

The GRAND

GRAND RIVER
CONSERVATION
AUTHORITY
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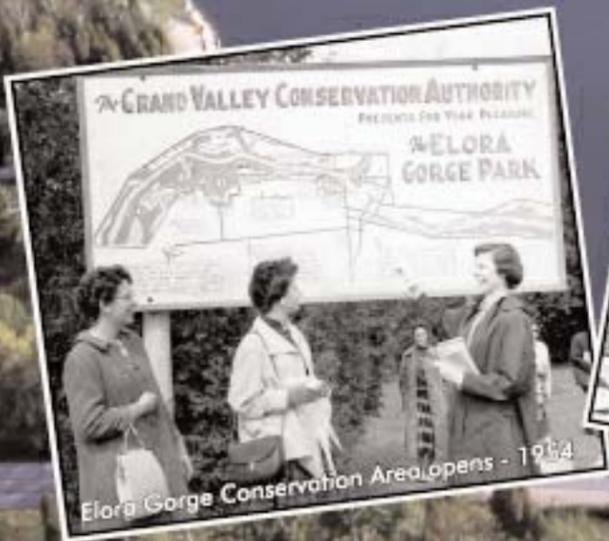


Celebrating 75 years of watershed conservation

Seventy-five years ago, the Grand River watershed was in dire straits. Flooding and poor water quality were threatening the health of watershed communities and their residents.

In 1934 farsighted municipal leaders joined together to form the organization that has since become the Grand River Conservation Authority.

This edition of The Grand celebrates the 75-year history of the GRCA – Canada's oldest watershed management agency. It tells how the GRCA was created and its efforts to improve the environment and the quality of life for all of the living things that call this watershed home.



Background photo: Rockwood Conservation Area

Along the Grand

The beginning

Visionaries tackled water issues that threatened health and prosperity.

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Recreation

GRCA parks gave watershed residents a place to enjoy nature close to home.

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Forestry

Millions of trees have been planted to restore the river's health.

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THE GRAND RIVER
A Canadian
Heritage River



The GRCA

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A Message FROM THE CHAIRMAN AND THE CAO



This year we are marking the 75th anniversary of the founding of the Grand River Conservation Authority.

In geological terms, that isn't a lot of time. The landscape of the Grand River watershed was sculpted by retreating glaciers thousands of years ago. The bedrock deep below was formed millions of years ago. Measured against those events, 75 years passes by in the wink of an eye.

But on a human scale, 75 years is a lot of time.

It was 225 years ago that the era of modern settlement began in the Grand River watershed. The Haldimand Proclamation was issued in 1784 to provide a new home for the Six Nations people who no longer felt welcome in their traditional territory in the new United States. Not long after they arrived, waves of settlers made their way to the fertile Grand River valley.

By 1859 – 75 years later – the watershed had undergone a remarkable transformation and had taken on many of the characteristics we know today. Many of the forests and wetlands had disappeared to make way for farms. Waterways had been tamed for power and transportation. Railroads had linked the cities and towns of the Grand to the rest of the world, setting the stage for major population growth in the late 19th century.

What those pioneers likely didn't realize, though, is that all of their effort had taken an extreme toll on the natural system. Even as their farms and cities prospered, they started to feel the impact of the degraded environment. Floods became more frequent. Water quality deteriorated. Springs dried up. Soil washed away. Plant, animal, bird and fish species disappeared.

During the next 75 years it became obvious that the Grand River watershed was caught in a downward spiral that threatened the health and economic vitality of the region.

Business leaders led an initiative to create a watershed management agency that would address the many environmental challenges plaguing the watershed. They pressured politicians at all three levels of government to take action.

Seventy-five years ago, in 1934, their efforts resulted in the creation of the Grand River Conservation Commission. In 1948 another agency, the Grand Valley Conservation Authority was founded under new provincial legislation, inspired in large part by the successes of the commission.

The two organizations worked in parallel – though not

always hand-in-hand – until they finally merged in 1966 to create today's Grand River Conservation Authority.

Over the last 75 years a lot of progress has been made to restore some natural balance to an out-of-kilter environment. Forest cover has rebounded, water quality has improved, natural areas have been protected and some species have found the land and water a more hospitable home than it was 75 years ago.

So this year we recognize all that has been achieved since 1934. But we're not just marking the anniversary of an agency. What we are celebrating is the coming together of a movement, one that united municipalities, senior levels of government, community leaders, scientists, First Nations, farmers, businesses and residents. It was a movement dedicated to restoring and preserving the environment of the Grand River watershed, to making it healthy and sustainable.

It is a movement that is far greater and more significant than any one organization. It is a movement that today faces emerging issues, from climate change to population growth, which will challenge it over the next 75 years. But it is a movement with a solid foundation that will meet those challenges.

It's been said that "the true meaning of life is to plant trees under whose shade you do not expect to sit." The people who founded that movement knew, literally, the truth in that statement. To the visionaries who came together 75 years ago to launch plans that they knew would take a lifetime to unfold, there is only one thing we can say: Thank you.



Alan Dale

Alan Dale
Chairman



Paul Emerson

Paul Emerson
Chief Administrative Officer

The municipality where you live appoints one or more representatives to the GRCA board to oversee the budget and activities of the conservation authority.

WHO SPEAKS FOR YOU?

Townships of Amaranth, East Garafraxa, East Luther Grand Valley, Melancthon, Southgate: Tom Nevills

Townships of Wellington North and Mapleton: Pat Salter

Township of Centre Wellington: Shawn Watters

Town of Erin, Townships of Guelph-Eramosa and Puslinch: Brad Whitcombe

City of Guelph: Vicki Beard, Mike Salisbury

Regional Municipality of Waterloo: (Cambridge, Kitchener, Waterloo, North Dumfries, Wellesley, Wilmot and Woolwich) – Jane Brewer, Kim Denouden, Jean Haalboom, Ross Kelterborn, Claudette Millar, Jane Mitchell (GRCA 1st vice-chair), Wayne Roth, Jake Smola, Bill Strauss, Lynne Woolstencroft

Town of North Perth, Township of Perth East: George Wicke

Regional Municipality of Halton: (Halton Hills and Milton) – Barry Lee

City of Hamilton: Jeanette Jamieson

County of Oxford: (Blandford-Blenheim, East Zorra-Tavistock, Norwich) – Alan Dale (GRCA chair)

City of Brantford: Robert Hillier, Vic Prendergast (GRCA 2nd vice-chair)

County of Brant: Robert Chambers, Brian Coleman

Haldimand and Norfolk counties: Lorne Boyko, Craig Grice

Hard times and high water

Visionaries tackled water issues that threatened health, prosperity

Canada's first watershed management agency came to life in 1934 with the creation of the Grand River Conservation Commission

By Janet Baine
GRCA Communications Specialist



The Grand River Conservation Authority traces its roots back 75 years to a tangled mess of environmental problems and hard economic times.

In fact, the stage was set in 1929, the year of the stock market crash. It was also a year of severe flooding up and down the Grand River. In just two affected communities, damages were huge for the time. In Galt, the estimate was \$250,000 and in Guelph, losses at manufacturing plants were "hundreds of thousands of dollars." On top of that, another severe flood hit in February 1932.

Summers on the Grand brought a different set of problems. During dry periods, the Grand River was not much more than an open sewer with mostly untreated wastewater trickling through it. The Ontario Department of Health was concerned about the sewage in the river.

Wanted solutions

People, businesses and governments wanted to find solutions to these problems, but they needed a plan, money and a mechanism to help them work together.

Kitchener engineer W. H. Breithaupt had called for government action since 1905. He thought if dams were constructed in the upper watershed to create

reservoirs, it would help solve these problems. The 1929 floods helped spur business leaders to form the Grand River Valley Boards of Trade which lobbied for a provincial investigation into solving the problems of the watershed.

"One municipality cannot get the ear of the (provincial) government. A group, however, can more easily get the ear of the government," said Alderman J. P. Jaffray of Galt.

Sixteen municipalities volunteered a total of \$2,425 which allowed the Boards of Trade to hire engineer James Mackintosh of the Ontario Hydro-Electric Power Commission to study "municipal water supply, sewage disposal, flood control, power development possibilities and afforestation."

The report was issued Feb. 11, 1932 and recommended four multi-purpose reservoirs to regulate water supply and ensure a minimum water flow through Kitchener, Waterloo, Galt and

Brantford. These reservoirs and an artificial lake at Luther Marsh would also provide enough waste dilution for 25 years. This was the plan.

Board of trade chair Gordon Cockshutt of Brantford suggested forming a commission to carry out these recommendations. The Grand River Conservation Commission Act was passed by the province in 1932. The first meeting was held on May 30, 1934 with Brantford, Kitchener, Galt, Fergus and Caledonia joining to form it. Other municipalities soon joined the partnership. This was the first time in Canada that local municipalities banded together to address water management on a watershed scale.

Money was the next problem. It was the Great Depression and some people in rural areas had abandoned their land. This left fewer people to pay local taxes. A dam would be too costly for the municipalities to manage on their own.

Depression funding

At the beginning of the Depression, the federal and provincial governments were more interested in helping people by providing government relief.

But the tide was turning: governments were thinking about large-scale public works projects that would provide jobs and help the economy. The federal government's National Employment Commission supported a proposal for a dam across the Grand River. By April 1938, the province and federal government had each agreed to contribute 37.5 per cent of the project. This left the municipalities to cover the remaining 25 per cent, an amount they could manage. This was divided among the municipalities differently based on tax



Destructive floods, such as this one in Galt (now Cambridge), were common in the early 20th century.

assessment and benefits such as water supply, flood protection and sewage disposal.

A second Grand River Conservation Commission Act was passed by the province in 1938 to broaden the commission's responsibilities so it could manage the construction projects.

Inspired others

The commission was now ready to undertake the first large-scale multi-purpose water control dam ever constructed in Canada. Construction of the Shand Dam at Belwood Lake started in 1938 and was completed four years later.

As a fledgling organization, the commission captured the attention of conservationists and water managers across the province, the country and even around the world. It inspired the

conservation movement as people and governments struggled to find a path to manage water into the future.

The GRCC undertook many building projects. It also planted more than five million trees in some of the province's first large-scale reforestation projects.

It was a model upon which Ontario based the conservation authorities that were set up across the province after 1946.

In fact, the commission supported the creation of the Grand Valley Conservation Authority in 1948 and the two organizations — the GVCA and GRCC had the same chair, William Philip of Galt.

They amalgamated in 1966 to form the present day GRCA and are the two founding organizations of the Grand River Conservation Authority.



'Grand Valley masters its river'

By Janet Baine
GRCA Communications Specialist

Before the Shand Dam and other major reservoirs were built, the river was sometimes a raging, uncontrolled torrent that menaced property owners all along its banks. At other times it was a smelly trickle of sewer water.

The first Grand River dam, the Shand Dam, started to change all that. It came about after years of struggle to find a reservoir plan, a political structure and funding. The first big step was taken in 1938 by the Grand River Conservation Commission when it hired H. G. Acres & Co. of Niagara Falls to come up with a reservoir plan and then supervise construction of the new dam.

\$2 million project

Finding the money was another big problem that solved itself as the Great Depression lingered. The federal and provincial government each kicked in 37.5 per cent of the \$2 million cost in an effort to put many unemployed people back to work. The eight

Opening of the Shand Dam was historic event for watershed residents

municipalities that made up the commission – Brantford, Galt, Fergus, Elora, Paris, Kitchener, Waterloo and Preston – paid a total of 25 per cent.

The cost included acquiring 2,000 acres of land. Half of the village of Belwood, along with most of its businesses, were affected by the construction.

Work started in 1939. At the peak, an on-site construction camp included a dozen buildings to house 200 men.

Most of the unskilled labourers were from the towns and cities in the Grand River and they lived on the worksite. While machines were used, there was also lots of manual work.

When the Second World War

began in September 1939, the provincial and federal governments decided the project was too far along to be put on hold for the war. Instead, once the high spring waters subsided in April 1940, there was big push to complete the dam quickly.

Records broken

By Nov. 14, 1940, all Canadian records were broken when 256,000 cubic metres of clay had been put in place and compacted in just five weeks. The dam's steel gates were installed and the dam was complete by the end of January 1942. The "last spike" on a railway that had to be moved due to the dam construction was driven in by William Philip, commission chair, on March 9, after which the first train crossed the dam.

The dam opened with great fanfare on Aug. 7, 1942, with 3,500 people on hand. A street dance and food for 5,000 people were provided by Raynor



William Philip



In October 1940, just a year after construction started, the Shand Dam was well on the way to completion.

Construction, the firm hired to build the dam. It was the largest party ever held in Fergus. The post office even issued a special cancellation stamp on mail from Elora and Fergus that day.

At first, the new dam was called the Grand Valley Dam, but tourists searching for it ended up at Grand Valley, 18 km upstream. As a result, it was renamed the Shand Dam after a local pioneer family.

International attention

The Shand Dam garnered national and international attention. The Financial Post ran a front page story a year after the dam opened, with a headline that proclaimed "Grand Valley masters its river." The article began: "Post-war projects that will pay for themselves, prevent serious annual losses and permanent

injury to otherwise productive land offer attractions impossible to ignore." It described the value of large engineering projects that would also provide post-war jobs for returning soldiers.

The Shand Dam was the first large-scale multi-purpose dam in Canada, and it formed a 12-km long lake — water that is held back to prevent flooding and then let out during the dry summer months to supply fresh water to communities downstream.

That value was proven after Hurricane Hazel in 1954. The Toronto area suffered tremendous loss of life and property, but no one died in the Grand River watershed as a result of the hurricane. The Toronto Star gave high praise to the Shand Dam for protecting people and property in an editorial titled "Big Dam Saved Cities."



Commission members tour the Shand site on Sept. 19, 1939 (standing left to right): Udney Richardson, commissioner; William Philip, president; K. Fellows, resident engineer; Marcel Pequenot, vice-president; G.S. Warning, general superintendent of Raynor Construction; and Hugh Templin, commissioner.

Reservoir network

The GRCA operates seven dams to manage floods and augment flows during dry weather.

Year	Name	Storage (cubic metres)
1942	Shand Dam	63.9 million
1952	Luther Dam	28.0 million
1958	Conestogo Dam	59.5 million
1968	Laurel Dam	2.4 million
1973	Shade's Mills Dam	3.2 million
1974	Woolwich Dam	5.5 million
1976	Guelph Dam	22.4 million



The outdoors at your doorstep

GRCA parks gave watershed residents a place to enjoy nature close to home

By Janet Baine
GRCA Communications Specialist

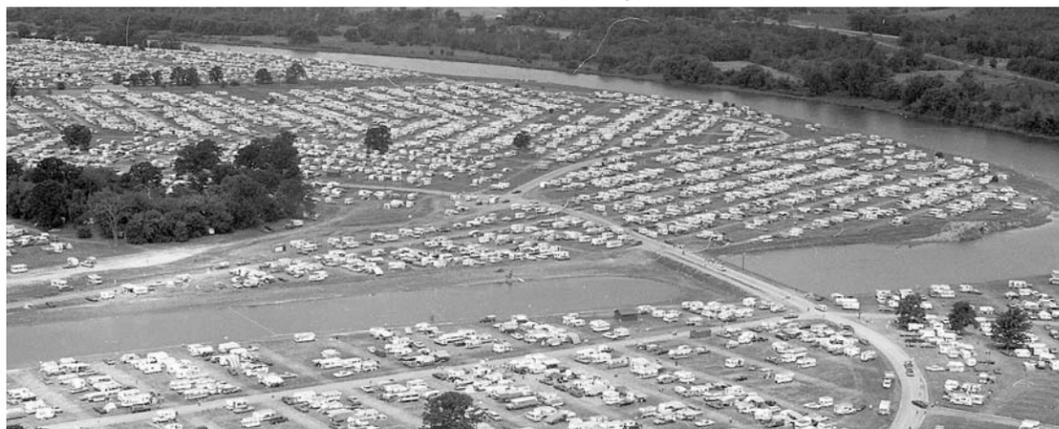
While recreation areas in the Grand River watershed are plentiful today, in the past there were very few parks, trails and beautiful spots to enjoy the river and the reservoirs.

As soon as the Grand River Conservation Commission started building the Shand Dam, people wanted to see how the landscape was being transformed.

"Citizens who have an idle few hours would be well advised to visit the (Shand) site and see the work which is going on," suggested the Brantford Expositor in August 1939.

A big attraction

After the dam opened in 1942 and Belwood Lake was created, people flocked there. By the late 1950s there was a boat launch, picnic pavilion and wading pool. But the parking lot and public beach access remained small. Families would picnic at Belwood



Brant Conservation Area was called an "instant park" because of the speedy way it was created in 1971.

where they could watch the motor boats and water skiers. This was still a new sport and a novelty to watch.

Admission was not charged until after a thunderstorm led to unsafe conditions. The storm descended quickly and the boaters moved toward shore to get off the lake to stay safe from lightning. At the same time, the picnickers moved in to get a better look at the boats. The result was that boaters were unable to get off the lake. A small admission fee was instituted as a way of restricting the number of visitors, so the area would be safer during storms.

When the commission constructed Luther Dam on the

Black Creek in 1952 and the Conestogo Dam in 1958, visitors came to these sites too, but recreation was more of a fringe benefit than a core responsibility of the commission.

Instead, it was left to the Grand Valley Conservation Authority, formed in 1948, to acquire land for recreation. The new agency took advantage of its ability to acquire environmentally significant land.

It started with Elora Gorge – the first conservation area in the province – which opened in 1954. The idea of the Elora Gorge park had been bandied about for decades, but initially it was expected to be a provincial park.

First conservation area

Elora resident Kay Marston lobbied to set up a network of conservation areas across the province, beginning with the Elora Gorge. This park was constructed in 16 months and was the first in this network which now has more than 250 conservation areas, including 12 operated by the GRCA.

Pinehurst Lake opened in 1955 and was the second of the GVCA's conservation areas. It was quickly followed by Byng Island (Dunnville) in 1960, Rockwood in 1964, and Laurel Creek (Waterloo) in 1970.

Brant Conservation Area near Brantford was nicknamed an "instant park" when it opened in 1971 to 30,000 visitors and their

7,000 vehicles that arrived for the National Campers and Hikers Association Campvention. It took only 18 months to complete the park.

The next parks were Shade's Mills Conservation Area (Cambridge) in 1972, Elora Quarry in 1977 and Guelph Lake in 1979.

Since 1995, the conservation areas have been self-supporting and generate enough revenue to cover operating costs. They receive more than a million paid visits annually. With more than 2,500 campsites at eight conservation areas, the GRCA is the second largest operator of campgrounds in the province – second only to Ontario Parks.

The 1966 annual report for the authority listed 23 conservation

areas, many of which were passive areas, such as F.W.R. Dickson Wilderness Area south of Cambridge. Management or ownership of some conservation areas was transferred to other agencies during tough economic times in the mid 1990s such as LaFortune near Caledonia, Kiwanis Park in Kitchener, Chickopee in Kitchener and Doon Heritage Crossroads.

There is no entry fee for the passive conservation areas. Likewise, they don't have services such as camping, public washrooms and equipment rental are not available. But these are favourite spots for hiking and other activities.

Developed rail-trails

In the 1990s, the GRCA's four Rail-Trails were among the first in Canada and are part of the Trans Canada Trail. These abandoned railway lines were converted into trails for year-round activities such as hiking, cycling and cross country skiing. They cover almost 110 km and include the 18-km Cambridge to Paris Rail-Trail, the 10-km Paris to Brantford trail, the 32-km Brantford to Hamilton Trail and the 46-km Elora to Cataract Trail. These are only a small part of the network of trails in the watershed, and there are many other trails on GRCA land.



The province's first conservation area, Elora Gorge, opened in 1954.

Conservation areas

Date	Name	Location	Size (hectares)
1942	Belwood Lake	Fergus	1,347
1952	Luther Marsh	Grand Valley	5,200
1954	Elora Gorge	Elora	200
1955	Pinehurst Lake	Paris	140
1958	Conestogo Lake	Drayton	2,350
1960	Byng Island	Dunnville	190
1964	Rockwood	Rockwood	79
1970	Laurel Creek	Waterloo	294
1971	Brant	Brantford	184
1972	Shade's Mills	Cambridge	177
1977	Elora Quarry	Elora	32
1979	Guelph Lake	Guelph	1,600



Lessons learned after '74 flood

Dams, dikes, flood warning system help to reduce damage, protect lives

Recent flooding in the Grand River watershed would have been much more serious if it were not for the havoc wrought by the memorable flood of 1974.

That flood was a defining moment in the history of the Grand River. It resulted in numerous changes that have reduced the risk of flooding to people and property.

May 17, 1974, started out sunny and warm. It deceived people who were "unaware of the approaching catastrophe," according to Judge W.W. Leach, who presided over a provincial inquiry into that flood.

When the rain came, there was little that could be done, because the GRCA's reservoirs were already full. According to the inquiry, warnings were sent, but they didn't get through to every-

one affected.

By 7 p.m. on May 17, the Grand was rushing through downtown Galt at a rate of 1,490 cubic metres per second (m³/s), a record flow that has yet to be surpassed. The summer low flow is only 15 m³/s.

Dikes gave way in Bridgeport and Brantford. For a time, the Brantford water treatment plant was knocked out of commission, creating a state of emergency. Floodwaters also engulfed parts of Paris, Caledonia, Cayuga and Dunnville. All told, damages amounted to more than \$6.9 million (\$29 million in today's dollars), excluding cleanup costs.

'Apathy' about floods

This flood left so many questions that the provincial inquiry into it went on for months. Judge Leach found that "in 1974 there was apathy throughout the



Though flood damages have been reduced, the problem never goes away. Some parts of the watershed are still susceptible to flooding, such as New Hamburg. This family was rescued from high water during a flood in 1975.

watershed, not only among the endangered, but in municipal governments and, to some extent, in the GRCA."

He called for a better flood warning system to be tested annually. He proposed improvements in the reservoir network. He urged the development of a computer simulation model for the river. And he called on governments to buy more land and further control development in the flood plain to reduce future damages.

Even with all of that in place, Judge Leach pointed out that the threat of flooding would never disappear.

"The potential exists for very serious flooding in the watershed in the future, with real danger of loss of life and extensive property damage."

Since then, \$43 million has been spent on new dikes and flood protection work in Brantford and Cambridge. Millions more have been invested in other communities.

Fine-tuned system

Over the years, the GRCA has fine-tuned the dam and reservoir

system to hold water back and minimize flooding. Over the course of the last year, the reservoirs prevented millions in damages for each of three separate events, but there is no calculation of the savings.

The sudden mid-winter thaw on Dec. 28, 2008 and the ensuing flooding showed how flood damages were averted. The flooding could have been a lot worse if the reservoirs in the system hadn't been nearly empty, said Dwight Boyd, Senior Water Resources Engineer at the GRCA.

At winter level

At the time of the flood, the reservoirs were at their normal winter holding level, but they filled up quickly because the sudden warm temperatures caused the snow to melt rapidly as rain pelted down. The combination of snowmelt and rain was equivalent to rainfall of 110 mm to 215 mm (about 4.5 to 8.5 inches), Boyd said.

The reservoir system cut flood peaks by 40 to 80 per cent on the rivers and streams where there are reservoirs, otherwise

they would have exceeded the levels set during the 1974 flood in some areas.

There would have been extensive flooding in St. Jacobs, on the Conestogo River. In Brantford, water would have been close to the top of dikes constructed after the 1974 flood. In Haldimand, water would have inundated portions of Caledonia, Cayuga and Dunnville.

The flood warning system is crucial to reducing the risk of flooding. This includes monitoring the temperature, rain, snow and river levels. Weather radar information has recently been integrated into this system to help make flood forecasting as accurate as possible.

Always on call

A GRCA staff member is on call at all times and is alerted of any unusual increase in river levels, and these staff members meet weekly.

This warning system is especially important during the era of climate change, because severe weather systems may increase the potential for flooding, especially in localized areas. Real-time streamflow information has been in place since 1989 and most of this information has been available in the River Data section of www.grandriver.ca since 2000.

When flooding is possible, messages are sent to municipal flood coordinators, who are senior municipal staff, such as fire chiefs and public works managers. They can mobilize the emergency response within their local community. The police and the media also receive these messages and help to let people know if they will be affected.

This flood warning system has been tested each year since 1976, just as Judge Leach recommended. After the test, the flood coordinators meet at the GRCA to talk about the flood outlook and recent developments. The meeting held this year was perhaps the biggest ever, with nearly 100 people attending.



A temporary berm was constructed in the Grand River in Cambridge in the 1980s to allow for channel work and dike construction to combat flooding.



Millions of trees planted to restore river's health

By Janet Baine
GRCA Communications Specialist

Old photos reveal a surprising truth about the Grand River landscape.

Just a few decades ago, it was common to see mowed grass right to the river's edge. Natural areas, and even parks, were often bereft of trees.

In the early part of the 20th century, trees occupied only a tiny part of the land.

But in recent years, they have taken a more prominent place. Our sense of what is attractive in

parks and natural areas has moved away from uniformly cut grass and planted forests with only one type of tree. It now includes a variety of native trees, shrubs, grasslands and wetlands that increase biodiversity and watershed health.

Where trees are part of the landscape, it feels as if they have always been there. It is easy to forget they were not. In fact, over the past 75 years, the GRCA has planted more than 25 million trees. Forest cover has grown to 19 per cent from a low of five per cent a century ago.

Tree planting has always been a big part of the work of the GRCA. But the scale and way that trees are planted has evolved over time.

Trees are important for a variety of reason. They reduce erosion, shade rivers and streams to keep them cooler, absorb nutrients, soak up greenhouse gases and provide a habitat for animals, birds and plants. In fact, the Grand River Forest Plan (2004) lists 28 benefits of trees and forests.

Raised money for trees

Tree planting took off in the 1940s when the provincial and federal governments agreed to support construction of the Shand Dam — but only if trees were planted. Initially there were no provincial funds for tree planting, so the commission raised money through municipal levies and cottage lot rental fees at Belwood Lake and later at Conestogo Lake.

In the beginning, the GRCC bought trees from the Department of Lands and Forests, but in 1956 it set up a tree nursery at Belwood Lake.

By 1965, the commission had planted 5.3 million trees at the three dam sites and was starting to wind down the Belwood tree nursery. In 1984 a new nursery opened near Burford, west of Brantford.

Innovative approach

The commission's first forester, Pete Rogers, had an innovative approach.

"Pete was way ahead of his time in terms of diversity of tree species," says Martin Neumann, supervisor of terrestrial resources for the GRCA. By 1965 GRCC plantations were 69 per cent coniferous and 31 per cent deciduous, a mix that no one else was doing. A mixed forest is more resistant to disease and more like a natural forest.

The tree nursery at Belwood produced nearly 680,000 trees in



Mac Coufts, (left) general manager of the Grand Valley (later the Grand River) Conservation Authority, with Chairman Garfield Dishar.

1965 from 68 species. Today, foresters also strive for variety and a diversity of native species.

When the Grand Valley Conservation Authority came along in 1948, it worked closely with the Department of Lands and Forests and focused on planting trees on private land. Because most land in the watershed is privately owned, this broadened the opportunity and scope of tree planting.

By the early 1990s the GRCA was planting a million trees a year thanks to provincial funding. However, subsidies eroded in the 1990s, provincial nurseries were closed and tree planting declined dramatically. In 2006 the GRCA planted only 83,300 trees.

"Our forest was not on a sustainable path, particularly on account of population growth and the spread of urbanization in the watershed," said the 2004 Watershed Forest Plan.

Doubled planting

In recent years, the province has increase funding for tree planting and last year the GRCA doubled its annual planting.

However, there's still a long way to go to hit the target of 30 per cent forest cover which Environment Canada says is needed for a healthy watershed. The target is not likely to be reached at the current rate of planting.

Over the years, tree planting strategies have become more

complex and strategic. In the early days, trees were planted in long, even rows — not at all like a normal forest. Now, smaller areas are planted with a bigger variety of trees in all sizes. This improves the quality of the forest and helps ensure more trees will survive.

Climate change raises new challenges including trying to figure out the species that will do well as weather patterns change, Neumann says.

The GRCA also has a broad range of ways to restore or naturalize the landscape. Former farm fields are being turned back into the wetlands they once were and prairie grasslands that have been dwindling, are being re-established.



Machines like this one were used to plant thousands of trees.

Innovative planters put more trees in the ground

During the early days of tree planting in the Grand River watershed, a horse-drawn plow created a furrow and people would follow behind, planting trees and filling in the furrow.

In 1946, the frugal GRCC found a faster, more economical method. Hugh Cameron and Ike Merrit, district forester for the Ontario Department of Lands and Forests, visited some American universities that were experimenting with mechanical tree planters. When they came home they designed their own mechanical planter. Then Cameron and Jack Ferrier built

one in a shop in Fergus.

"It was the first operational tree planter in Canada. Others were under development in the United States (but) they were prototypes," says Charles Miner, assistant superintendent at Belwood Lake Conservation Area.

The GRCA eventually had three machines to use at Belwood Lake, Luther Marsh and Conestogo Lake. The first was the best, and it was used until the 1960s.

The GRCA still has five planters, but they are used less often because of the way trees are planted these days.

Targets

2004 Forest Plan targets for the Grand River watershed:

- 30 per cent forest cover for the entire watershed
- 15 per cent forest cover for each sub-watershed
- 95 per cent of watercourses and wetlands buffered with natural vegetation
- 75 per cent of stream buffers forested
- 100 per cent municipally-owned well fields naturally vegetated
- 40 per cent canopy cover in all urban areas
- No net loss of forest



Protecting water quality has been a major challenge

By Janet Baine
Communications Specialist

Seventy-five years ago, water quality in the Grand River watershed was at an all time low.

In the 19th century, residents chopped down the trees transforming forests to farmland. They drained the wetlands and built communities next to the river. They then let their untreated sewage drain directly into the waterways. During summers when there was no rain, water quality was especially poor.

By 1936, a Maclean's Magazine article said the Grand River fishery had become a memory, with trout and bass replaced by carp and suckers. Turning all of that around has taken generations and the challenges continue today.

The first solution to poor water quality was building a network of dams between 1942 and 1976. These hold back water in reservoirs during the spring and release it during the dry summer months. A common saying at the time was "dilution to pollution is

Though water quality has improved, growth raises concerns about the future

the solution." The reservoirs now provide up to 85 per cent of the flow in the Grand River through Kitchener and Waterloo during the summer and 90 per cent of the flow in the Speed River through Guelph.

But that was only part of the solution. More significant was the work done to keep contaminants out of the river in the first place. In 1966, the Ontario Water Resources Commission (OWRC), the predecessor of the Ministry of Environment, began regulating municipal sewage treatment and industrial discharges into waterways.

Municipalities have made tremendous strides in wastewater treatment. Guelph has a history of being ahead of the pack. Improvements to the plant and its operating procedures have helped transform the Speed River. It is no longer weed-choked, murky and bereft of aquatic life; instead it is a quiet oasis where hikers can enjoy the

scenery as waterfowl swoop in for a visit.

However, water quality still remains a concern and in some parts of the watershed, population pressures have led to a decline in quality.

The Grand River is one of the most intensively monitored and researched rivers in Canada. The three universities within the watershed all study the waterways. Solving water quality problems means knowing what is going into the waterways and how changes on the land change the river.

Testing started in 1964

Monthly water sampling by the province for phosphorus, nitrogen and metals began in 1964. In 1971, this evolved into a partnership between the province, which does the lab work, and the GRCA, which provides the water samples. Now called the Provincial Water Quality Monitoring Program, water is sampled eight times a year for 20 parameters at 36 sites.

By the late 1970s, technology had advanced and continuous water quality monitoring began. This was a breakthrough. It is used for decision-making, to assess and improve river health and it is also an early warning for drinking water intakes.

There are now seven stations that measure water temperature, pH, conductivity, and dissolved oxygen every 10 minutes, 24 hours a day. Since 2000, this information has been posted on the GRCA website.

Water quality data is also incorporated into the Grand



Water quality testing has long been an important job for the GRCA. It provides critical information to watershed decision makers.

River Simulation Model (GRSM) — a complex computer simulation that uses data about river conditions, the 28 municipal wastewater treatment plants and the river's biological processes. The model can predict how a proposed change, such as a sewage treatment upgrade, will impact water quality.

"This is a very important decision support tool, when you consider the growing population and the high cost of upgrades," said Sandra Cooke, supervisor of water quality at the GRCA. It helps municipalities, which are responsible for wastewater treatment, find the balance between costs and benefit when they undertake upgrades.

Waterloo Region is set to spend \$648 million on wastewater treatment upgrades over the next decade and a simulation model will help the region make better decisions about these upgrades and their potential impact on water quality."

GRSM was on the leading edge of technology when it was first developed by the Ministry of Environment in 1976. It has been refined over the years as technology and understanding of water quality in the Grand River increases. It is now the responsibility of the GRCA and remains

the only simulation model developed in Canada.

The fishery that was only a memory in 1936 had been revived. Trout and bass are back. The Grand is now known as a world-class fishery.

But there's more to the fishery than sport. Fish are to the rivers what canaries are to coal mines — their number, range, health, size and variety tell scientists to what degree waterways are life-giving, which is good for both aquatic species and people.

This success is only part of the story, because in other parts of the watershed, the challenges of a thriving population and growing economy are immense.

Since 1966, the number of people in the Grand River watershed has grown from 400,000 to nearly a million. This means that even though watershed residents, businesses, farmers and municipalities are more careful with the water resources, the growing population puts growing demands on them. As a result, the water is used much more intensively than ever before.

Water quality samples show that as the river flows south towards Lake Erie, the water quality deteriorates. In fact, a federal report in 2008 found the lower Grand is the third foulest river in Ontario.



Photo courtesy of Guelph Museums

This photo of the Speed River near Goldie Mill in Guelph shows the poor state of the river more than a century ago. Note the outhouse perched on the river's edge in the lower right.



National, international attention raised awareness about improvements

By Janet Baine
GRCA Communications Specialist

Sixty years after the 1934 founding of the Grand River Conservation Commission, there were still a lot of people in the watershed with a low opinion of the Grand River.

But attitudes changed in the 1990s when the river started to be noticed on national and international stages.

The breakthrough came in 1994, when the Grand River system was designated as a Canadian Heritage River. It had taken five years to collect the information to support the designation, so it was a big achievement.

It was even more notable that the Grand was the first Canadian river in a heavily populated area to be nominated for heritage status. Most of the other heritage rivers were in remote, pristine environments.

Impressions changed

The designation changed the popular impression of the Grand. People who thought of the river as a dirty, smelly place to avoid started to look at it in a new way, said Barb Veale, co-ordinator of policy, planning and partnerships with the GRCA.

"This designation made people understand that the water quality and recreational opportunities had dramatically improved," said Veale. Recreational groups, municipalities and organizations were bolstered by the designation and stepped up the flurry of river improvements that were already underway.

By 1998 the Grand became Ontario's first river to have a fisheries management plan, thanks to a partnership of community and fishing organizations called the Grand River Fisheries



The designation of the Grand River system as a Canadian Heritage River in 1994 was marked with a ceremony in Cambridge featuring representatives of watershed communities.

Praise from afar cast a bright light on the Grand River

Management Plan Implementation Committee. This has led to improved fishing and river access. In fact, this year the committee received the Recreational Fisheries Award from the federal Minister of Fisheries and Oceans.

"Not all watersheds in Canada can do this, because the trust and willingness to work together is not always as well understood. We are fortunate to have built these partnerships over many years. That is the future," said Warren Yerex, supervisor of aquatic resources at the GRCA.

Farm program gets award

Another innovative GRCA program started in 1998 — the Rural Water Quality Program. It provides financial support and advice to farmers undertaking

projects to protect water quality. They put up fences to keep livestock out of the rivers, plant vegetation and trees near waterways and construct manure storage facilities. In 2006, the program received an award for outstanding partnership with business from the Foundation for Rural Living, a provincial organization.

International recognition

In May 2000, the GRCA submitted an application for a new international award and that fall it became just the second winner of the prestigious International Thiess Riverprize, which is awarded by the International Riverfoundation in Brisbane, Australia.

The GRCA received the award on behalf of itself and its municipal partners. The Grand is the

only Canadian river to have received this recognition.

"Ours is a story of the recovery of the Grand River from years of degradation and industrialization and how we are working together to keep it healthy for future generations," the Riverprize nomination said.

The Riverprize came with

'(The GRCA's) model... may be a good starting point.'



– Justice Dennis O'Connor

AUD\$100,000 in prize money. Now that money supports the Community Conservation Grant program which provides grants to community and school groups for environmental projects.

Winning the award also led to a greater international role for the GRCA in provincial, national and international circles.

The GRCA won the prize the same year seven people died in Walkerton after drinking contaminated water. Justice Dennis O'Connor, who headed up the Walkerton Inquiry, heard about the GRCA's International Riverprize and asked the GRCA to participate in the hearings.

"The Grand River Conservation Authority has received global recognition for its efforts in watershed planning, and I suggest that its model, combined with the model provided in the 1993 watershed planning framework, may be a good starting point" for source protection planning, O'Connor said in Part 2 of the Walkerton Report.

Twinning program

The International Riverfoundation also funded a twinning program between the GRCA and the San Roque watershed in Argentina. Regular exchange visits have paid dividends for both sides of the arrangement.

"You have played a unique role as a catalyst, facilitator, technical advisor and honest broker," Andrew Hamilton Joseph of Los Algarrobos told the GRCA board when he visited in April. "We have used your credibility as an internationally recognized watershed management expert to impress upon our communities and our decision makers the need to work together to improve our watersheds."

The recognition has only spurred the GRCA to continue its quest to better manage the Grand River watershed.

"People have spent a lifetime of work that has culminated in that heritage river designation and the Riverprize, but you can't rest on your laurels after that either," Veale said. "We need to ensure that we tackle resource issues in a timely fashion."



Award winners make Grand better

The GRCA has given out watershed awards each year since 1976 to recognize individuals, families, corporations and groups that have made a tangible contribution to the preservation and improvement of the Grand River watershed and its natural heritage.

The Watershed Awards are presented for outstanding conservation and environmental work.

The 2008 awards were presented at a ceremony at the GRCA office in Cambridge in October.

In some years, a special Honour Roll Award is given to those who have a sustained record of achievement over an extended period of time. No Honour Roll award was given in 2008.

Dave Belleville

Dave Belleville is a life-long Brantford resident who organizes community clean up events. He is past chair of the Beautiful Brantford Committee. He is dedicated to keeping Brantford and the natural areas, including trails and the riverside, litter-free.



Dave Belleville

Richard Cook

For more than 20 years, Richard Cook has been the GRCA's only volunteer dam operator. Always carefully attuned to the weather, Richard opens the flood gate to let the high flows pass through the dam then closes it back down to maintain the pond level in Wellesley. Richard must check on the dam in the wee hours of the morning and in all kinds of weather.



Richard Cook

In recent years this group led by Bill Warnick has been working hard to clean up the Port Maitland Lock and turn it into a tourist attraction. The lock is on the old Feeder Canal, which linked the Grand River to the Welland Canal. The group restored the lock, beautified the area and installed information signs and a bench.

On the Grand Historical Association

Phillip and Katie Wilman have grown a successful farm business, River's Edge Goat Dairy, while bringing nature back to their

Katie and Phillip Wilman

farm just east of Arthur. The farm was in poor condition when they bought it but the Wilman's have worked hard to make improvements. They put up fences on either side of the waterway, allowed the natural vegetation to grow near the river creating a buffer, planted 2,000 trees in the year 2000, and installed an environmentally-friendly stream crossing to bring the tractor across to the fields on the other side of the river.



Members of On the Grand Historical Association at Lock 7 near Port Maitland.

Woolwich Clean Waterways Group This group works with farmers and many partners to plant trees and undertake restoration projects in Woolwich Township. Since 1992 they have planted

over 5,000 trees and worked with 10 farmers. Their first project was in Bolender Park in Elmira, where they stabilized the river banks and saved a big old tree that would have been lost to erosion long ago.

Woolwich Clean Waterways Group

Doug Ratz is a founder of the Elora Centre for Environmental Excellence, Ontario Streams and Friends of the Grand River. He has been active in many environmental initiatives over many years. He helped with projects to put up fencing to keep livestock out of Swan and Carroll creeks, establish new river access points to promote recreation on the Grand, and promoted annual tree planting efforts by area students.

Doug Ratz

He has been active in many environmental initiatives over many years. He helped with projects to put up fencing to keep livestock out of Swan and Carroll creeks, establish new river access points to promote recreation on the Grand, and promoted annual tree planting efforts by area students.



Doug Ratz



Members of the Woolwich Clean Waterways group.

More info

For more on the Watershed Awards visit the GRCA website at www.grandriver.ca and look under the "Taking Action" section.

You'll find stories and photos of past winners, as well as information about how to nominate candidates for future awards.



Katie and Phillip Wilman of River's Edge Goat Dairy with their children Gordon and Clara.



GRCA 2009 budget calls for spending worth \$31.4 million

The 2009 budget of the Grand River Conservation Authority calls for expenditures totalling \$31.4 million to pay the cost of programs that protect water quality, reduce flood damages, protect natural areas, support responsible development, provide outdoor recreation and environmental education.

The budget was approved by the 26-member board in February. The board is made up of representatives appointed by municipal councils throughout the watershed.

The budget is about \$2.3 million higher than 2008, with much of the increase due to one-time capital projects or special programs, such as Source Water Protection, that are covered entirely by the province, municipalities or other sources.

Revenues

The GRCA has three main sources of revenue:

- \$9.5 million (33 per cent)

Municipal share of budget works out to \$9.06 per person

from watershed municipalities. Most of the money is raised by the municipalities from residents through their water bills or property taxes. The levy works out to about \$9.06 per person.

- \$7.5 million (25 per cent) from grants, mostly from the provincial government.

- \$13 million (43 per cent) from self-generated revenue such as money from campground fees, planning fees, tree sales, hydro-electricity generation, rental property income and other sources.

Expenditures

The budget is broken down into four sections:

- **Base operating budget – \$17.8 million (56 per cent)** – The ongoing programs of the GRCA include flood prevention,

environmental education, planning advice to municipalities and landowners, operation of trails, forest management and others.

Some of the money is going to:

- \$1.4 million to upgrade Conestogo Dam near Drayton to allow it to safely discharge more water during periods of extremely high flows.

- \$331,000 to install two new river monitoring gauges in Kitchener and York.

- \$265,000 for an update of the Grand River Basin Water Management Study. This will look at three issues – water quality, water supply and flood control – on a watershed-wide basis with a particular emphasis on emerging issues brought about by population growth and climate change.

- \$100,000 to continue a study of the Chilligo-Hopewell creeks subwatershed study in the Kitchener-Cambridge area.

- **Special projects — \$2.7 million (9 per cent)** – One-time projects and studies that are covered by grants and revenue from outside sources.

Some of the projects are:

- \$200,000 to continue a project financed by the Ontario Geological Survey to investigate the Dundas Buried Valley, an ancient river bed located deep below the surface which could be a rich source of groundwater.

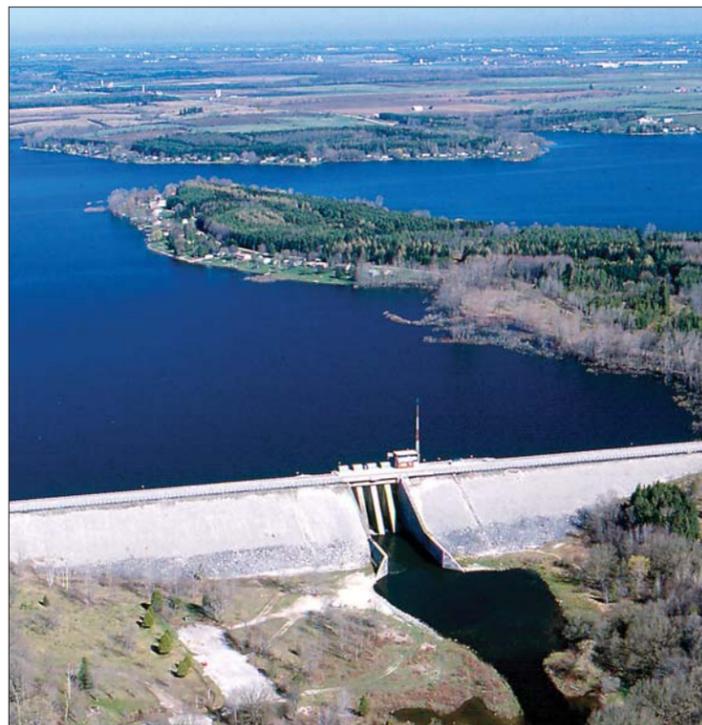
- \$700,000 in grants to rural landowners under the Rural Water Quality Program, financed by grants from watershed municipalities.

- \$200,000 for the Chilligo Pond restoration in Cambridge, covered by donations.

- \$300,000 to purchase environmentally sensitive land, covered by proceeds from earlier land sales.

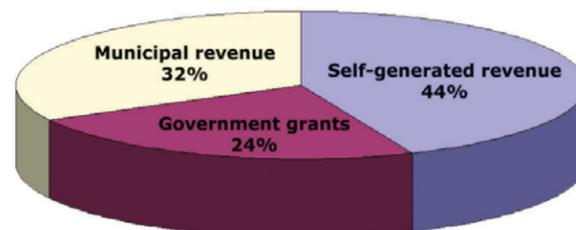
- **Conservation Area operations – \$5.7 million (18 per cent)** – Fees from park users cover the entire operating cost of the GRCA's active conservation areas.

- **Source Water Protection program — \$5.2 million (17 per**



A major project this year is an upgrade to Conestogo Dam.

GRCA revenue sources



Where your money goes...

The municipalities of the Grand River watershed contribute about 32 per cent of GRCA revenues. The average cost per person for all watershed residents is about \$9.06 a year.

Here's how it will be spent in 2009:

\$9.06 used for:	Your cost in 2009:
✓ Watershed studies	\$0.04
✓ Resource inventory, environmental monitoring	\$1.48
✓ Flood forecasting & warning	\$0.60
✓ Flood & erosion control structures	\$1.73
✓ Floodplain regulation	\$0.58
✓ Resource management support cost	\$0.29
✓ Municipal plan input & review	\$0.30
✓ Private land tree planting, forestry	\$0.45
✓ Soil & water conservation, stream restoration	\$0.54
✓ Conservation information	\$0.80
✓ Conservation land property taxes	\$0.15
✓ Administration/head office facilities	\$2.10

The per person cost was calculated by dividing the portion of the GRCA's total general municipal levy of \$8.6 million by the estimated number of residents (950,000) in the Grand River watershed. The \$9.06 was then applied to the net cost of the various GRCA program areas that are partially funded by municipalities.

cent) – To continue work to develop a source water protection plan under the Clean Water Act to implement the recommen-

dations of the Walkerton Inquiry. All costs for this program are paid by the provincial government.



Hydrogeologist Gregg Zwiers examines a core sample removed from hundreds of feet underground as part of the Dundas Buried Valley project.





The GRAND RIVER CONSERVATION FOUNDATION

Natural Ambassador program gives classes a chance to enjoy outdoor education activities

When Laura Ellement, a teacher at Brant Avenue Public School in Guelph, heard about the environmental education programs that were to be launched at the Rockwood Conservation Area, she got excited.

Rockwood's unique geological features – limestone cliffs, caves and the beautiful Eramosa River – make it an outstanding place for kids to experience nature in a hands-on way and develop environmental values that last a lifetime.

Laura did, however, have concerns about how her students could attend. Not every student could afford the cost, and the

Teachers, parents praise program that helps cash-strapped classes

school didn't have any money for a visit.

Fortunately, there was a way, through the Grand River Conservation Foundation's Natural Ambassador program. The program enables people and groups to adopt a class – either one of their choosing, or simply a class in need in the community – and bring up to thirty children to one of the GRCA's Nature Centres.

Donors make a contribution of \$175 for a half-day or \$300 for a

full day of programs. In return, they receive a charitable receipt, a thank you note from the school principal and the satisfaction of knowing they are playing an important role in a child's development.

"If it wasn't for the GRCF grant, we wouldn't have been able to experience first hand the science concepts we're studying," said Ellement.

Debby Burton, a parent volunteer, added: "This is an experience that all students should have the opportunity to have, not just the wealthy schools."

Many donors

Donors throughout the community – including Monsanto Canada, the AO Smith Foundation, Syngenta Crop Protection Canada and several individuals and groups – have seen the value of investing in kids.

"Monsanto has contributed to the GRCA's outdoor education programs for years and we were keen to find a way to keep supporting school children as they learn about our environment," said Trish Jordan, public affairs director.

"We have a commitment to agricultural sustainability, so supporting lessons like soil and water conservation, delivered through hands-on learning experiences, is a great fit for us."

"The program works because it's simple," says Sara Wilbur, executive director of the GRCF. "For a relatively small amount of money, donors can have a huge impact on a group of kids, who otherwise wouldn't be able to



Rockwood Conservation Area, featuring limestone cliffs, glacial pot-holes and caves, is particularly well-suited to outdoor education programs.

learn and grow from these programs. Last year, some people even gave classes as holiday gifts."

To help develop our next gen-

eration of environmental ambassadors by adopting a class, please visit www.grcf.ca and click on "Make a Donation", or call the GRCF at 1-877-29-GRAND.

President's Gala supports environmental projects

The River Run Centre in Guelph was the setting for the 2009 President's Gala – A Celebration of Youth and Conservation in March.

The gala raised more than \$7,000 for the foundation to support its work to improve the Grand River watershed.

The event featured a presentation by Severn Cullis-Suzuki, a prominent young environmentalist gaining acclaim worldwide for her approach to "intergenerational justice" – the idea that adults have a responsibility to young people to leave our natural world intact and even improved for future generations. She came to prominence



Cullis-Suzuki

when she challenged delegates at the 1992 Rio Earth Summit to change their ways and ensure a better future for children like her.

During the day, Cullis-Suzuki visited two GRCA Nature Centres and met with students in Grades 2 to 11. Highlights included a presentation on energy in air and water with Grade 2 students at Shade's Mills Nature Centre, inspiring Grade 11 students to environmental action, and a visit to the chickadee trees with Grade 8 students at Guelph Lake.

Grade 3 students at Guelph Lake planted a tree in honour of Cullis-Suzuki and her baby, due later this year.

You can help, too!

For more than 40 years, the Grand River Conservation Foundation has improved our quality of life by enriching the natural values of the Grand River watershed and encouraging people to enjoy, and to learn from, the great outdoors.

For more information:

- phone toll-free 1-877-29-GRAND
- e-mail foundation@grandriver.ca
- click on www.grcf.ca

