

# Water Quantity

## Why it matters

The quantity of water in our rivers and lakes depends on a number of different factors. These include the speed of snowmelt in the spring, plus rain and soil conditions. Other factors such as groundwater discharge and storm runoff also play a role. The biggest factor determining water quantity is how much we take out of the system.

Surface water is measured by depth or as flow. The monitoring is done by Saskatchewan's Water Security Agency and Environment and Climate Change Canada.

Water is in continuous movement above, on, and below the surface of the earth. This hydrologic cycle tracks water molecules as they transfer from the oceans and into the atmosphere by evaporation. Then, that water is deposited on the land as precipitation. Finally, water is transferred back to the ocean and lakes by rivers and groundwater.

Surface water quantity, land management and surface water quality are strongly interconnected.

Water shortages can harm water quality. Shortages can be caused by changing weather patterns and when other jurisdictions change their practices.

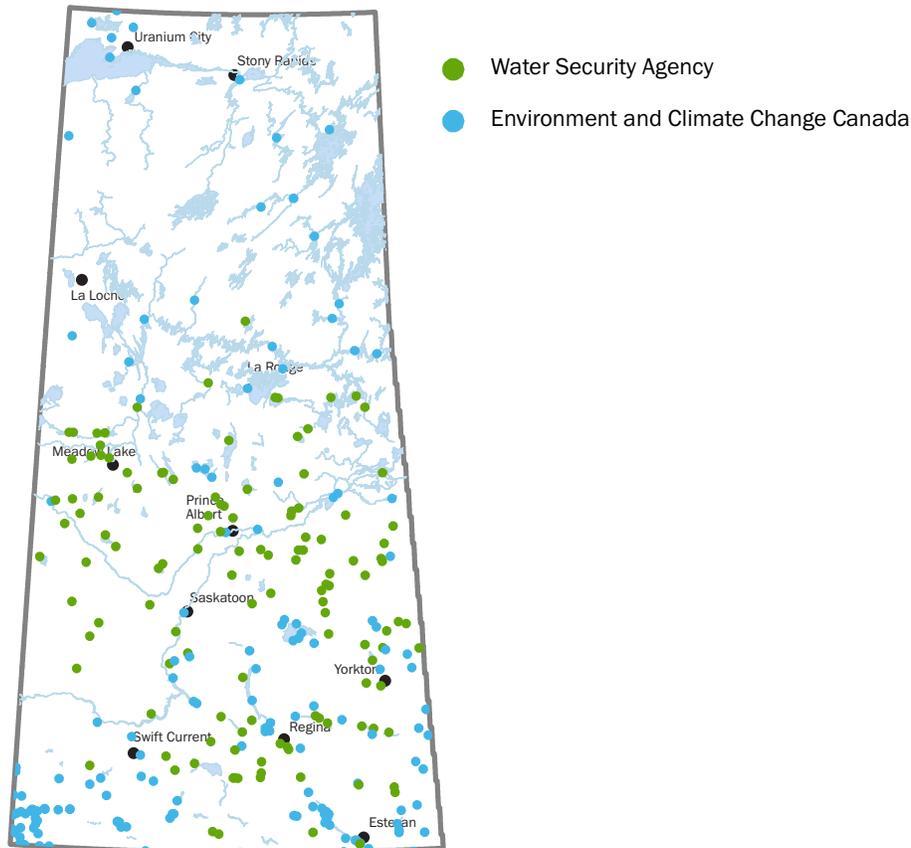
Stream flows must go up and down to promote biodiversity and a healthy ecosystem. Changes in natural flow patterns affect these ecosystems and may alter the aquatic habitat.

In Saskatchewan, surface water is used for many purposes including human consumption, ecosystem health, recreation, and economic activities including industrial use, power generation and agriculture.

## What is happening

In 2015, higher-than-normal water quantity was observed in southeast and central Saskatchewan compared to other parts of Saskatchewan. Changes in temperature and precipitation (rainfall and snowfall) cause water quantity in rivers to fluctuate throughout the year. Where water quantity is classified as low for a hydrometric station it is likely that drought conditions exist. Hydrometric stations with high flows typically indicate a wet period for the region near that hydrometric station or at a watershed level.

### Hydrometric Stations in Saskatchewan, 2015

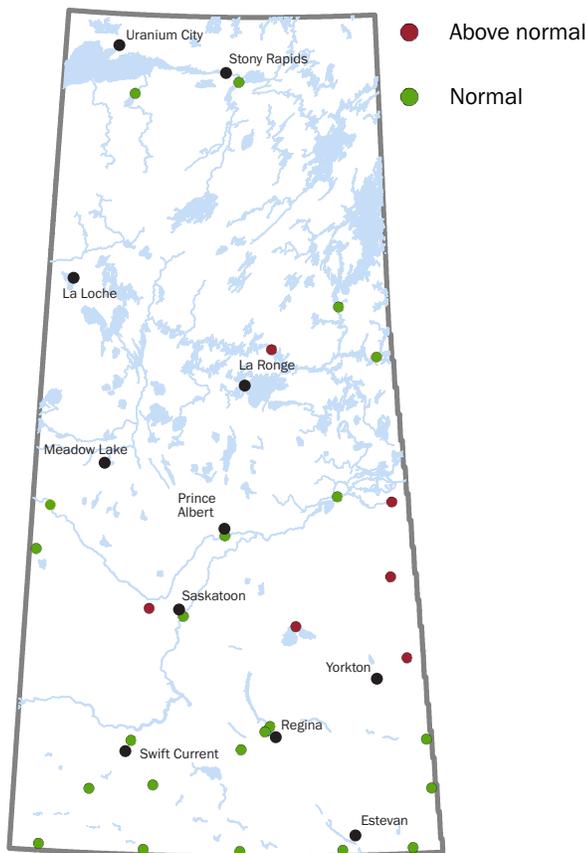


Three Saskatchewan watersheds do not have hydrometric stations: Athabasca River, Big Muddy Creek and Kasba Lake watersheds. Although we don't have hydrometric stations within the Saskatchewan side of the Athabasca River and Kasba Lake watersheds, there are hydrometric stations that monitor these watersheds in Alberta and the Northwest Territories. There is no station in the Big Muddy Creek Watershed as the waterways in this watershed are short-lived in nature.

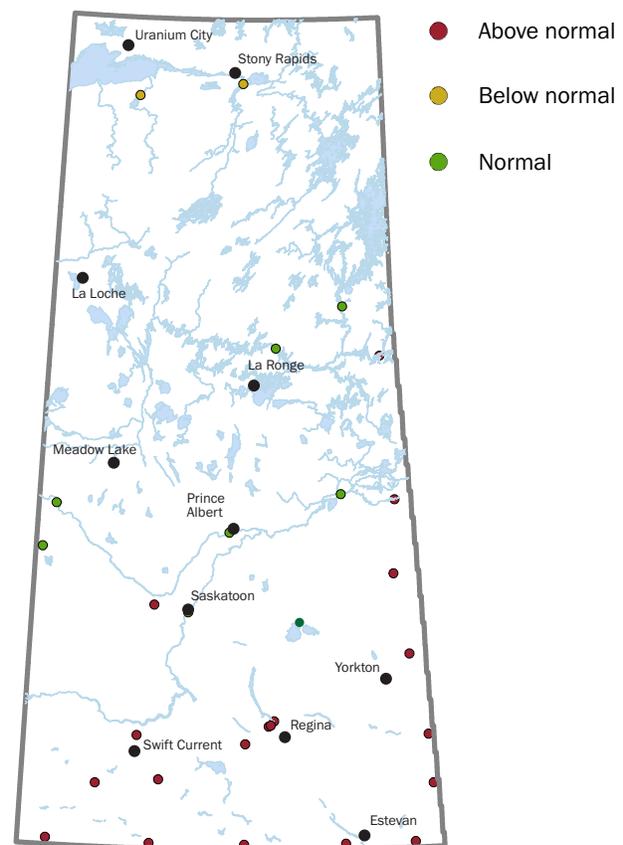
In 2006-2010, the average water quantity value was rated as normal for 26 (79 per cent) of the hydrometric stations and higher-than-normal for seven (21 per cent) of the hydrometric stations. In 2011-2015, the average water quantity value was rated as low for two (6 per cent) of the hydrometric stations, normal for 10 (30 per cent) of the hydrometric stations and higher-than-normal for 21 (64 per cent) of the hydrometric stations.

The water quantity classification for a hydrometric station is based on a comparison of the five-year average condition at that station to its 30-year average (1986-2015). A hydrometric station's rating for a year is the category that is most frequently observed at that station within a given year. A hydrometric station classified as low does not mean that the water quantity was consistently low throughout the year, but that low water quantity conditions were most frequently observed within that year.

Water Quantity, 2006-2010



Water Quantity, 2011-2015



## What we are doing

To help ensure surface water use is sustainable, the Water Security Agency regulates the use of water and the construction, extension, alteration and operation of water diversion works (e.g., dikes, dams, weirs, reservoirs, etc.). This is managed through the issuance of Water Rights Licences and Approvals to Construct and Operate Works as found in *The Water Security Agency Act*.

The Water Security Agency is leading implementation of a number of actions from the 25 Year Saskatchewan Water Security Plan to:

- evaluate existing water supplies and future demands for the next 25 years and beyond to determine the need for new infrastructure across the province;
- analyze the water supply situation in the major rivers; and
- identify the flow required to sustainably support the aquatic ecosystem.

In Saskatchewan, surface water quantity is monitored cooperatively by the federal and provincial governments through the national hydrometric program. Hydrometric monitoring occurs in 26 of Saskatchewan's 29 watersheds. The activities of this program include the collection, interpretation, and dissemination of surface water quantity data and information to decision-makers and the public.

Using hydrometric data, the Water Security Agency's River Forecast Centre prepares monthly provincial streamflow forecasts for Saskatchewan. These forecasts describe the current stream flow and water levels in the province and provide forecasts of expected flow conditions and lake levels. Data from 158 hydrometric stations are used for this initiative, including the 126 stations the Water Security Agency monitors as part of the Water Survey of Canada and the additional 32 stations the Water Security Agency monitors that are not part of the Water Survey of Canada.