GRAND Actions

The Grand River watershed newsletter

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Cover photo

Shand Dam (Belwood Reservoir), the GRCA's largest multi-purpose dam.

A watershed community of best practices – managing water together for the Grand River

Sandra Cooke, GRCA Senior Water Quality Supervisor

The Grand River watershed has had a long-history of collaborative water management. It started in the 1930s when business leaders from Fergus, Kitchener, Galt, Brantford and Caledonia realized that a healthy watershed and river system is needed to support healthy and vibrant communities.

We all need water to live, work, play and prosper. Water management planning in the Grand River watershed helps to plan for population growth, manage the balance needed with land use intensification and adapt to a changing climate. Since the Grand River crosses many municipal boundaries in its 311 km journey from its headwaters in Dundalk down to Port Maitland on Lake Erie, water managers from across the watershed work together to ensure all of our communities thrive. Over the last 80 years or so, many partners have come together when needed to help plan and undertake actions for a healthy Grand River watershed.

Today, the spirit of collaboration continues. 2019 marks the end of five years of implementing actions to improve water management to achieve four common goals outlined in the Grand River Watershed Water Management Plan:

- improve water quality;
- ensure water supplies;
- reduce flood damage potential; and
- build resiliency to deal with climate change.

A new direction for Grand Actions

A note to our readers:

After more than 20 years in production, this is the final issue of Grand Actions. Originally published as a "Grand Strategy" print publication, this newsletter featured a monthly account of all the good things that were taking place throughout the watershed. Published up to six times each year, the focus of this publication has since shifted to highlight the work undertaken by the GRCA.

In 2020, the GRCA will launch a new digital platform that will provide more timely, informative and engaging content.

If you receive the print version of this newsletter and would like to receive updates on the launch of our new digital platform, please subscribe to Grand Actions via www.grandriver.ca/subscribe. Once the new product is launched, you will receive an email. If you already subscribe to Grand Actions via email, there's no need to do anything further at this time.

We hope you're as excited as we are about this fresh, new digital platform!


Grand Actions
Issue 1
June 1996
The Grand Strategy Newsletter
Share the Resources
Share the Responsibility

The first issue of Grand Actions (June 1996).

Continued from page 1...

A summary of collective actions and accomplishments since 2014

Water managers across the region have met routinely to share their work plans for wastewater improvements, stormwater retrofits, stream restoration, dam and dike safety studies and water demand management approaches. By sharing lessons learned and best practices, an accelerated implementation of actions can support the Grand River region to prosper.

Improving water quality

Our partners have advanced the health and prosperity of the Grand River watershed by investing in 'hard' solutions like infrastructure and 'soft' solutions like best management practices to achieve the Water Management Plan's goals. Further, partners are fostering a community of experts and practitioners that share their knowledge, learn from one another and encourage best practices are used to continue to improve where we live, work and play.

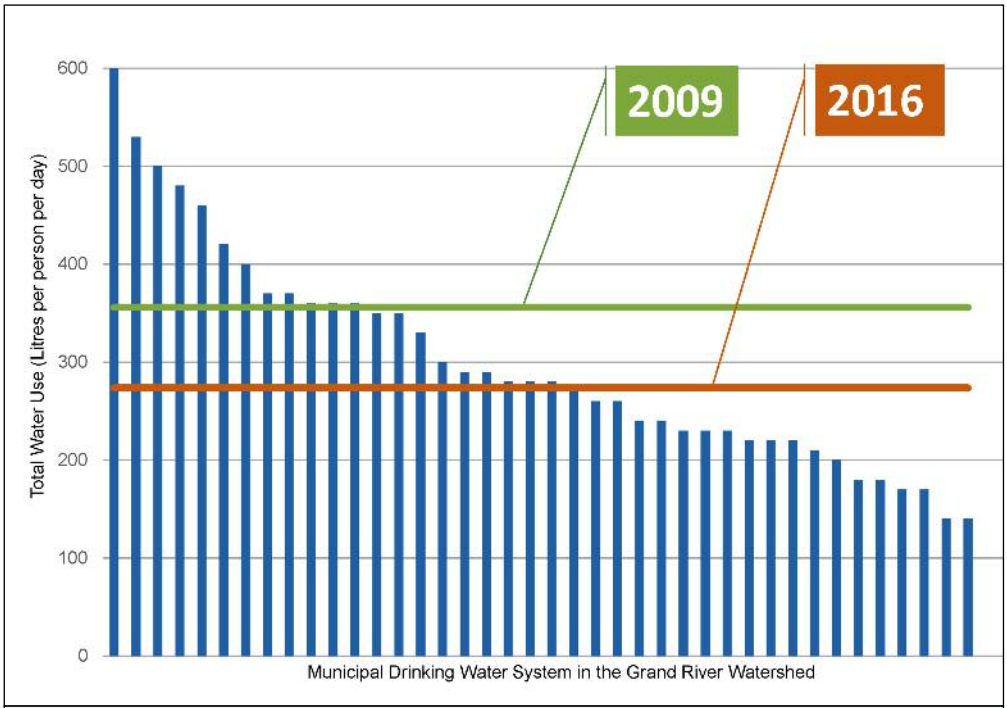
Many actions to improve water management are showing positive benefits in the river. For example, upgrades to the Kitchener wastewater treatment plant by the Region of Waterloo have shown a significant improvement in the water quality in the Grand River, especially in the summer when flows are low. Additional plant upgrades are still underway and it is projected that these improvements will continue to improve the quality of the river.

Stormwater management programs in Kitchener and Waterloo are transforming urban areas and restoring neglected creek systems. Other communities like Guelph, Cambridge and Brantford are working hard to secure funding for stormwater programs. This work will undoubtedly improve the health of the local creeks and ultimately the Grand River with time.

Road salt is having an impact on urban creeks and some creeks have seen concentrations exceed 1,000 mg/L, while the limit to protect aquatic life is 120 mg/L. Reducing road salt use is the focus of active awareness programs in some municipalities, and most municipalities have road salt management plans. Further innovative action to reduce the use of chloride needs special attention now.

A great deal of effort has taken place on our rural landscapes too. Some of the most productive agricultural lands in southern Ontario are in the Grand River watershed. With municipal support for a Rural Water Quality Program in the Region of Waterloo, Wellington, Brant, Haldimand, Oxford and now Dufferin counties, the GRCA continues to work with our farming community to implement water quality improvement projects. The program has supported landowners to complete more than 6,300 voluntary projects since the program's start in 1998. This work undoubtedly helps to build the resilience needed on our rural landscapes to deal with a changing climate.

Top: Before the creation of a fenced, vegetated buffer along the stream. Bottom: Showing the effect of this buffer, 16 years later. The Rural Water Quality Program is strengthening the resiliency of the watershed by helping to maintain key hydrologic processes in some of the most productive agricultural lands in southern Ontario.



Over 60 per cent of all water usage in the watershed is municipal. Because of this, water managers have an important role in actively managing the demand for this resource. Through their work, the average total per capita demand for water has fallen to 274 litres per person per day in 2016 from 376 liters per person per day in 2009.

The existing urban areas in the watershed are expected to see a sizable increase in population – growing to 1.4 million people by 2041. However, most notable is the growth in the headwater region where the Grand River and its feeder creeks are only a few metres wide. Currently, water quality in these areas is generally good with low nutrient and chloride levels. However, with headwater communities like Grand Valley and Dundalk projected to more than double in population by 2041, and the communities of Fergus and Elora expected to increase by 80 per cent, integrated water management will be critical. Work is ongoing to evaluate future water supplies for these communities, but they also need a river system capable of receiving additional wastewater effluent.

The rural landscape in the headwaters is also under pressure to become more productive with a doubling of the tile drainage area over the past 10 years in Dufferin County alone. These issues will continue to challenge the smaller headwater communities as the Greater Toronto Area continues to leapfrog the Greenbelt and expand into the watershed.

Ensuring water supplies

Over 80 per cent of the 1 million people who currently live in our watershed rely on groundwater for their source of drinking water. Knowing how much groundwater is available has been the focus of many technical studies supported by the Province of Ontario through Source Protection Planning.

This information supports the decisions of water managers on how best to use and manage this critical supply of water. With over 60 per cent of all water usage in the watershed being municipal, water managers have an important role in actively managing the demand on this resource. The hard work of municipal water managers has paid off! The average total per capita demand for water has fallen to 274 litres per person per day from 376.

Land use threats like road salt, can impair ground water quality and the quality of local creeks in urban areas. Some municipal drinking water wells have seen a steady increase of chloride over the past 10 to 20 years; therefore, further action is needed.

Due to the landscape of the Grand River watershed (i.e.: types of soils, land use, the amount of vegetative cover) water can runoff and/or drain quickly. From the 1940s to the 1970s, seven multi-purpose dams and reservoirs were built to manage river flows throughout the watershed. These multi-purpose dams are critical to the safety and health of the watershed and its residents, and were built to work as a system to address: frequent and severe flooding; extremely low summer river flows; and challenges with water quality.

These multi-purpose reservoirs help keep water on the landscape during spring snowmelt and following heavy rains. The water collected in the reservoirs then helps to replenish rivers downstream so that the river flows in the summer.

Reservoir-moderated river flows, such as in the Grand River between Fergus and Dunnville, the lower Conestogo River, and the Speed River through Guelph, help to ensure that there is enough water for municipalities dependent on the river for their drinking water supplies as well as enough water for accommodating the treated sewage effluent from 16 wastewater plants. By maintaining minimum river flows during summer dry periods, through reservoir operations, GRCA engineers ensure there is enough water for communities whose water and wastewater services depend on the river.

River flows can become very low during hot, dry periods in streams that are not influenced by the large reservoirs. In the Nith and Eramosa rivers, Whitemans Creek and areas above the large reservoirs like the upper Conestogo River, low flows are common and can become fairly severe in areas that do not have any groundwater discharge. Due to the low flows, communities on these streams are challenged to discharge their treated wastewater as there isn't enough water in

More information, including a detailed summary of the actions and accomplishments of the Grand River Watershed Water Management Plan (2014-2018) is available at www.grandriver.ca/WMP.

the river to accommodate the effluent safely. A changing climate may make this issue more challenging for some rural communities.

The most severe low water year since the late 1990s was in 2016, when much of the watershed was in a Level 2 condition as determined by the Ontario Low Water Response program. Discharges from the reservoirs were very carefully controlled and GRCA engineers put a plan in place, in consultation with Water Managers, to reduce the operational river flow targets a few weeks early due to low water levels in the reservoirs. Since the river provides water supply and receives the treated wastewater effluent of many communities, consulting with Water Managers is important when aligning water conservation efforts during dry periods. The Level 2 declaration lasted 150 days until the reservoirs were filled in the spring of 2017.

With a changing climate and predicted shifts in precipitation, low water conditions may become more frequent in the future and thus, working together up and down the river system can ensure water supplies.

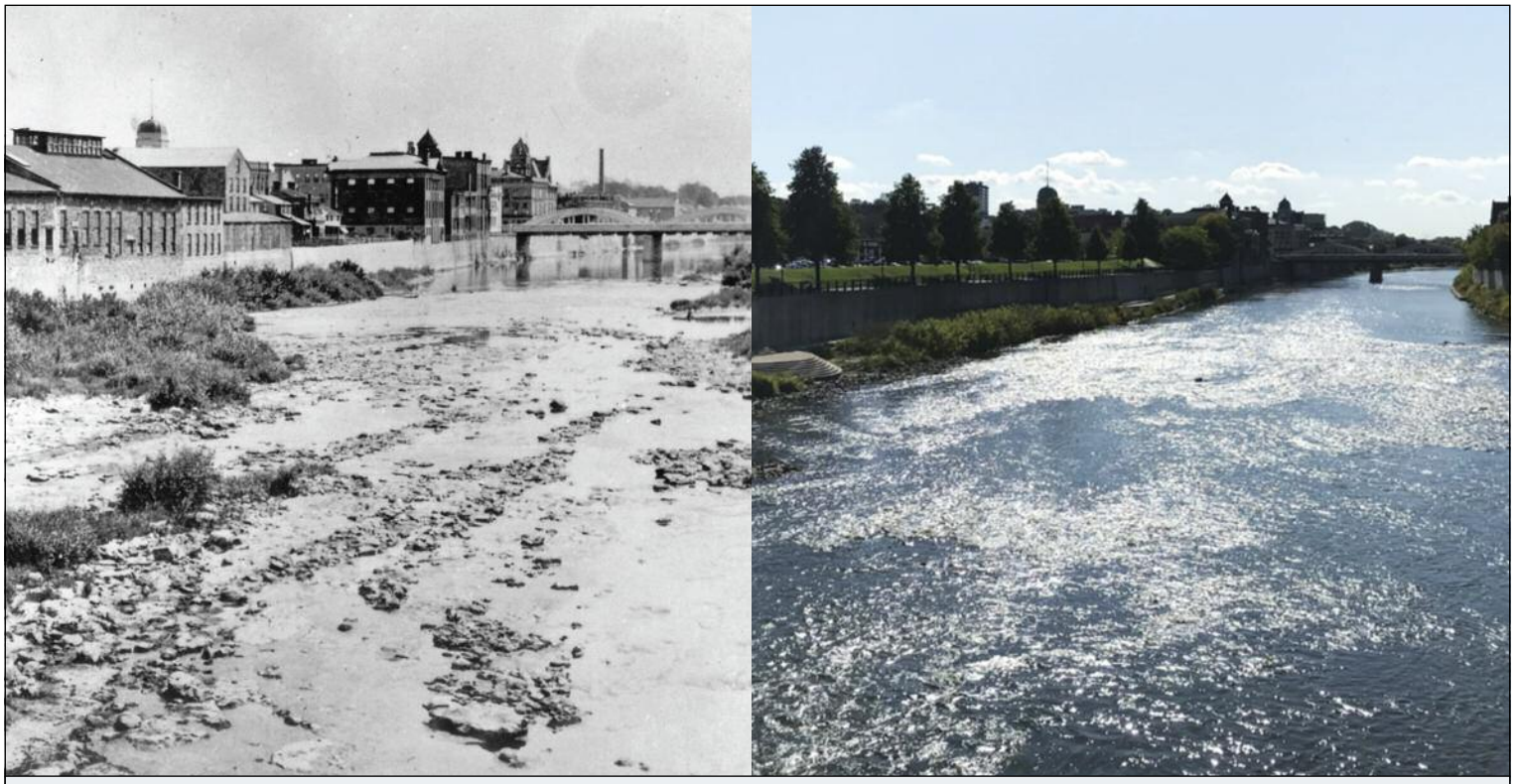
Reducing flood damage potential

Managing high flows in the watershed will be a constant and continuous improvement effort as it has been over the last 75+ years.

High flows and riverine flooding in the Grand River watershed can occur any time of the year and result from rapid snowmelt, snowmelt combined with rainfall, widespread heavy rainfall, or localized intense rainfall that can cause urban or rural flash flooding. Areas adjacent to the Lake Erie shoreline, including the Grand River reach up to the Dunnville Dam, can also experience surge flooding from wind and storm events on Lake Erie. Lastly, ice jams can occur almost anywhere in the watershed, though there are areas that are notably more prone to such occurrences.

Over the past five years, the watershed has experienced the threat of flooding from a higher than normal snowpack (2014), flooding from severe widespread rainfall (2017), and ice jams (2018). Significant localized urban rainfall also caused flooding in 2016 in Cambridge.

With a changing climate, the flood forecasting and warning system, combined with improved information such as more detailed floodplain mapping, and the attentive management and maintenance of the large dam and dike infrastructure



Left: Grand River through Cambridge (Galt) in the 1930s when there were no reservoirs to help keep water flowing. Right: The Grand River at Cambridge (Galt) today. River flow targets are achieved more than 95 per cent of the time. Some watercourses are not influenced by the large reservoirs, however, and can become very low during hot, dry periods.

become even more crucial to the lives and livelihoods of many people in the watershed.

Continuous improvement through collaboration

The communities in the Grand River watershed are an important part of Ontario and Canada. The combined Gross Domestic Product (GDP) of Kitchener, Waterloo, Cambridge, Brantford and Guelph represent a significant contribution to the Ontario and Canadian economies. The combined total GDP of this region is seventh in Canada.

This region of Ontario is celebrated for its natural assets including the Grand River, a Canadian Heritage River, and its high quality of life. Although, the health of the river system is generally improving due to very significant infrastructure investments, many pressures remain and it is now, more than ever, that we all need to continue the hard work to ensure the watershed stays healthy and vibrant for our communities to continue to prosper.

The Grand River is a large river system draining a productive, diverse and complex landscape. The river crosses many boundaries and is influenced by the decisions of many people. To make a positive impact in the health and vitality of the communities in the watershed, the agencies and people making decisions come together regularly to share insights and best practices for managing water around one 'watershed table'. The Grand River Conservation Authority has taken on the role of coordinator and facilitator for over 80 years to bring different interests together across the river system.

By working together toward common goals, relationships are established and trust is built. This capacity helps to tackle challenging and complex water issues. This is the value of a watershed-wide approach to water management.

Removing buckthorn at Laurel Creek Nature Centre

By Mary-Anne Cain, GRCA Environmental Education Specialist

The Laurel Creek Nature Centre land, located in Waterloo, contains valuable ecological features and educational resources. Maintaining the biodiversity of the property is important for nature centre programs and the wildlife that live there. Screech and great-horned owls, white-tailed deer, red foxes, raccoons, coyotes, rabbits, red and grey squirrels and many bird species are found on the property.

For program participants, observing wildlife is one of the highlights of a visit to Laurel Creek Nature Centre and helps create a connection to the local natural environment.

There are numerous plant species on this property and across the Grand River watershed that are not native to the area. These species have been introduced by humans. Many of these are invasive and out-compete the native plants. Fewer native plants result in decreased biodiversity, which can threaten the health of a whole ecosystem, and have economic and social implications as well. Fortunately, not all introduced plants are invasive.

Invasive plants are a concern because they have 'displacement capacity'. These invasive species form dense colonies or compete aggressively, forcing out native vegetation.

Brandon Moser and Oshanna Cromer, co-op students from Resurrection and Eastwood High Schools, removing buckthorn at Laurel Creek Nature Centre using extractigators. Many volunteers have worked to clear areas invaded by buckthorn, making them ready for planting native species.

Characteristics of invasive species:

• High annual seed production and quick establishment.
• Tolerance of a wide range of growing conditions.
• Ability to spread by underground roots that re-grow quickly when disturbed by pulling, cutting or fire.
• A lack of natural predators to keep their population under control in their new environment.

Some of the invasive plant species found at the Laurel Creek Nature Centre are European buckthorn (also known as common buckthorn), garlic mustard and Japanese knotweed.

European buckthorn was introduced from Europe to North America in the 1880s as a shrub, and was widely planted for fencerows and windbreaks in agricultural fields. Since then, it has spread aggressively throughout southern Ontario.

In addition to out-competing native species of plants, it has been shown to negatively affect some native songbird populations. Birds nesting in this buckthorn are more susceptible to predators, because of the low branch heights and lack of protective thorns (like those found on hawthorns and native rose species). The berries are eaten by many birds: thrushes, waxwings, white-throated sparrows, European starlings, blue jays and small mammals, but offer low nutrients, and the laxative properties of the seeds ensure they are spread widely and rapidly.

Buckthorn can also affect nearby agricultural crops by hosting oat rust, a damaging fungus, as well as the soybean aphid, an insect that damages soybean crops.

GRCA's steps for reduction of European buckthorn on its properties

1. Education about invasive species, including buckthorn;

2. Create opportunities for volunteers, including school groups, community and corporate groups to help control it by pulling or cutting and bagging stumps;

3. Create opportunities for volunteers to plant native herbaceous plants, coniferous and deciduous trees or shrubs to replace the buckthorn plants in the space where they once were, and;

4. Monitor and control buckthorn regrowth.

At the nature centre, students are able to inventory populations and learn about native and non-native species through hands-on experiences and exploration. Helping people understand the impact of invasive species on biodiversity is important to watershed health. The more people know about the problem, the easier it will be to stop the introduction or spread of invasive species.

Education is also an important first step for community volunteers. After learning how to identify buckthorn, volunteers are taught how to remove it. An extractigator is like a weed puller, only it is designed to pull out the stem and roots of invasive plants. If a buckthorn plant is too big to pull out with an extractigator, the plant is cut down and the stumps are bagged with buckthorn bags to prevent regrowth.

Thanks to a grant from TD Friends of the Environment Foundation to assist with buckthorn control, the plant biodiversity of Laurel Creek Nature Centre is improving. Volunteers from community groups such as Waterloo Scouts and Cubs, Waterloo Region Teens, Blue Dot Waterloo Region, Creekside Church volunteers, Cambridge Hawks families and Waterloo Public Library have cleared areas invaded by buckthorn, making them ready for planting native species.

Classes from St. Mary, St. David, Resurrection, Holy Rosary, St. Agnes, St. Teresa of Avila and St. Nicholas schools also extracted buckthorn, and they planted native wildflowers and shrubs as well.

Adding native plants to the area has increased diversity and will help control the regrowth of buckthorn. The canopy will shade out invasive species, because there is less sunlight available for them to grow.

Support through the Jane Goodall Institute's Roots and Shoots project, generously funded by Toyota Motor Manufacturing Canada, allowed students from St. John, Lourdes, St. David and Resurrection schools, as well as staff from

European buckthorn grows up to 6 m tall and the stems are 25 cm in diameter. Buckthorn is among the first trees to come into leaf in the spring and hold onto its leaves late in the fall.

The berries on a female buckthorn plant are green (left) and turn black by late July. A common reduction strategy is to remove female plants first, because they are the seed producers. Another way to clearly identify buckthorn is to scrape away the bark (right). The under layer of European buckthorn is a brilliant orange colour.

Toyota Motor Manufacturing Canada to participate in these activities.

Staff at the Laurel Creek Nature Centre will continue monitoring for young buckthorn plants, and hope that the odd hand pulling may be all that is required to control it in these once heavily infected zones.

How you can help

- Learn how to identify buckthorn and other invasive plants, and how to remove them from your property.
- Report invasive species online at www.invadingspecies.com.
- Avoid buying and using invasive plants in gardens and landscaping.
- Dispose of invasive plants in the garbage. Do not put them in the compost or discard them in natural areas. Discarded flowers may produce seeds.
- When hiking in natural areas, prevent the spread of invasive plants by staying on trails and keeping pets on a leash.
- Watch for volunteer opportunities. For more information on volunteering with the GRCA, visit www.grandriver.ca/volunteer.
- Support the Grand River Conservation Foundation in efforts to enhance biodiversity and create learning opportunities at GRCA Nature Centres. Visit www.grandriver.ca/grcf.

Planned giving: Leaving a legacy for future generations

Gil Henderson was passionate about the outdoors. A prize-winning cattle farmer, for decades he worked with community groups, kids and conservation agencies, including the Grand River Conservation Authority, to plant trees in the area of his Brant County farm.

His actions inspired others and led to additional efforts. These included the reintroduction of habitat for the trumpeter swan (then a species at risk), and establishing more than 300 bluebird boxes.

Through his involvement with the GRCA, he was a leading steward of the whole Grand River watershed, not just his corner.

Paul Emerson is a former CAO of the GRCA who was a friend of Gil's, and remembers his efforts. "Gil always had a project on the go. Over time, he worked with many people to protect our environment for now and the future. As I travel through Brant County I can see the on-the-ground results of the work he did," he said.

When Gil passed away in January 2017, his legacy continued. He planned gifts for the agencies with whom he had worked over time, including the Grand River Conservation Foundation (GRCF).

Gil's bequest to the GRCF focused on enhancing the GRCA's nature centres, a reflection of the work he did with young people. His donation has gone a long way to funding the development of the future new Guelph Lake Nature Centre, which is anticipated to open in 2020. The Centre will provide a purpose-built space for about 20,000 learners each year, replacing an outdated facility, and will offer visitors to Guelph Lake Conservation Area a hub for new outdoor programs.

Planned gifts can have a big impact on conservation in the Grand River watershed. They can be committed in a way that doesn't cost a penny today, but will yield great returns later.

Examples of planned gifts include:

- A bequest: committing a donation in your will does not affect your current financial picture and will allow for the GRCF to receive a future contribution. You can plan an amount or a percentage of your estate, to a program of your choice or for a general donation. Your estate will receive a tax receipt.
- Life insurance: you can either name the GRCF as the beneficiary of a life insurance policy, or transfer ownership of a policy to GRCF and receive a charitable receipt for any premiums you pay.
- Gifts of publicly-listed securities: when you donate securities directly, rather than cashing them out and making a donation, you can receive significant tax relief while making our watershed a better place.

A grade 11 student at Guelph Lake Nature Centre studies a red-backed salamander. Planned gifts - such as bequests - can be marked for a program of your choice and can make a huge impact.

"When a person plans a gift, they are expressing their values," says Sara Wilbur, GRCF's Executive Director. "The protection of our environment has never been more important, and planned gifts can make a huge impact. They are a legacy for future generations who enjoy our rivers, parks and trails."

Some people wish to let the GRCF know of their commitment, and others prefer to remain anonymous.

To learn more about planning a gift to the Grand River Conservation Foundation, please contact Sara Wilbur at swilbur@grandriver.ca, 519-621-2763, ext. 2272, or visit grandriver.ca/GRCF.

THE GRAND CALENDAR

Soil sampling and fertility workshop

November 18 - St. Jacobs
November 27 - Cayuga

These complementary workshops are targeted to agricultural producers and farm property owners to better understand the benefits of soil sampling and soil fertility testing. Jake Munroe, Soil Fertility Specialist with the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), will be discussing how to interpret soil tests and how to use soil test results to help make farm decisions. Learn about the programs and resources available to help manage soil fertility and nutrients. Participants will receive a free copy of OMAFRA's Soil Fertility Handbook. For more information please visit www.grandriver.ca/events. To register, please contact ruralwater@grandriver.ca or 519-621-2761, ext. 2278.

Winter is coming to Shade's Mills

November 23

Winter is coming – water freezes, food is scarce and temperatures plummet. How do plants and animals cope with our cold season and food shortages? From migration to hibernation, join our Nature Guide to discover the many strategies that plants and animals employ to survive "the frozen desert". For more information please visit www.grandriver.ca/events.

Owl prowls at Shade's Mills

November 30 and December 14

Join our nature guides for a short evening hike as it will be a hoot! You will get to learn some owl calls and other interesting facts about these night time predators. We will listen for nighttime nature sounds and enjoy marshmallows around the campfire. Please dress warmly. We provide marshmallows and roasting sticks. Please limit flashlights to one per family. For more information visit www.grandriver.ca/events.

Other guided nature events at Grand River Parks

The GRCA offers a wide range of quality programs suitable for people of all ages throughout the year. They have an environmental, outdoor focus and are led by GRCA nature guides. Some programs are free, and some are offered at a fee. There's bound to be something for your family to do at one of our Grand River Parks. Please check out our event calendar at www.grandriver.ca/events where you can search for all upcoming events. You can also subscribe to receive GRCA events by email at www.grandriver.ca/subscribe.

Learn more about the benefits of soil sampling and soil fertility testing at our workshops.

Nature Centre PD Day camps

Camps at our nature centres are all about being outdoors, discovering nature, making new friends and creating memories that will last a lifetime. During our PD Day Nature Adventure Camps, your child will experience fun, hands-on seasonal activities and games that aim to inspire and educate. To learn more visit www.grandriver.ca/daycamps.

About Grand Actions:

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In 2020, a new digital platform that will provide more timely, informative and engaging content will be launched.

More information:

Back issues are available online at **www.grandriver.ca/GrandActions**.

If you would like to receive updates on the launch of our new digital platform, please subscribe to Grand Actions via www.grandriver.ca/subscribe.

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