

ONTARIO LOW WATER RESPONSE (OLWR)

A MEASURE INTRODUCED IN RESPONSE TO LOW PRECIPITATION IN THE PROVINCE DURING THE LATE 1990s

Many communities in southern Ontario are faced with water shortages because of a growing population and a limited supply of good quality drinking water. This has led to placing a high value on water and conservative water use. In addition to limited sources of water, there can be further reduction in supply due to natural conditions such as low rainfall and hot temperatures. Ontario Low Water Response (OLWR) was introduced in response to low precipitation in the late 1990s which caused drought conditions throughout many parts of Ontario. It is a voluntary program designed to take early action during low water conditions to minimize socioeconomic and ecological impacts caused by low water availability.

It is important to understand that water restrictions can be put in place for many different reasons. A water supply system

may have a short term loss of volume caused by equipment failure, contamination or accident. In these instances, water restrictions may be initiated to preserve the supply capacity for essential water use. These restrictions are often temporary and may last a few days to a few years depending on the supply problem.

Water restrictions may also be placed on a community seasonally to help control spikes in water use and keep the cost of additional water supply infrastructure to a minimum. Finally, water restrictions can be put in place in times of drought when water availability is low because of low flow in streams and rivers or low ground water tables. It is in this last case when OLWR is initiated.

Low Water Conditions and Drought

To understand OLWR it is important to understand the terms low water condi-

tions and drought. During the course of a typical year there will be times when the amount of precipitation may not be enough to offset the need for water. This is part of the natural yearly cycle and should be taken into consideration when designing water supply systems.

Low water conditions happen when precipitation is lower than normal leading to low flow in rivers and streams and possibly affecting the groundwater table. Low water conditions can occur as the result of a few weeks with no precipitation during a dry period or one year of extremely low precipitation or a few consecutive years of lower than average annual precipitation. Long term low precipitation can stress the natural system to the point that it may take several years of higher than average precipitation to recover. Drought is an extreme case of low water availability.

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An example of annual precipitation over 65 years at Lake Belwood's Shand Dam on the Grand River is shown in Figure 1. Average annual precipitation is set at zero, with positive values representing higher than average precipitation years and negative values representing lower than average precipitation years. Examples of extreme low precipitation years such as 1963 and 1998 and consecutive years of low precipitation such as the early 1960s and late 1980s can be seen.

Ontario Low Water Response (OLWR)

OLWR was designed to deal with low water and drought conditions caused by natural factors. The program relies on stakeholders to voluntarily reduce water use through conservation efforts when faced with low water conditions. Only in extreme drought conditions will regulated water restrictions be imposed by the province, although municipalities may impose water restrictions for their serviced areas as part of a voluntary water use reduction plan.

Since OLWR is based on voluntary reduction in water use, one of the most important aspects of the program is its cooperative approach to decision making. Decisions regarding the request to reduce water use are made by the local Water Response Team (WRT). The WRT is made up of representatives from local industry, municipalities, commercial and special interest groups. In this way, each stakeholder group can voice their concerns regarding water use and help to share the burden of conservation efforts. The degree of low water in the watershed is expressed by the OLWR using a system of Levels shown in Table 1.

The decision to declare a Level I or II low water condition lies with the local WRT. Level III can only be declared by a provincial committee with recommendation from the local WRT. The WRT meets to discuss low water levels when one or both of the indicators for that level are reached (see Table 2). They will declare a low water level if they feel the situation will not improve unless water use is decreased (e.g. no forecasted precipitation). Once a level is declared, it is the responsibility of the WRT with help from provincial representatives to communicate the request to reduce water use in their area.

Figure 1. Annual precipitation at Lake Belwood's Shand Dam on the Grand River from 1940 to 2005. Annual precipitation is measured as the difference from the long term average over the given time period.

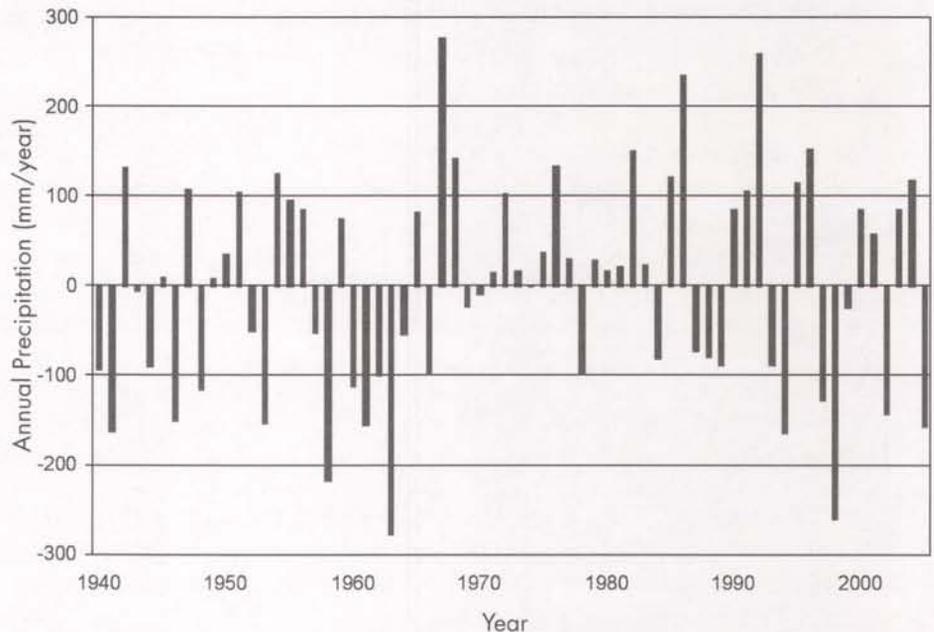


Table 1. Description of each level under OLWR and what action should be taken if the level is declared.

Level	Description	Action
Level I	Potential water supply problem	Voluntary reduction of water use by 10%
Level II	Potentially serious water supply problem	Voluntary reduction of water use by 20%
Level III	Failure of the water supply to meet demand	Possible regulation of water restrictions by provincial agencies

Table 2. Indicators for low water conditions under OLWR (adapted from OLWR MNR July 2003).

Condition	Indicator	
	Precipitation	Streamflows
Level I	<80% of 3 or 18-month average	<70% of normal summer low flow
Level II	<60% of 1, 3 or 18-month average	<50% of normal summer low flow
Level III	<40% of 1, 3 or 18-month average	<30% of normal summer low flow

The Grand River and OLWR

The Grand River watershed has had an active WRT since 2001. The team meets regularly to review low water conditions, share between members, and discuss water conservation efforts. Membership in the Grand WRT includes representation from each of the member municipalities,

agriculture, golf course superintendents, aggregate producers, fish and wildlife special interest groups, First Nations and the Conservation Authority. Many provincial and federal representatives sit on the committee as advisory members without voting rights. The Grand River Conservation Authority (GRCA) provides technical sup-

port to the committee. During low water conditions, the WRT meets as needed to declare or remove levels.

The Grand WRT has used various methods to reach voluntary reductions during Level I and Level II conditions. They include issuing press releases to the local media encouraging water conservation, contacting large water users in the watershed directly, and meeting with sector groups to formulate plans for water conservation. Voluntary water reduction strategies that water users in the watershed have used include municipal outdoor water use restrictions, water recycling and recirculation, installing water storage systems, and staggering water takings. Voluntary water use reductions within the Grand River watershed have helped during low water conditions to prevent socioeconomic and ecological losses as the result of low water flows.

To provide information regarding low water conditions to the general public, the GRCA maintains a section on their website for low water response. In this

section, current conditions are posted for various areas of concern within the watershed. Information includes daily flow rates, 7 day average flow rates, and indicators for each level. Current precipitation values can also be found on the GRCA website.

Observations

Although the Grand WRT has had success with using OLWR to help mitigate low water conditions, OLWR is not the solution to water shortages. The program was designed to deal with infrequent water shortages caused by low precipitation and to act quickly when faced with low water conditions to attempt to avoid socioeconomic and ecological losses. The solution to water shortages lies in proactive planning and resiliency in both the water supply system and with the end user. For the sports turf industry, building resiliency into turf surfaces is essential. This may include new varieties of turf, more innovative and adaptable irrigation systems, and better understanding of soil-

water-plant interactions. Drought conditions, although infrequent, are unavoidable. Building resiliency into water supply and water use systems and planning for low water availability can lessen the impact of drought conditions allowing for faster recovery from drought and reducing economic losses.

For More Information

- www.grandriver.ca – Low water conditions and declared levels for the Grand River Conservation Authority
- www.mnr.gov.on.ca – Low water conditions for the province, OLWR regulations and information
- Or contact your local conservation authority or MNR district office ♦

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