the phosphorus samples collected in Lake Whittaker over the last three years exceed the PWQO objective of 0.02 mg/L during the ice-free period. This objective is set to avoid the growth of nuisance algae, in particular cyanobacteria. Although most of the total phosphorus results exceed the PWQO, the long-term data suggests a downward trend indicating that total phosphorus levels throughout the watershed are improving slowly over time. Monitoring also helps to identify phosphorus "hotspots" in the watershed. This allows KCCA to set environmental goals and implement programs to improve water quality over time.

Monitoring phosphorus in surface water throughout the Kettle Creek watershed is a major component of the Watershed Report Card process. A watershed report card evaluates key indicators of watershed health, using provincial standards of defensible science-based research. KCCA releases a new report card every five years to provide local residents, community groups, municipalities, industries and agencies information on the health of the watershed. The most recent report card was released in 2013.

Through the implementation of stewardship programs and education of local landowners combined with the long-term environmental monitoring of the watershed, KCCA is working towards improving the water quality of Kettle Creek and reducing the amount of phosphorus entering Lake Erie.



MAY 2000	● Walkerton Drinking Water Crisis
JULY 2007	● Clean Water Act, 2006 came into effect
NOVEMBER 2007	● Lake Erie Region Source Protection Committee forms
MAY 2009	● Kettle Creek Source Protection Plan Terms of Reference approved
DECEMBER 2009	● Public Consultation Period for the Kettle Creek Assessment Report begins; four rounds of public consultation occur.
JANUARY 2012	● Pre-consultation on the Kettle Creek Source Protection Plan Policies begins with implementing bodies
MARCH 2012	● First Public Consultation on the Kettle Creek Source Protection Plan begins
AUGUST 2012	● Second Public Consultation on the Kettle Creek Source Protection Plan begins
MAY 2014	● Ministry of the Environment approves the Updated Kettle Creek Assessment Report
MARCH 2014	● Proposed Amended Kettle Creek Source Protection Plan submitted to the Minister of the Environment
SEPTEMBER 2014	● Kettle Creek Source Protection Plan approved
JANUARY 2015	● Kettle Creek Source Protection Plan effective date

Source Water Protection

The Kettle Creek Source Protection Plan was approved on September 11, 2014. The plan outlines the policies and programs that will protect the quality of water used by two municipal drinking water systems in the Kettle Creek watershed. Both systems are based in the Municipality of Central Elgin:

- The Elgin Area Primary Water Supply, which takes water from an intake in Lake Erie just east of Port Stanley. The system supplies water to several communities in eastern Elgin County as well as the City of London.
- The water system serving the community of Belmont, which draws water from two wells in the town.

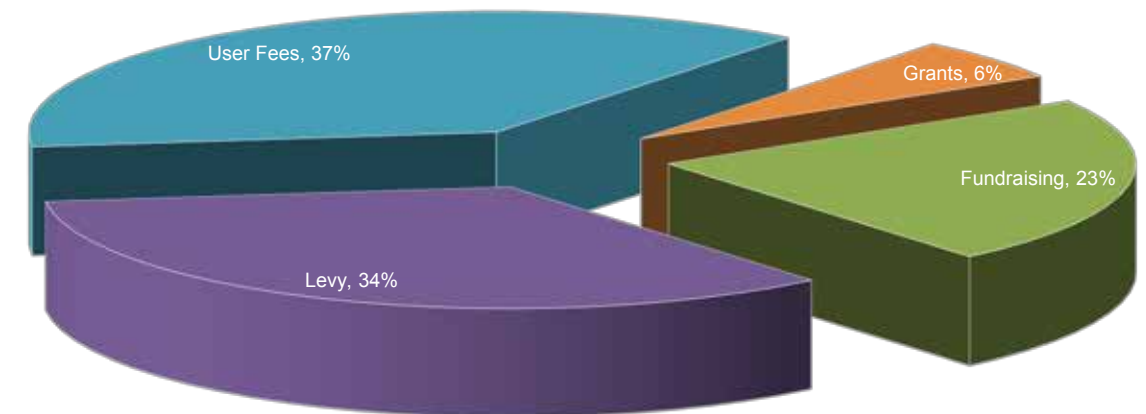
A range of approaches has been used to address the threats including outreach and education campaigns, updating municipal documents and, in certain instances, prohibiting activities immediately within the Belmont Wellhead Protection Areas or the Port Stanley Intake Protection Zone.

The plan and its policies took effect on January 1, 2015.

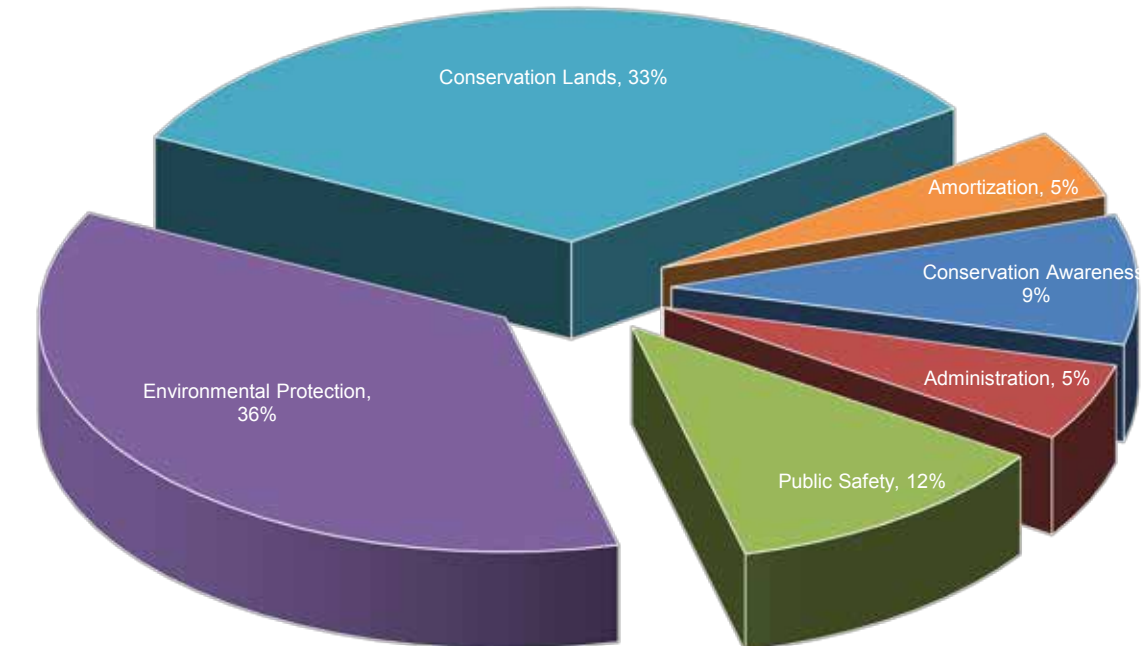
With the Ministry's approval of the plan, the Municipality of Central Elgin and the Kettle Creek Conservation Authority will begin the implementation phase of the planning process. A comprehensive education and outreach campaign is planned for 2015 to raise awareness of the plan and its policies.

Financial Statements

Total Revenues



Total Expenditures



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City of London

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Cliff Barwick
City of St. Thomas

Heather Jackson
City of St. Thomas

Bill Mackie
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Jim McIntyre
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Jay Fitcher & Ian Chard
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• Sandra Crinklaw-Jones • Department of Fisheries and
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• Trojan UV • Upper Thames River CA • Stanley G. Vince

(please notify our office of any errors or omissions)



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