

GROUND WATER CANADA

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Inside: The Source
The official magazine
of the Ontario Ground
Water Association

SUMMER 2025

Lifewater Canada

Canadian charity gives hope for developing
countries to access clean water



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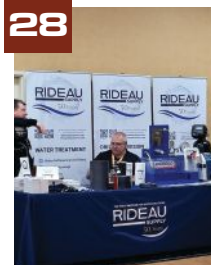
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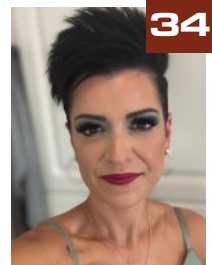
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ON THE WEB:

CBC News analysis identifies Canadian hot spots for PFAS risk

A CBC News analysis has recognized several sites in Canada where drinking water is at risk of being contaminated by PFAS, otherwise known as "forever chemicals." CBC News report.

First Nations leaders pressing Carney to revisit water bill

Canada's Indigenous leaders want Prime Minister Mark Carney to reintroduce a bill that established drinking water standards in First Nations communities, stressing it be done within 100 days of Parliament's return. CBC News report.

The hope of water

Canadian agency helps developing countries access clean water.



by Mike Jiggins

For most people in Canada who wish to quench their thirst with a drink of cold water, it's simply a matter of turning the faucet handle and filling a glass with clean, safe drinking water.

There are still parts of Canada where that's not possible, including many First Nations communities where boiling water is a prerequisite to consumption. But even that is a preferable alternative to what people in other parts of the world must endure.

There are developing countries that lack access to clean drinking water, but new hope has come in recent years to some of these locations, thanks to a Canadian charity.

Lifewater Canada, which was founded by an Ontario hydrologist, is marking its 30th anniversary of helping developing countries gain access to clean drinking water. The ongoing work of this organization is helping people in remote areas of Haiti and the African nations of Liberia, Kenya and Nigeria gain that access without having to venture several miles away to acquire it.

I met a representative of Lifewater Canada in March during the Ontario Ground Water Association's annual convention in Niagara-on-the-Lake. The organization had an exhibit on the trade show floor, and I learned

enough about its work that I felt it warranted exposure within the pages of Ground Water Canada.

In April, I interviewed Lifewater Canada vice-president Dan Nickol who explained how the organization came into being, how it has successfully trained local people to drill for water, and the achievements it has realized over the past three decades. The number of projects Lifewater Canada has undertaken in 30 years is staggering, and its work has made a profound impact on

the quality of life for residents of these targeted countries. It's not just a matter of helping to provide a healthier source of drinking water for the people of Haiti, Liberia, Kenya and Nigeria. The organization's work is helping to provide younger residents – especially girls – with the hope of a better school education and is promoting enhanced hygiene among the populace.

Lifewater Canada is multi-faceted in the work it does. Nickol estimates about two million people in Liberia alone have benefited from the agency's programs. The number of wells drilled in Liberia can now support about one-third of its population with clean and accessible water.

Liberia became a war-torn country following a 14-year civil war – a conflict that destroyed several wells Lifewater Canada had drilled. Nickol was in the country in March to help prepare a rig for further work and tracked down Liberia's oldest surviving well the organization drilled 29 years earlier.

The equipment used to drill these wells may not be the Cadillac of apparatus, but it gets the job done. There are many challenges faced by those undertaking Lifewater Canada's projects, including shipping delays, the lack of infrastructure to allow equipment to reach their targeted drill sites, environmental hurdles and political barriers.

Fortunately, something that has never been a problem for the organization is finding the necessary labour to conduct Lifewater Canada's projects. Nickol said local people from the developing countries the agency serves are eager to get involved and learn the skills required.

Turn to page 8 to learn more about Lifewater Canada and the difference it's making.

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NEXT ISSUE: The next issue of Ground Water Canada will take a retrospective look at the drinking water tragedy experienced 25 years ago in Walkerton, Ont. Watch for it in the fall!

The number of wells drilled in Liberia can now support about one-third of its population with clean and accessible water.

'CITIZEN SCIENTISTS' ASSISTING IN RESEARCH OF FRESHWATER RESOURCES

Armed with water sampling kits and scientific curiosity, citizen scientists are joining forces with University of Windsor researchers to protect the Great Lakes through a new initiative led by the Real-time Aquatic Ecosystem Observation Network (RAEON).

This participatory science project invites volunteers to work alongside researchers to collect vital water quality data and deepen an understanding of the health of these critical freshwater resources.

Starting in May, RAEON hosted bi-weekly community science events where participants gathered baseline water quality samples to learn about the factors that influence the health and ecological integrity of their local watersheds.

This hands-on approach not only strengthens scientific research but also builds environmental awareness and a deeper connection to the Great Lakes.

"The benefits of having individuals participate in the science are twofold: first, their input will help expand and supplement data collection," Katelynn



Johnson, project co-lead and research and operations director for RAEON, said. "But perhaps even more important, participants will learn more about the scientific process and the challenges facing the environment in which they live."

Data collected through the initiative will contribute to research publications, conference presentations, and the development of adaptive management plans and environmental policies. By combining citizen-collected data with traditional scientific research, the project

aims to equip decision-makers with more comprehensive information to guide evidence-based policies and management strategies.

The project is a collaborative effort involving institutions across the Great Lakes region, including municipal, provincial, and federal government scientists, nonprofit agencies, and underrepresented groups such as nontraditional fishers. A dedicated community science liaison will connect with a broad range of stakeholders, including K-12 schools, universities, water utilities, and recreational water users, to encourage wide participation.

In addition to Johnson, the project is led by Aaron Fisk, co-lead and science director of RAEON, professor in the School of the Environment, and Tier 1 Canada Research Chair in Changing Great Lakes Ecosystems; and RAEON community science liaison Edward Millar.

The initiative is supported by a \$540,000 grant from the Canadian Water Agency, supplemented by \$672,667 in-kind funding, totalling \$1,212,667.

H2AWESOME! EXAMINES THE WAY WE INTERACT WITH WATER

A virtual conference addressing the many ways we interact with water was presented over several days in the weeks leading up to Earth Day on April 22.

"Water is unwavering" was the theme for the annual *H2Awesome!* conference that had more than 1,200 students register. The conference was a joint presentation of the Upper Grand District School Board, the Wellington Catholic District School Board and the City of Guelph.

"Water sustains life, connects communities, shapes ecosystems, and fuels industries," Adam Barnard, program leader, Science/Sustainability and STEM at Grant Evans Education Centre, noted on the Upper Grand District School Board website. "It is powerful, resilient, and constant, yet vulnerable to human impact."

The conference included critical discussions on sustainable water use, conservation, and innovation.

"From the hidden flow of groundwater to the vast currents of our oceans, we will examine how our choices influence water quality, availability, and the health of the planet."

Students engaged in activities involving engineer design, Indigenous knowledge, math, science and social studies.

All presentations were streamed live on the *H2Awesome!* YouTube channel. Videos can be viewed by visiting <https://www.youtube.com/@H2Awesome>. Conference/streams.

Conference speakers included:

- Caroline Johnson, relay education
- Gemma Romano, relay education
- Nikolas Maclean, Water Rangers
- Brian Young, author & filmmaker
- Jim Baxter, P.Eng., groundwater resource engineer
- Christopher Scott, assistant park superintendent for Voyageur Provincial Park
- Lisa Young, P.Eng., PhD, Fisheries and Oceans Canada
- Rebecca Hardman, Headwaters Food and Farming Alliance
- Jeremy Shute, M.A., RPP, senior planner & musician



OFFERING HOPE FOR SAFE WATER

Canadian agency helps developing countries access clean drinking water.

A founded-in-Canada organization that strives to ensure that residents of developing countries have access to clean, safe drinking water, conducted its first charitable act in 1995 when it drilled a well in Liberia while the African country was embroiled in a 14-year-long civil war.

by MIKE JIGGENS

Almost 1,200 well projects have since been completed by Lifewater Canada in the small country along Africa's Atlantic coast. Liberia is one of four developing countries that continue to benefit from Lifewater Canada's work.

The Thunder Bay-based organization's roots were formed 30 years ago when Ontario hydrologist Jim Gehrels sought to share his knowledge and skills in the field of water with countries around the world that needed access to safe and clean drinking water. Along with a friend named Glenn Stronks, Gehrels shipped a portable drilling rig to Liberia and conducted a three-day conference to train a dozen local men, figuring a couple of wells could be drilled before the duo returned to Canada.

They realized, however, that the men they trained couldn't be expected to volunteer their time drilling wells when they should be earning money to provide for their families. Upon returning to Canada, Gehrels and Stronks conceived the idea for raising funds that would pay for ongoing drilling work.

"That marked the beginning of Lifewater Canada," vice-president Dan Nickol said. "We drilled our first well on March the 24th (1995) in Liberia."

Nickol recently returned from Liberia where he oversaw yet another project. The trip also marked the 30th anniversary of the first well ever drilled by Lifewater Canada. That well has since been bulldozed to accommodate a new road, and several

other wells in Liberia were lost during the civil war or had succumbed to rebel activity.

While in Liberia in March, Nickol tracked down the country's oldest surviving well drilled by Lifewater Canada 29 years ago.

Gehrels died in 2020. His wife, Lynda, a retired nurse who was actively involved with the organization, assumed the president's role and worked with the board of directors to make several strategic hires, including Nickol who began as executive director in 2020.

"Since then, we've really been working on expansion and growth," Nickol said.

In its 2020 fiscal year, Lifewater Canada completed 640 projects in its four target countries that also include Haiti, Nigeria and Kenya. In addition to drilling new wells, the organization's projects include rehabilitating dormant wells, making pump repairs, building community washrooms and conducting health and hygiene workshops.

A BIG YEAR IN 2024

Last year proved to be a banner year for Lifewater Canada with 6,400 projects completed.

"The last five years have really been marked with growth," Nickol said. "We've been working on expanding our teams, expanding our technology, expanding our training and letting the teams work as much and as hard as they can."

Lifewater Canada employs four full-time and five part-time staff while Lynda Gehrels continues



A school in Liberia was the site of a drilling project last March.

as a full-time volunteer. Eight teams are working on various projects in the four countries. Nickol's recent trip to Liberia helped launch that country's third team.

Aside from the core four countries Lifewater Canada continues to support, the African countries of Mali, Zambia and Malawi have benefited from the charity's involvement.

"We have a small but incredibly productive team in Haiti," Nickol said. "There are about six people on that team, and they do about 80 pump repairs, a couple of dormant well rehabilitations and six to eight new wells monthly."

One of Liberia's teams focuses solely on pump repairs and education. One of its primary tasks is to provide hygiene education to local residents, including the distribution of "dignity kits" that feature reusable, recyclable feminine hygiene products. Nickol said hygiene education fits in with Lifewater Canada's sanitation program.

Liberia has two other teams that drill 12 to 14 wells between them each month. A large team in Nigeria drills about 15 new wells a month and makes about 60 pump repairs and about 15 rehabilitation projects. In Kenya, three teams perform varied specialty work, with about 15 new wells drilled, upwards of 100 pump repairs and close to 10 rehabilitation projects completed monthly.

During the early stages of Lifewater Canada's work, each country's teams relied on the in-person assistance of Canadian volunteers.

"I've been working really hard to make them self-sufficient and give them all the support that they need remotely."

Although this reduces the amount of travel for Nickol, he must make the occasional trip overseas "keeping that to handling issues or bringing technology that they can't actually do on their own. They don't have the training, and they don't have the capacity yet, so I try to focus the trips on more capacity building rather than doing the actual work."

Nickol travels to the organization's beneficiary countries about twice a year.

"Those trips are generally around something like manufacturing or fabrication of some kind of specialized administration or computer training or something like that. It's really hard to teach someone to weld over Zoom."

A LACK OF INFRASTRUCTURE

Liberia has no water infrastructure whatsoever, Nickol said, adding some had existed in major cities prior to the country's civil war, but had been "wiped out" during the conflict. There are currently enough wells in Liberia to support about one-third of its population with safe, clean and accessible water,



A drilling team begins its quest for accessing clean water in Liberia during a project last March.

but that number depends on differing information provided by various agencies. Nickol said some charitable organizations claim Liberia doesn't need any more wells, basing their assessment on the distances residents must walk to reach a well.

"Chances are if there is a swamp a kilometre away and a freshwater pump four kilometres away, they're going to get their water from the swamp. That's just part of the education aspect of it."

One of Lifewater Canada's development goals is to have a water access point within a kilometre of populated areas, Nickol said, adding accessibility to water is dire in each of the countries the agency serves.

"Without access, everything suffers and it's not just health, it's not just infant mortality, but it's capacity to earn a living...it's things like education for school-age children because typically in these cultures it's the girls in the family – the daughters – who are tasked with gathering water. They tend to miss school in order to do that."

Nickol said boys are seen by families as their hope to escape poverty, provided they earn good grades in school, they attend university and land a good job.

"Girls aren't viewed with that same kind of value. When girls are missing up to 50 per cent of their classes in favour of gathering water or when girls aren't

sent to school at all because the money that could go toward their tuition is being used to purchase water from a water vendor on the side of the road, it really impacts every aspect.”

Nickol said Lifewater Canada isn’t confined to drilling wells solely in rural areas. A large percentage of wells drilled are in urban locations. The agency’s most recent project was conducted in Monrovia – Liberia’s capital city.

About two million people in Liberia have benefited from safe and accessible water sources through the agency’s programs.

SHIPPING DELAYS

The recent project in Liberia had its share of challenges, including delays in shipping. The original plan was to build the drill rig on March 24 so that drilling could get underway on April 9. The truck that housed the drill didn’t arrive until April 16.

“We spent the rest of the time going from my notes and measurements I had taken off of previous projects, and we

ended up building the machine itself without a truck to mount it on.”

Nickol said he hoped that when the truck arrived, it could be backed up to allow the rig to be bolted in place before heading out into the field. His prayers were answered, and the team set out the following morning

“Shipping delays are always a big thing.”

The rig put together in Liberia was Lifewater Canada’s third, following one in Kenya and another in Nigeria. The latter two have been responsible for more than 200 wells.

Nickol said he favours Isuzu trucks because of their straight frame which makes it easier for the rig to be mounted.

Environmental obstacles have also been challenging over the years, but Nickol said Lifewater Canada is endeavouring to overcome them. In the past, the organization worked with smaller rigs that didn’t have the capacity to go through hard rock, or any type of rock at all.

On other occasions, the country’s rainy

season could hinder a rig’s transportation or inhibit its ability to be set up on the ground. Such environmental challenges could shut down work, but he said today’s new breed of machinery can easily overcome these hurdles.

One aspect of well drilling in Liberia, Haiti, Nigeria or Kenya that has never been a problem is the availability of labour. Local people are eager to get involved in Lifewater Canada’s projects, Nickol said, adding he’s always getting requests from people wanting to work for the agency.

“The challenge is more on the knowledge or the individual capacity front.”

Nickol said education is a missing element in developing countries. Liberia lost generations of education, even though its civil war ended several years earlier, he said.

Although the teams he mentors are eager and enthusiastic about their work, no one individual could cut two pieces of steel to the same length. He said it was challenging to teach his teams how to read a tape measure to the nearest 16th of an inch instead of to the nearest inch.

“All of these parts of education have been completely lost. That’s why we spend so much time with our teams, doing the training and capacity building and some things that seem second nature to us here in North America. I’ve learned not to take it for granted that everyone knows those same simple things. They’re not taught a lot in these places.”

Another team in Liberia is working on a drill rig that is identical to the one put together in March. Nickol said he’d like to see another rig in Haiti once the dust settles from the country’s current political crisis.

For the next while, Lifewater Canada expects to focus on administrative and accounting issues as well as training. A significant project the agency will be undertaking over the next several months is an audit of every well it has drilled. Slightly more than 3,000 wells have been drilled around the world, but some information prior to 2012 is missing.

“We want to have a full database of locations and conditions and repair times and pump replacement times.”

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