GET SMART!
Managing our Water

Photo: Dianne Werbicki

By Nathan Helder

THE CONSERVATIONIST John Muir (1838–1914) once said "When one tugs at a single thing in nature, he finds it attached to the rest of the world." What is more important and life supporting than water? In Canada, we are surrounded by so much water we take it for granted. We don't really understand our water resources as well as we should; what happens with groundwater or runoff, where do leaks occur in water transportation systems, how is water being used, how much energy is being used to move water into and in our homes, commercial buildings, treatment plants or irrigation systems? Every answer that we can find for the previous questions point to waste (i.e., extra cost). If water isn't effectively applied or used, costs will soar.

One thing we know for sure is that municipal water rates are continually increasing here in Ontario and around the globe. Recently, a suburb of San Francisco will be seeing its biggest water rate increase ever, a 47% increase! The scary part is that Canadians rank second only to the United States in terms of highest per capita water use in the developed world – 1,494 cubic meters per capita (Source: Environment Canada). As a result, municipalities in Ontario continue to increase their water rates with no end in sight.

So, how are water rates calculated? Water rates are calculated by measuring how much water is needed at peak demand. This is the time when water use is at its highest. Peak demand generally occurs at the end of July and the beginning of August. The water distribution system has to be sized to meet this demand even though it occurs for only a few weeks in the summer. Moving water, both clean and sewage water via underground pipes and treating water takes an extraordinary amount of energy and cost.

Good Water Management

Individually, we are learning to conserve water. But more needs to be done. We need to take a smarter approach to water management. Do you know how much water your condominium's irrigation system uses? Do you know how much water is wasted and goes down the drain? Many condominiums have no idea how much water their systems use or how much water their landscape area really needs. Understanding your landscape requirements and water efficiency rates will reduce water usage at your condominium between 40–50%. Sadly, a lot of that water can be wasted due to inefficient or poorly maintained irrigation systems.

It is more important than ever to find out exactly how your irrigation sprinklers are performing. An irrigation audit can save you water and money while keeping your landscape healthy and beautiful.

Auditing: The First Step to an Efficient Irrigation System

The best way to determine your sprinkler system efficiency is to have a certified professional come to your property and perform a detailed irrigation audit. They will conduct a series of inspections, run some performance tests, collect data and calculate the efficiency of your system, zone by zone. They will also use this data to determine exactly how long you should run your sprinklers to keep your plants healthy while avoiding runoff and water waste. An irrigation audit will also detail technology of the past – faulty rain sensors, soil moisture sensors and inefficient sprinkler heads.

Recommendations for Saving Water and Money

1. Fix Leaks. The quickest return on investment is to fix leaking valves. Look for water running onto sidewalks or over curbs after the sprinkler system is turned off. If water flows constantly when the sprinkler system is off that indicates that a valve is not fully closing. Leaks in the mainline that go undetected, and continuous leaking because of the absence of a master valve.

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2. Relocate sprinklers so that they are between 4–6 inches (10–15cm) from the edge of sidewalks, curbs, patios, etc. in lawn areas. In shrub areas they can often be 12 inches (30cm) from the edge, especially with a mature landscape. This will reduce the amount of spray onto the paved surface and will not create a dry area along the edge of the lawn.

3. Change the Timing. Run your irrigation system during the morning hours, especially if you use sprinklers. Less water is lost to evaporation when the temperature is cooler, plus in most areas the wind doesn't blow as hard in the mornings. Watering in the evenings can lead to turf and plant disease problems because the water sits on the plants all night, especially in humid climates.

4. Consider Drip. Switch to drip irrigation for watering gardens, flowerpots and shrubs. Drip irrigation is about 20% more water efficient than sprinklers. It is easy to install and reasonably inexpensive.

5. New Technology. Technology in sprinklers has advanced over the last 20 years and many new sprinklers are more water efficient than the older models. Switch to rotary sprinkler heads and install master control valves. Some sprinkler head models have built-in pressure regulators. The pressure regulators save water by reducing water pressure at the sprinkler head nozzle. If too much water pressure is present, the sprinklers tend to create too much mist, allowing the wind to "carry" or "blow" the small droplets away and give uneven coverage resulting in water waste. Other sprinkler heads have built-in check valves that prevent water loss in lower elevation areas after the system has been turned off. Some irrigation controllers now come with a wind sensor that will prevent the system from operating in strong winds.

6. Prune Plant Material. Make sure tall grass, groundcovers or shrubs are not blocking or deflecting the water spraying out of the sprinklers. The water from sprinkler heads that pop-up less than 3 inches high is often deflected by tall grass around the sprinkler head. When the water pattern is deflected by tall grass or leaves it results in uneven watering and water waste.

7. Install Smart Controllers. Smart controllers are an emerging technology for adjusting irrigation applications based on actual weather and soil conditions. According to the Irrigation Association, "Smart controllers estimate or measure depletion of available plant moisture to operate an irrigation system that replenishes water as needed while minimizing excess. A properly programmed smart controller makes irrigation adjustments throughout the season with minimal human intervention."

A sensor-based controller uses real-time measurements of one or more locally measured factors to adjust ir-

rigation timing. The factors typically considered include temperature, rainfall, humidity, solar radiation and soil moisture. A sensor-based system often has historic weather information (i.e., an ET curve) for the site location programmed into memory and then uses the sensor information to modify the expected irrigation requirement for the day. A smart controller is similar to your thermostat in your home. Not only does the thermostat turn the furnace/AC off and on but more importantly it will only turn on when it reaches set temperatures. Smart controllers turn on the sprinkler system only when the turf and gardens need moisture.

What are the Results?

By implementing these strategies on your condominium property, not only will you be reducing your carbon footprint – saving water (40–50%), but also there will be a significant savings in dollars. The return on investment typically is less than three years. In addition, the property's landscape i.e., turf and gardens will be healthier and will require less inputs.

So, what will you do with this information? Get smart and reduce our water use!

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