GREEN TECH THE SERIES COLUMN FOR JULY 20, 2016
HEADLINE: RAIN WATER HARVESTING: DROUGHT CONDITIONS MERIT THIS

The media, after years of ignoring it, now constantly reports information on climate change, greenhouse gas effects and how we are polluting our beautiful planet. These reports have critical merit and are necessary in keeping the issues alive for viewers and readers. The one area that still seems to be on the second last page of the paper, however, is water and the growing lack of it in many parts of the world. How did we get into this water crisis? It's really not that hard to understand. There are more and more of us on this planet and our numbers have affected the climate, resulting in drought becoming more prevalent, not unlike the one we are currently experiencing in Eastern Ontario

There are a number of countries that realize we have a problem and that are looking at solutions. China, for example, has taken to weather modification or cloud seeding. They claim they have created 36 billion tons of rain a year since 1999. In 1961, President Kennedy stated, "If we could ever get fresh water from salt water it would dwarf any other scientific accomplishment." Today, we have over 13,000 desalinization plants all over the world. While effective, it's a costly and controversial method of creating fresh water.

Every year, we hear of more and more cities with water restrictions. In Perth, Australia, city planners are so concerned about water shortages that one predicted Perth could become the first ''ghost city,'' abandoned for a lack of fresh water. Some counties and cities have taken to recycling their waste water. In El Paso, Texas, close to 40% of their potable water comes from recycled municipal sewage. Singapore is one of the few countries in the world where usage has actually dropped almost a dozen litres a day per citizen due to strict water management.

Parts of Australia, Germany and California now mandate rainwater harvesting systems in all or some of their new buildings. Rainwater harvesting is not ''new technology;'' far from it. There is a rainwater collection tank in Istanbul, Turkey, built by the Romans in 565AD. It holds 80,000 cubic metres of rain and it's still in use today. In Israel, rainwater harvesting allows homes and farms to operate in a part of their country where annual rainfall is 100mm. About 2 years ago, using UNESCO funding, Kenya discovered a deep aquifer that is estimated to contain 200 billion, yes billion cubic metres of fresh water, this represents 900% of the

entire country's current water supply. To a country known for drought conditions, this is a huge discovery.

Closer to home, in June of 2006, the Ontario Building Code was amended to allow the use of rainwater, but with the provision that the home or commercial building use a dual plumbing system inside the building. The city of Toronto has an aggressive program to support rainwater harvesting and is working on projects in locations like the Toronto Zoo.

The need to reduce water consumption in this part of the world has not gone unheeded. Many people have changed to low flush or dual flush toilets, low volume showers and more efficient washing machines. However, collecting the rain should be a national effort, from simple rain barrels to properly installed underground collection systems. The internet is full of suggestions for rain barrels and they are not expensive to install. Soft rainwater is excellent for gardens and washing the car and it is a reasonable cost efficient alternative to turning on the tap to access municipal water that is treated for your personal drinking water, at some considerable cost. Environment Canada studies have shown that many municipal water distribution systems leak up to 25% of their treated water. And, further exacerbating the problem, since 1980, our personal usage has increased by nearly that same amount, according to the same study.

Installing a whole house rainwater harvesting system is not that difficult. The roof on your home is the collection system, the eavestrough and downspouts are the distribution pipes; you have only to add the collection tank. At one point in our past, it was called a cistern and nearly every rural home had one years ago. Seems our ancestors already knew about this! For most homes a polyethylene tank ranging from 6-12 cubic metres should do. Most tanks today are buried underground just outside the home, although an even simpler system involves rain barrels and tanks.

If you intend to use this water for drinking, it is recommended that your roof be a coated steel roof. If you intend it to be non-potable for irrigation, toilets and laundry, there are piping and filtration systems available for every application. If you plan to pipe the rainwater into the home, a dedicated non-potable distribution piping system is code required. Suitable identification is necessary so that cross connections to the potable water are not done at a later date. There is actually a CSA B128 standard on non-potable systems. Some municipalities do require some sort of cartridge filters or UV lights, even for non-potable systems. Seems there is some concern about possible human usage and there is still misunderstanding about these systems with some municipal officials.

Such systems allow for current use, but go beyond that to seasonal storage for use in times of drought or urban water bans. With our ever increasing extremes in climate, harvesting water will help with property storm water management. Lastly, the cost of treating water to make it safe for drinking in an urban area is staggering. The City of Toronto, for example, uses nearly 30% of its municipal electrical consumption in the treatment and distribution of drinking water. The United Nations predicted, “The world’s demand for potable water is expected to increase nearly 2/3 by 2025.” That’s only 9 years away. We need to make water conservation a priority.

On a personal note, before we renovated our present 1894 Church, we lived in a nearby 1912 church, where, during renovations, I installed a rainwater collection system that drained into a 1400 gallon “cistern.” Depending on rainfall, it supplies 100% of the non-potable water prior to freeze-up. The roof is coated steel and the proper filters were installed. To anyone who says you cannot function on this type of water system, we are living proof that it can be done.

Cam Allen L.I.W. NHI ACI can be reached at cam@alltechconsultinggroup.com for any questions or comments