

Water Availability and Drought Conditions Report

OCTOBER 2023

Executive Summary

- This Water Availability and Drought Conditions Report provides an update on conditions throughout Manitoba for October 2023. This will be the last conditions report for 2023. Reporting will resume in spring 2024.
- Precipitation conditions over the past month, three month, and twelve month periods are as follows:
 - October brought above normal (>115 % of median) precipitation conditions to southern Manitoba. In northern Manitoba, conditions ranged from moderately (60 – 85 %) to extremely (<40 %) dry.
 - Over the past three months (August, September, October), most of agri-Manitoba experienced normal (85 – 115 %) to moderately to dry conditions. In northern Manitoba, conditions ranged from severely dry (40 – 60 %) to normal, with a pocket of extremely dry conditions centered over Flin Flon.
 - Over the past 12 months, conditions ranged from severely dry to moderately dry across the province, with a region of normal conditions extending northward from Thompson.
- As of October 31, 2023, rivers and lakes across Manitoba were experiencing a variety of conditions ranging from normal (25th – 75th percentile) to much below normal (< 10th percentile) water levels and flows. Of the 42 monitoring stations included in this report (Figure 4), ~40 % were either below normal (10th – 25th percentile) or much below normal (<10th percentile).
- As of October 30, 2023, most monitored aquifer levels remained in the normal range (25th – 75th percentile), except for three sand and gravel aquifers in southeastern Manitoba that reported below normal (10th – 25th percentile) to much below normal (<10th percentile) levels.
- The October 31, 2023 Canadian Drought Monitor assessment showed an improvement in drought conditions in southern Manitoba over the past month with the removal of extreme drought (D3) conditions. Moderate drought (D1) and severe drought (D2) conditions continued across the south and into northwestern Manitoba.
- As of October 31, 2023, provincial water supply reservoirs were generally close to or above full supply, except for Stephenfield Reservoir (69 % of full supply).
- Major reservoir levels and mainstem river flows on the Manitoba Hydro system were below average as of November 1, 2023, negatively impacting their ability to generate surplus energy, resulting in a decrease in export sales and a need to import energy.
- Going into freeze-up, most dugouts were classified as 50 % to 60 % of capacity, depending on their location. Adequate snowfall is needed this winter to replenish on farm water supplies.
- Overall, winter feed supplies for livestock are considered adequate and many producers will not need to purchase additional supplies. Producers who are short on inventory should have no issues sourcing feed to purchase.
- As November 6, 2023, a total of 198,633 hectares were burned during the 2023 wildfire season, which is classified as below average. At the time this report was published, no provincial burning or travel restrictions were in place due to wildfire activity. However, nine communities or municipalities continued to have burning restrictions in place.

Drought Indicators

Precipitation Indicator

Precipitation is assessed to determine the severity of meteorological dryness and is an indirect measurement of agricultural dryness.

Three precipitation indicators are calculated to represent short term (one month; Figure 1), medium term (three months; Figure 2) and long term (12 months; Figure 3) conditions. The indicators compare current monthly precipitation totals to historical data to calculate the per cent of median precipitation that occurred over the past one, three or twelve months. Historical medians are computed from 45 years of data (1971 – 2015).

Due to large distances between meteorological stations in northern Manitoba, the interpolated contours in this region are based on limited observations and should be interpreted with caution.

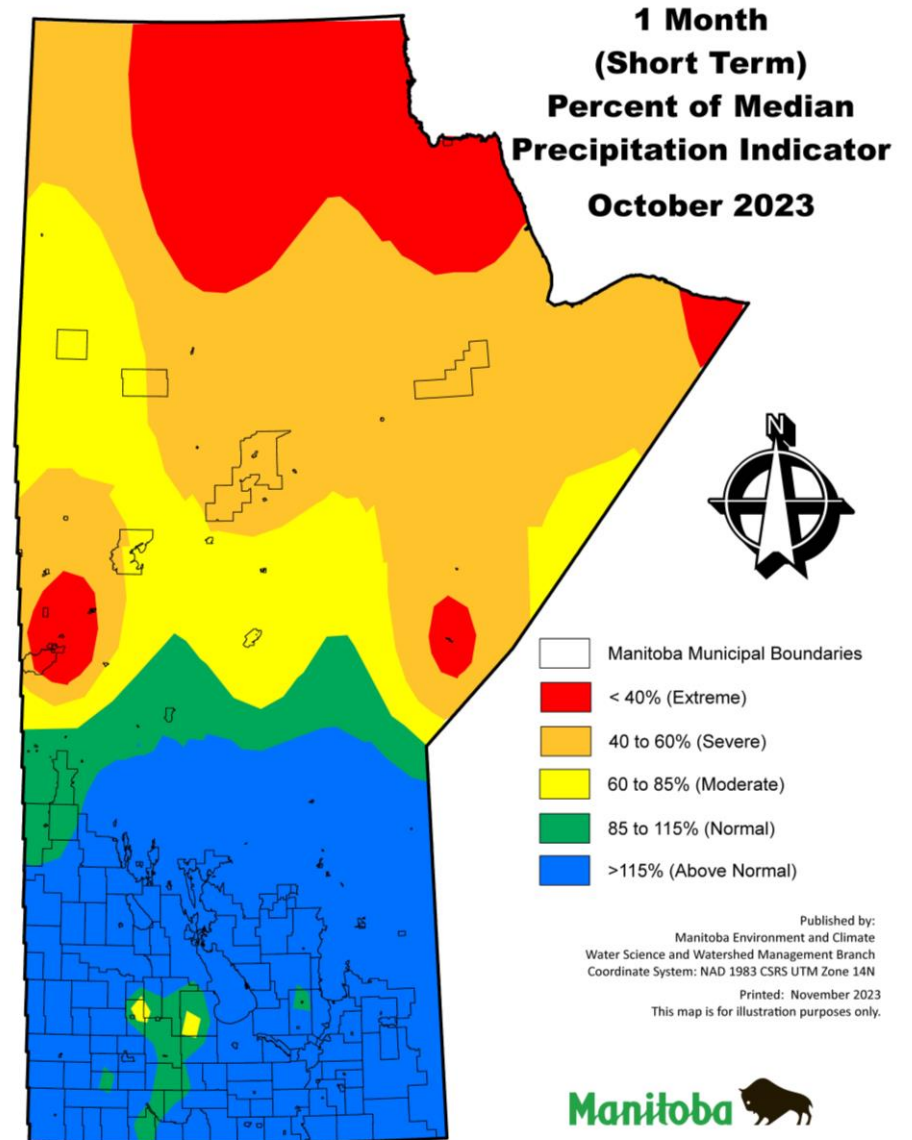


Figure 1: One month (short term) per cent of median precipitation indicator.

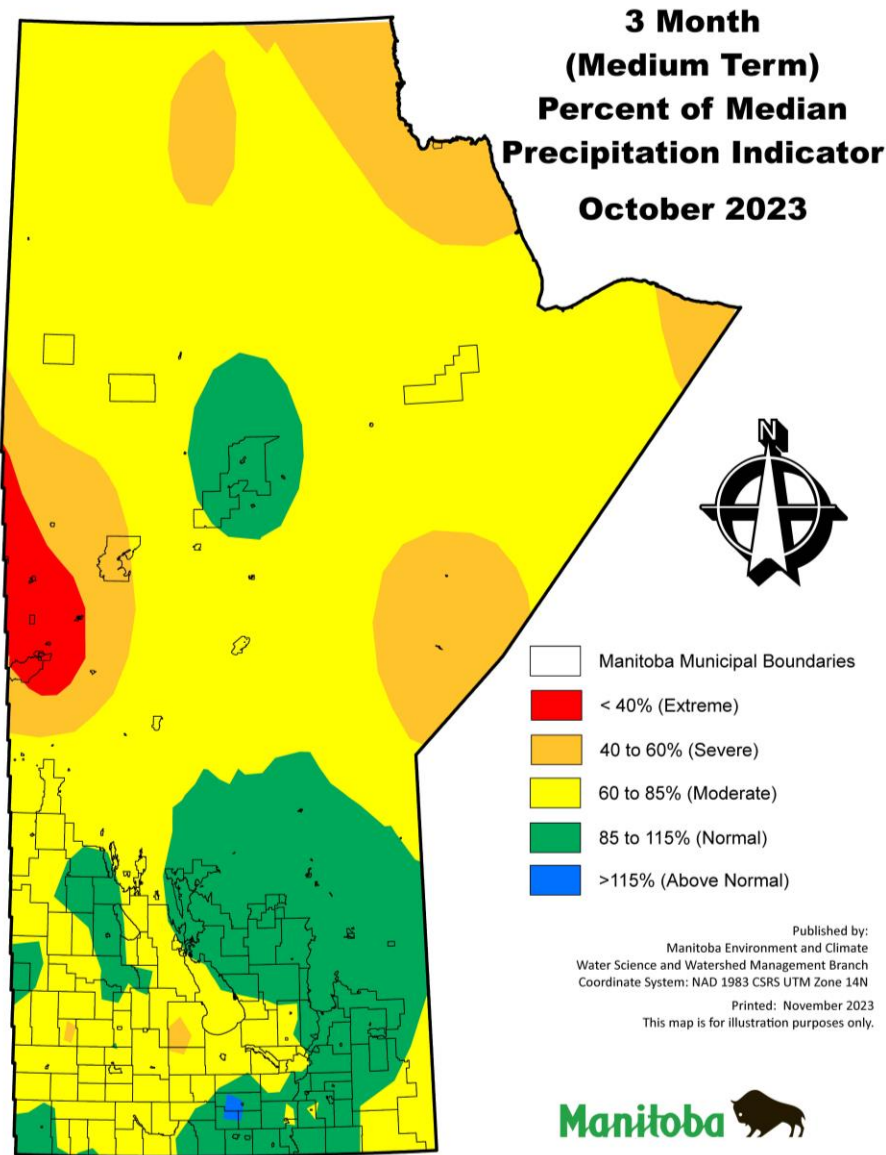


Figure 2: Three month (medium term) per cent of median precipitation indicator.

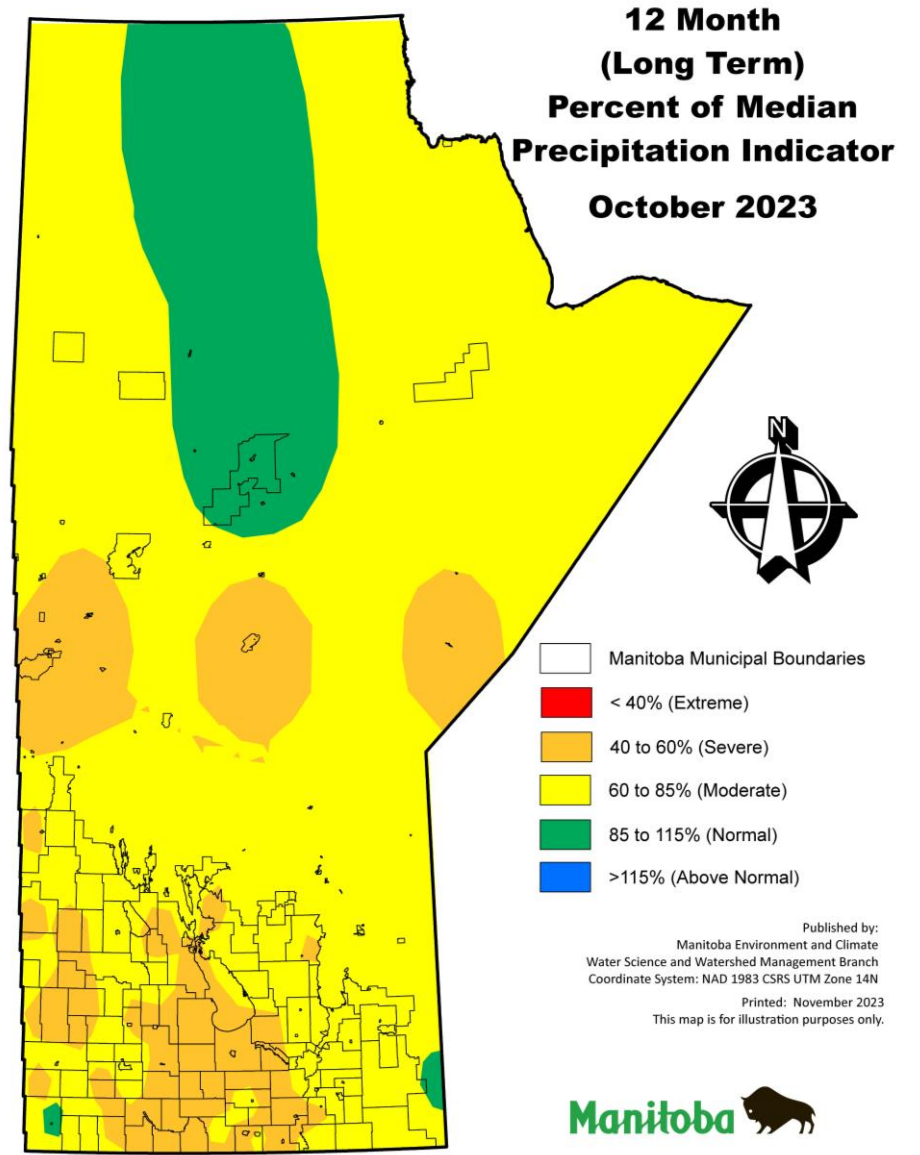


Figure 3: Twelve month (long term) per cent of median precipitation indicator.

Streamflow & Lake Level Indicator

The streamflow and lake level indicator is based on average daily flows and levels compared to historical values for that particular day.

This indicator is used to determine the severity of hydrological dryness in a watershed and is summarized on Figure 4, representing hydrological conditions for October 31, 2023.

Streamflow and lake level percentile plots for all of the rivers and lakes included on Figure 4 are available on the [Manitoba Drought Monitor website](#) under the *Drought Indicator Map* tab.

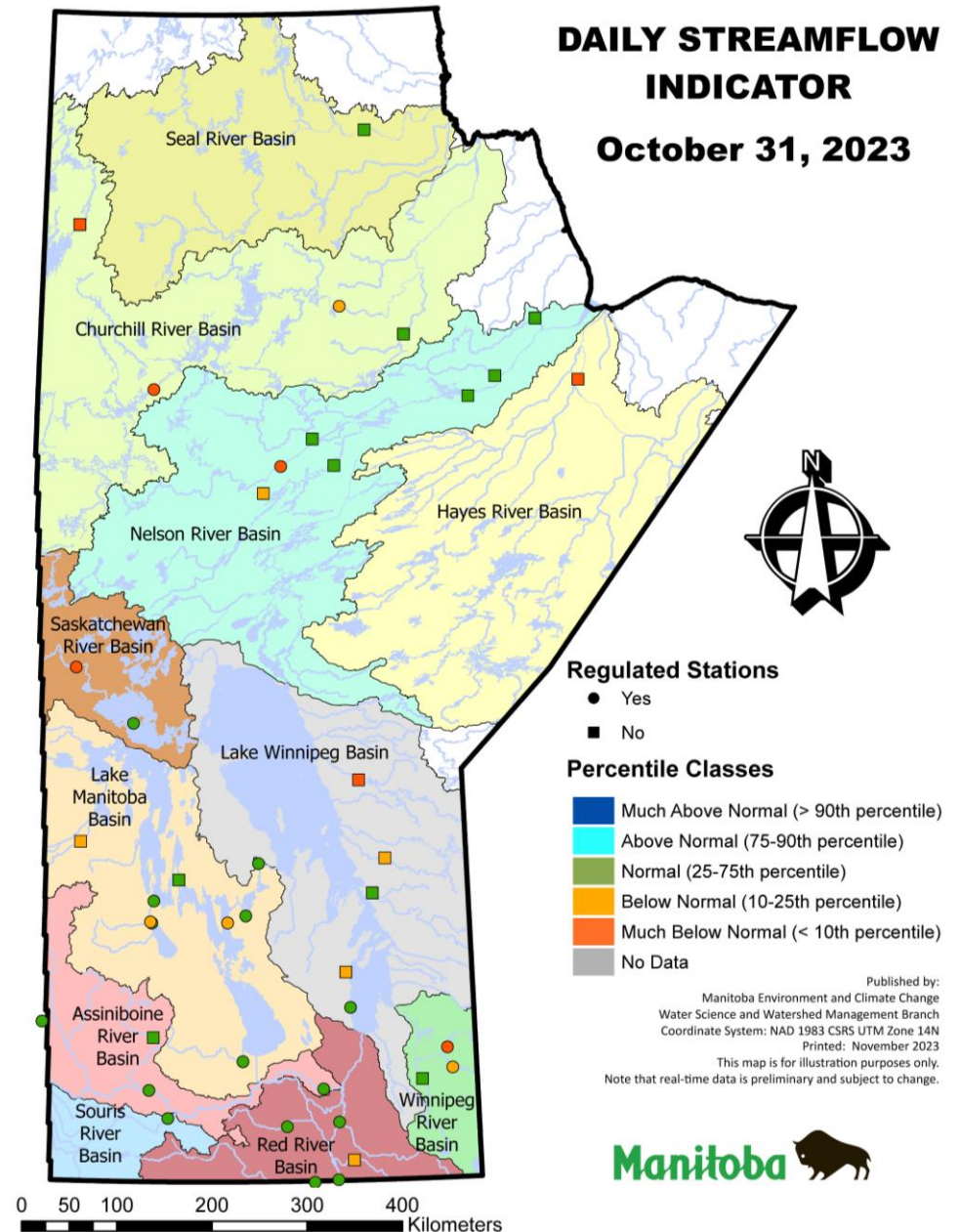


Figure 4: Daily streamflow and lake level indicator for October 31, 2023.

Groundwater Indicator

Water level responses to precipitation fluctuations in most aquifers lag considerably behind surface water responses, so even prolonged periods of below normal precipitation may not have a significant negative effect on groundwater levels. Even at low levels, most aquifers store large amounts of water and can continue to provide water during extended periods of dry weather. However, local conditions may vary from monitoring data and in shallow aquifers with limited extent, some may experience water levels declining below the pump and may be reported as dry or intermittently dry during pumping cycles. The major concern regarding groundwater and dry periods relates to water levels in shallow wells. As the water table drops, there is less available drawdown in shallow wells and some wells may 'go dry'.

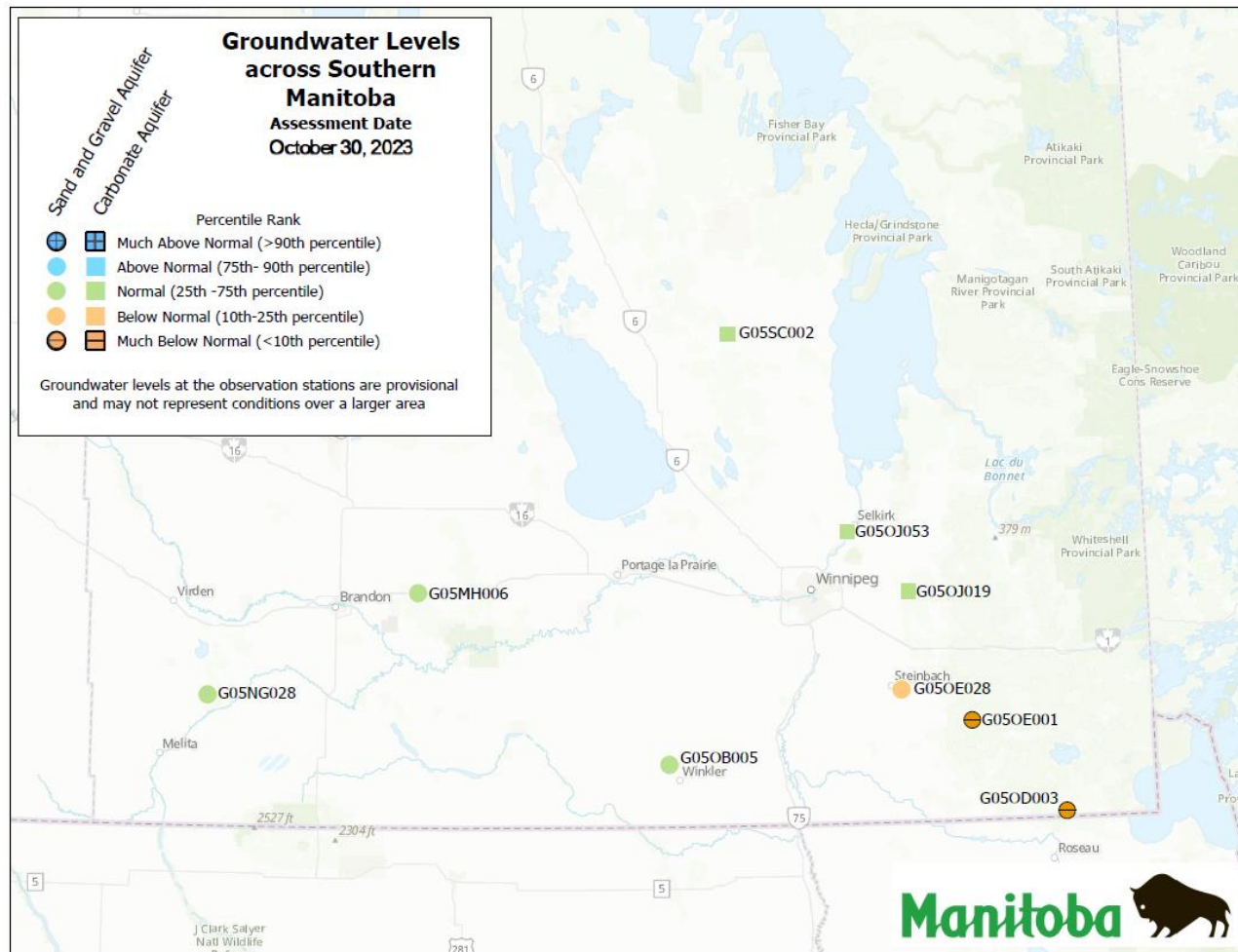


Figure 5: Groundwater indicator on October 30, 2023 for select groundwater monitoring sites.

Canada and United States Drought Monitors

The Canadian Drought Monitor and the United States Drought Monitor map the extent and intensity of drought conditions across Canada and the continental U.S.A.

Drought Monitor assessments are based on a suite of drought indicators, impacts data and local reports as interpreted by federal, provincial/state and academic scientists.

The Canadian and United States Drought Monitor maps use the following classification system:

- D0 (Abnormally Dry) – represents an event that occurs every 3 to 5 years;
- D1 (Moderate Drought) – 5 to 10 year event;
- D2 (Severe Drought) – 10 to 20 year event;
- D3 (Extreme Drought) – 20 to 50 year event; and
- D4 (Exceptional Drought) – 50+ year event.

Additionally, the map indicates the duration of drought as either short-term (S; less than 6 months) or long-term (L; more than 6 months) (Figure 6).

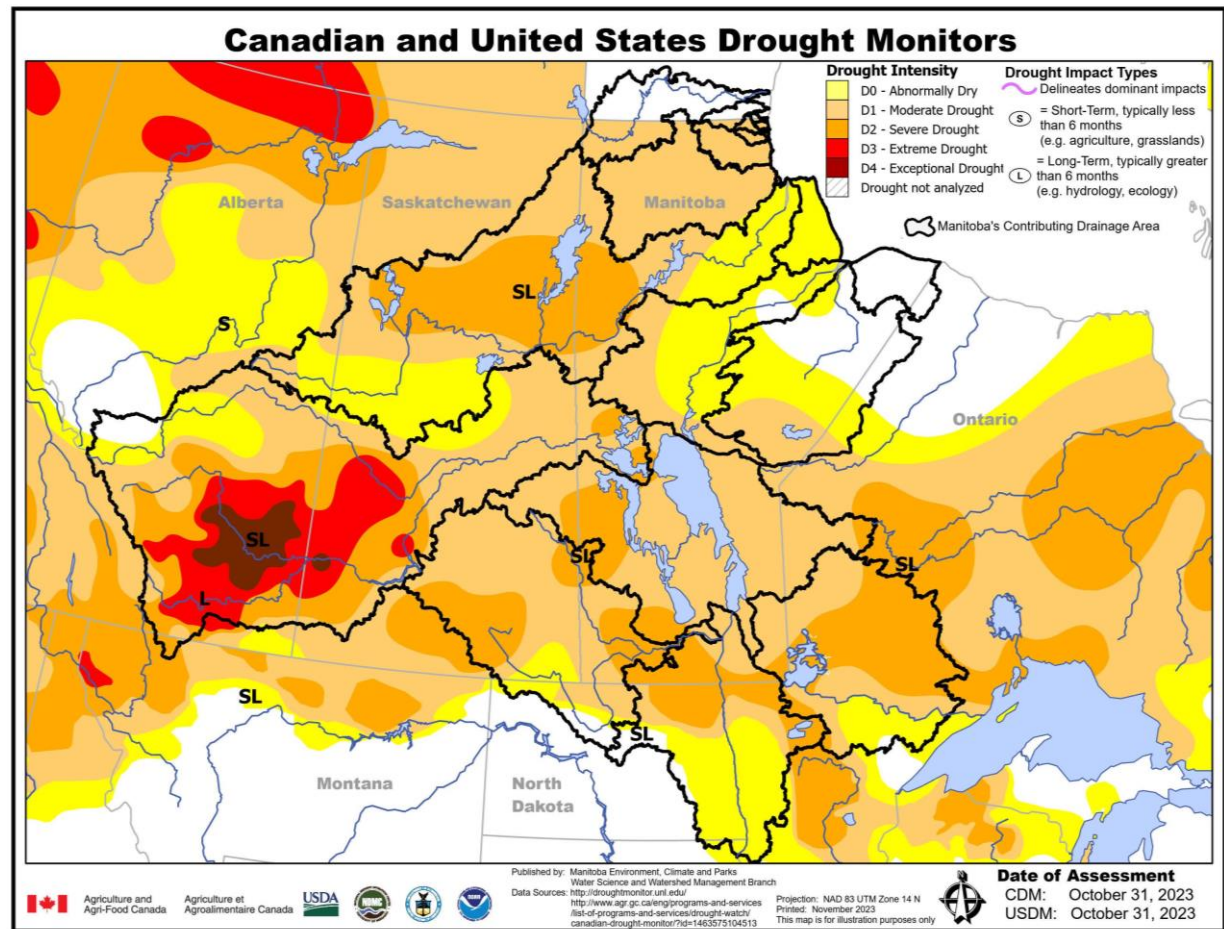


Figure 6: Canadian and United States Drought Monitors' classification of short-term (S) and long-term (L) drought conditions assessed as of October 31, 2023.

Water Availability

Reservoir Conditions

Table 1: Water Supply Reservoir Levels and Storages – October 31, 2023 (Southern and Western Manitoba).

Water Supply Reservoir Levels and Storages - October 31, 2023								
Lake or Reservoir	Community Supplied	Target Level (feet)	Latest Observed Level (feet)	Observed date	Supply Status (Recent - Target) (feet)	Storage at Target Level (acre-feet)	Storage at Observed Level (acre-feet)	Supply Status (observed storage/target storage) (%)
Lake of the Prairies (Shellmouth)* ¹	Brandon, Portage, Cartier Regional Water Co-op	1,402.5	1401.37	October 31, 2023	-1.13	300,000	286,114	95%
Lake Wahtopanah (Rivers)*	Rivers	1,536.0	1534.53	October 31, 2023	-1.47	24,500	22,886	93%
Minnewasta (Morden)*	Morden	1,082.0	1078.65	October 31, 2023	-3.35	3,150	2,625	83%
Stephenfield*	Carman, Pembina Valley Water Co-op	972.0	969.01	October 31, 2023	-2.99	3,810	2,642	69%
Vermilion*	Dauphin	1,274.0	1273.99	October 31, 2023	-0.01	2,600	2,598	100%
Goudney (Pilot Mound)*		1,482.0	1482.04	October 31, 2023	+0.04	450	452	100%
Jackson Lake*		1,174.0	1171.31	October 31, 2023	-2.69	2,990	2,326	78%
Manitou (Mary Jane)*		1,537.0	1535.92	October 31, 2023	-1.08	1,150	1,054	92%
Turtlehead (Deloraine)*	Deloraine	1,772.0	1770.34	October 31, 2023	-1.66	1,400	1,310	94%
Lake Irwin*		1,178.0	1176.89	October 31, 2023	-1.11	3,800	3,155	83%
Minnedosa* ¹		1,681.5	1680.20	October 31, 2023	-1.30	1,558	1,247	80%
Boissevain*	Boissevain	1,697.0	1697.08	October 31, 2023	+0.08	505	514	102%
Elgin*		1,532.0	1530.66	October 31, 2023	-1.34	520	428	82%
St. Malo*		840.0	840.17	October 31, 2023	+0.17	1,770	1,798	102%
Kenton Reservoir		1,448.0	1446.65	October 31, 2023	-1.35	600	516	86%
Killarney Lake		1,615.0	1614.71	September 26, 2023	-0.29	7,360	7,225	98%

¹ Summer target level and storage
 * Real-time water level gauge

On Farm Water Supplies

Manitoba Agriculture's Seasonal Summary Crop Report (October 25, 2023) reported that water supplies for livestock remained adequate throughout 2023. Dugout levels were variable during the summer months due to highly variable precipitation conditions.

Heading into freeze-up, most dugouts were classified at approximately 50 % to 60 % capacity, depending on their location in agri-Manitoba. Adequate snowfall is needed this winter to replenish on-farm water supplies.

Soil Moisture

A regional representation of soil moisture conditions for the top 120 cm relative to the field capacity is shown on Figure 7 for October 29, 2023.

The colours on the map represent measured soil moisture values from automated instruments at sites across Manitoba. Qualitative range (very dry to very wet) is based on the amount of current soil moisture relative to field capacity. Field Capacity is defined as the maximum amount of moisture the soil can hold when drainage due to gravity stops.

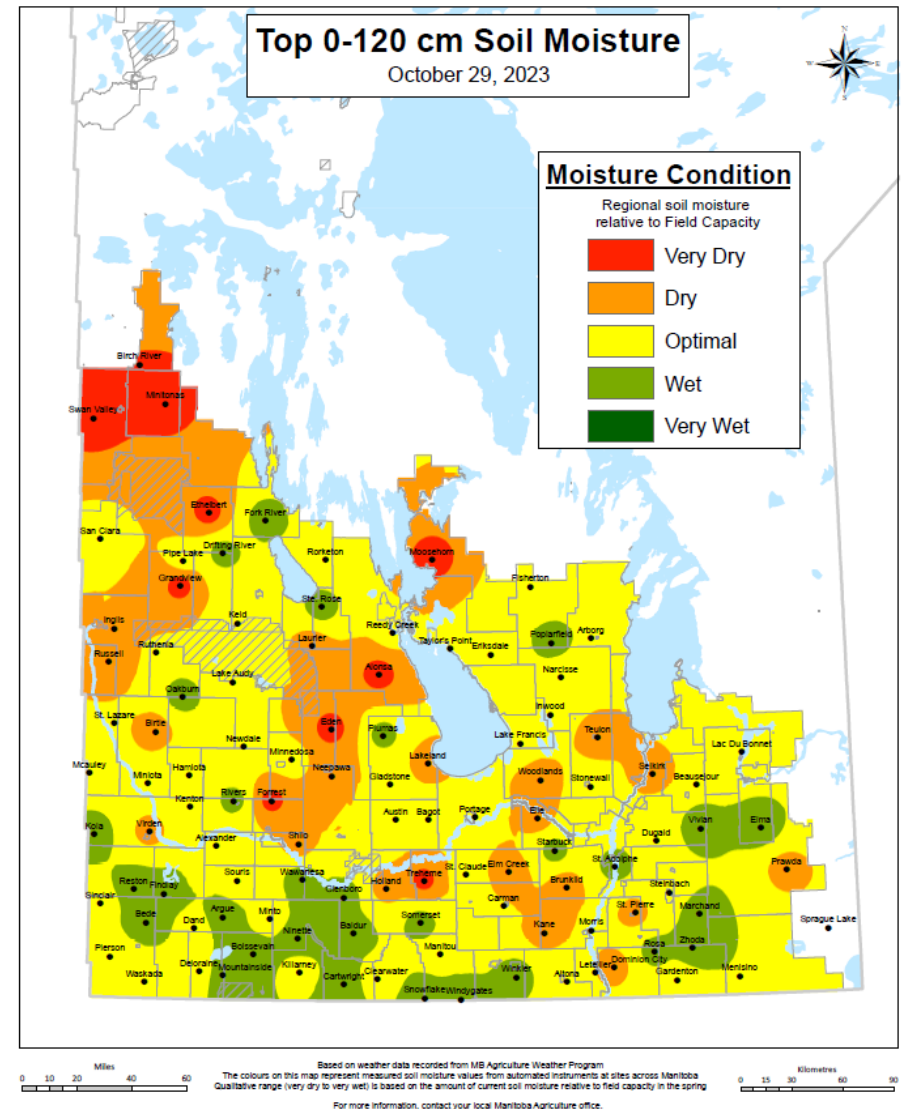


Figure 7: Manitoba Agriculture's October 29, 2023 mapping of soil moisture conditions in the top 0 – 120 cm.

Wildland Fires

As of November 5, 2023, 300 fires burned a total of 198,633 hectares, primarily in the northern region. The number of wildfires for this time of year is lower than the historical average. Wildfire danger was classified as nil across Manitoba due to the transition to winter conditions.

As of November 5, 2023, there were no provincial fire or travel restrictions in place. Nine communities or municipalities had burning restrictions.

Impacts due to Dry Conditions

Crops

Harvest progress was at 96 % complete as of October 24, 2023. Overall, crop conditions were generally classified as fair to mostly good. Crop yields and quality are variable and dependent on growing season precipitation, which was highly variable. For specific information on yields, please refer to [Manitoba Agriculture's Crop Reports](#).

Forages

The 2023 haying/pasture season presented producers with a variety of challenges, including highly variable soil moisture conditions.

Overall, winter feed supplies are considered adequate. On average, 40 % of producers have some surplus hay production, 50 % consider their hay supply adequate for the winter, and 10 % are short hay supply. Levels of straw, greenfeed and feed grain supplies are seen as adequate. Average silage corn yields are higher than expected and forage supplies for most are better than last year.

Many producers reported adequate feed supplies for winter and do not need to purchase additional supplies. Producers who are short on inventory should have no issues sourcing feed to purchase.

Producers are beginning the process of sending feed samples for analysis. Preliminary information indicates that protein levels (particularly in corn silage samples) may be lower than last year.

Hydropower Generation

Major reservoir levels and mainstem river flows on the Manitoba Hydro system are below average for this time of year.

Manitoba Hydro started reducing reservoir outflows last spring to conserve storage and to ensure they can reliably supply their customers should drought conditions continue into 2024/25.

Below average water supply conditions negatively impact Manitoba Hydro's ability to generate surplus energy, resulting in a decrease in export sales and a need to import energy.

Past reports, drought mapping and other information and resources are available on the [Manitoba Drought Monitor](#) website.

For further information, please contact:

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Acknowledgements

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Manitoba Transportation and Infrastructure:

Reservoir level information:

gov.mb.ca/mti/floodinfo/index.html

Manitoba Wildfire Service:

gov.mb.ca/nrnd/wildfire_program/

Manitoba Agriculture:

Crop Reports:

gov.mb.ca/agriculture/crops/seasonal-reports/crop-report-archive/index.html

Topsoil moisture conditions and other weather reports:

gov.mb.ca/agriculture/weather/weather-conditions-and-reports.html

Environment and Climate Change Canada:

Flow and lake level information:

wateroffice.ec.gc.ca/index_e.html

Agriculture and Agri-Food Canada:

Canadian Drought Monitor:

agriculture.canada.ca/en/agricultural-production/weather/canadian-drought-monitor

United States Drought Monitor:

droughtmonitor.unl.edu/