

Water Availability and Drought Conditions Report

OCTOBER 2020

Executive Summary

- This Water Availability and Drought Conditions Report provides an update on conditions throughout Manitoba for October 2020.
- Precipitation conditions over the past month, three month, and twelve month periods are as follows:
 - During October, moderately (60 – 85 % of median) to severely (40 – 60 %) dry conditions were observed across much of eastern, central and southwest agri-Manitoba, giving way to extremely (< 40 %) dry conditions in the Interlake and northwest regions. In northern Manitoba, conditions were generally moderately dry with some regions of normal (85 – 115 %) or above normal (> 115 %) precipitation.
 - Over the past three months (August, September, October), moderately dry conditions were observed in the eastern region giving way to severely dry conditions with pockets of extreme dryness in parts of the Interlake, central, southwest, and northwest regions of agri-Manitoba. Conditions in northern Manitoba were normal to above normal, with moderately dry conditions surrounding Churchill.
 - Over the past 12 months, most of agri-Manitoba observed moderately dry conditions with pockets of severe dryness in the Interlake and southwest regions. Conditions in northern Manitoba were generally normal to above normal, with moderately dry conditions surrounding Churchill.
- As of November 2, 2020, streamflows and lake levels across Manitoba were generally normal (25th – 75th percentile) to much above normal (> 90th percentile). Below normal (10th – 25th percentile) conditions were observed on the Mossy River, Swan River and Whitemouth River, and much below normal (< 10th percentile) conditions were observed on the Icelandic River, Winnipeg River and on Lake Manitoba.
- Dry fall conditions have resulted in lower groundwater levels across some areas of the province. Levels are below the median values in all wells in the eastern and Interlake regions with the exception of the Sandilands (OE001) and Selkirk (OJ053) wells. All other sites are in the normal (25th to 75th percentile) to above normal (75th to 90th percentile) ranges. The Oak Lake station is currently off-line.
- The October 31, 2020 Canadian Drought Monitor assessment showed increased dryness across southern Manitoba since the end of September. Abnormally dry (D0) conditions observed in the east and north gave way to severe drought (D2) conditions across much of agri-Manitoba.
- There are currently no concerns over reservoir water supplies. Dugout water levels are classified as adequate to low with some dry dugouts and shortages reported in the southwest, northwest, and Interlake regions. Adequate snowfall is needed to refill on-farm supplies in the spring.
- As of October 25, 2020, the majority of agri-Manitoba was experiencing optimal moisture conditions at 0 - 120 cm depth. However, at about 25 % of monitoring station locations soil moisture was classified as dry or very dry, with the largest regions of dryness occurring in the Interlake and west of Lake Manitoba.
- Forage yields have generally been 33 to 66 % of normal, causing cattle producers to look at alternative feed sources, such as baling non-conventional crop residue and increased greenfeed silage.

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.

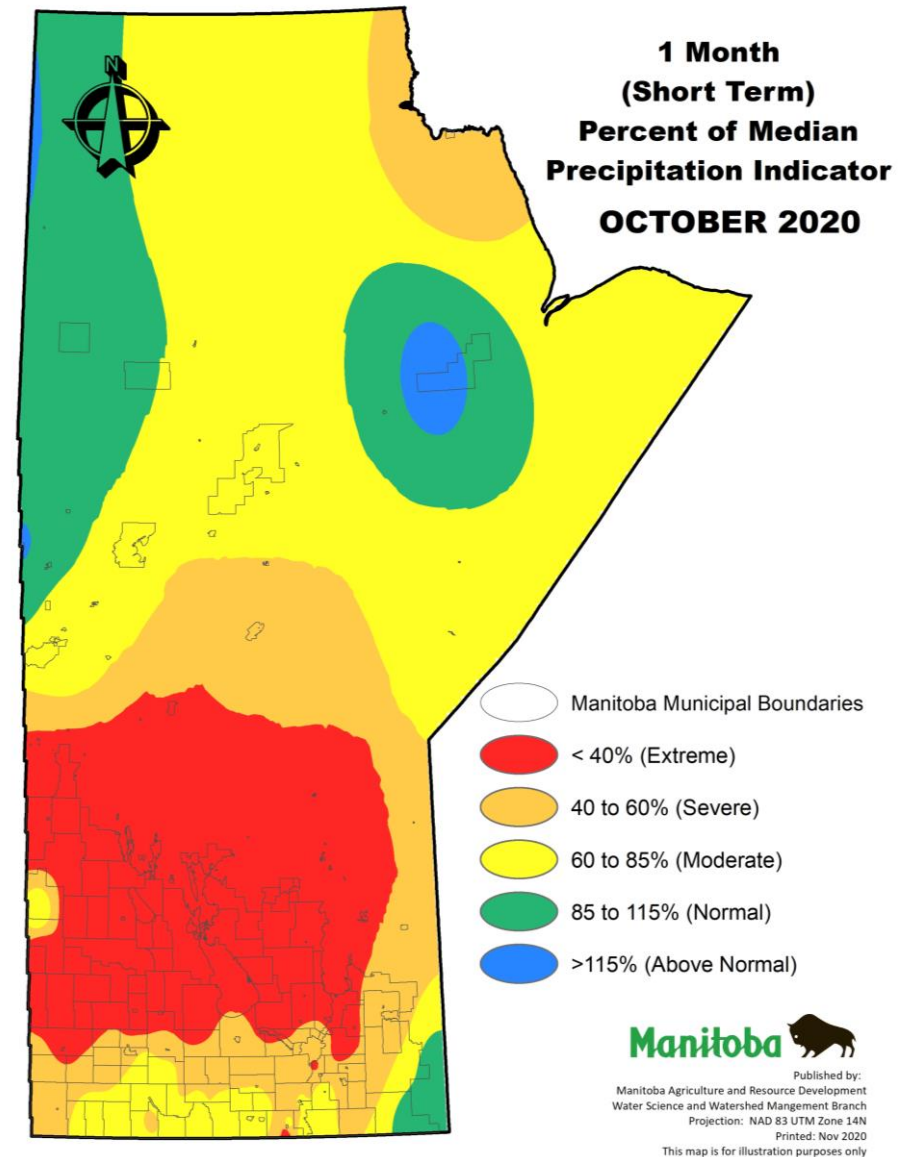


Figure 1: One month (short term) per cent of median precipitation indicator.

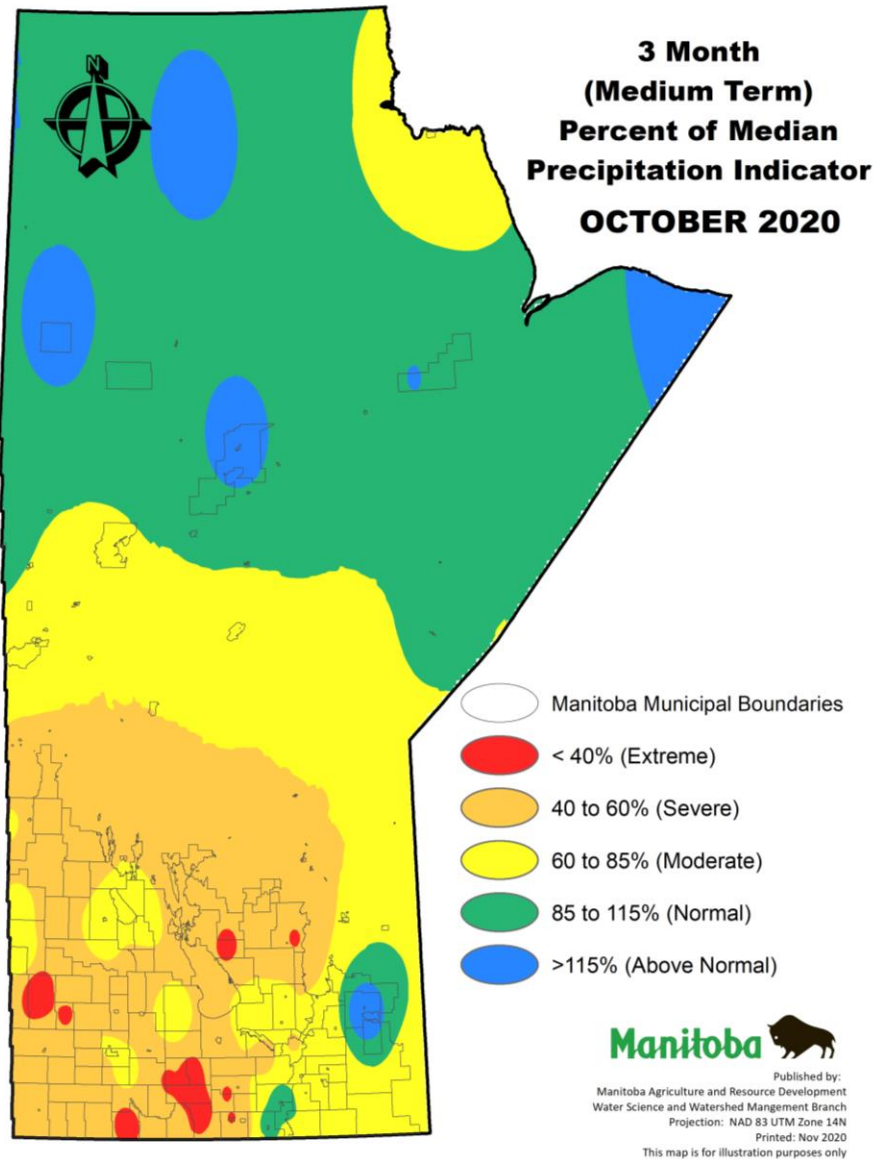


Figure 2: Three month (medium term) per cent of median precipitation indicator.

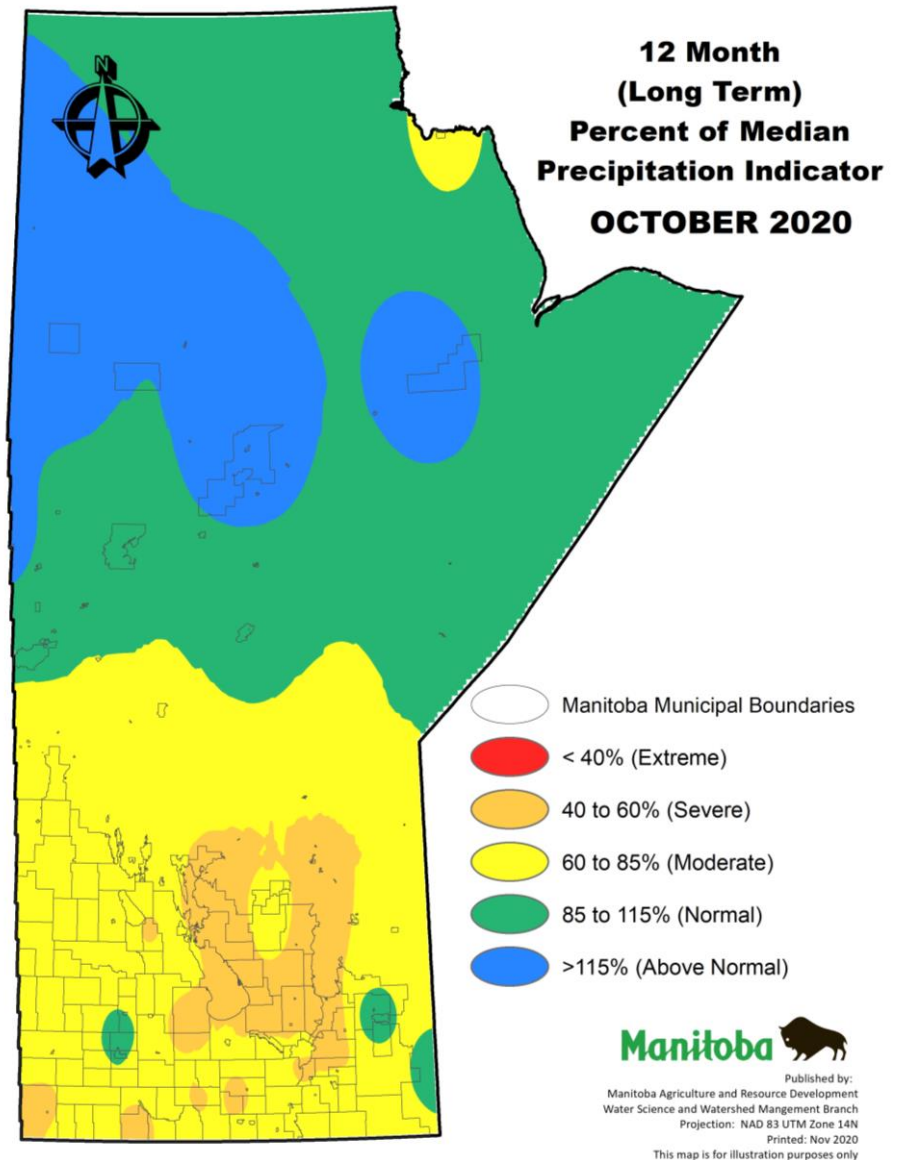


Figure 3: Twelve month (long term) per cent of median precipitation indicator.

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 November 2, 2020.

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.

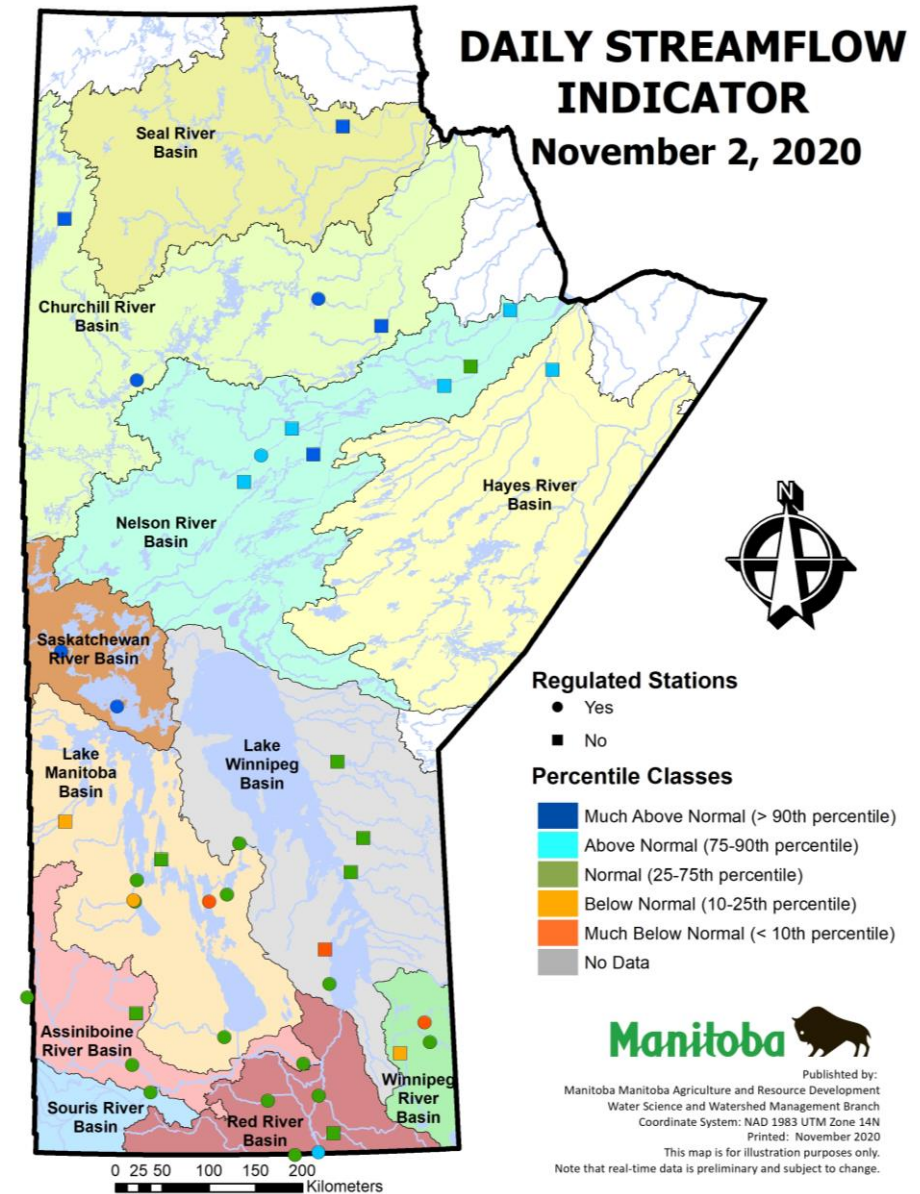


Figure 4: Daily streamflow and lake level indicator for November 2, 2020.

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. Most aquifers also store very large quantities of groundwater and can continue to provide water during extended periods of dry weather. Consequently, 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', even in short-term drought conditions.

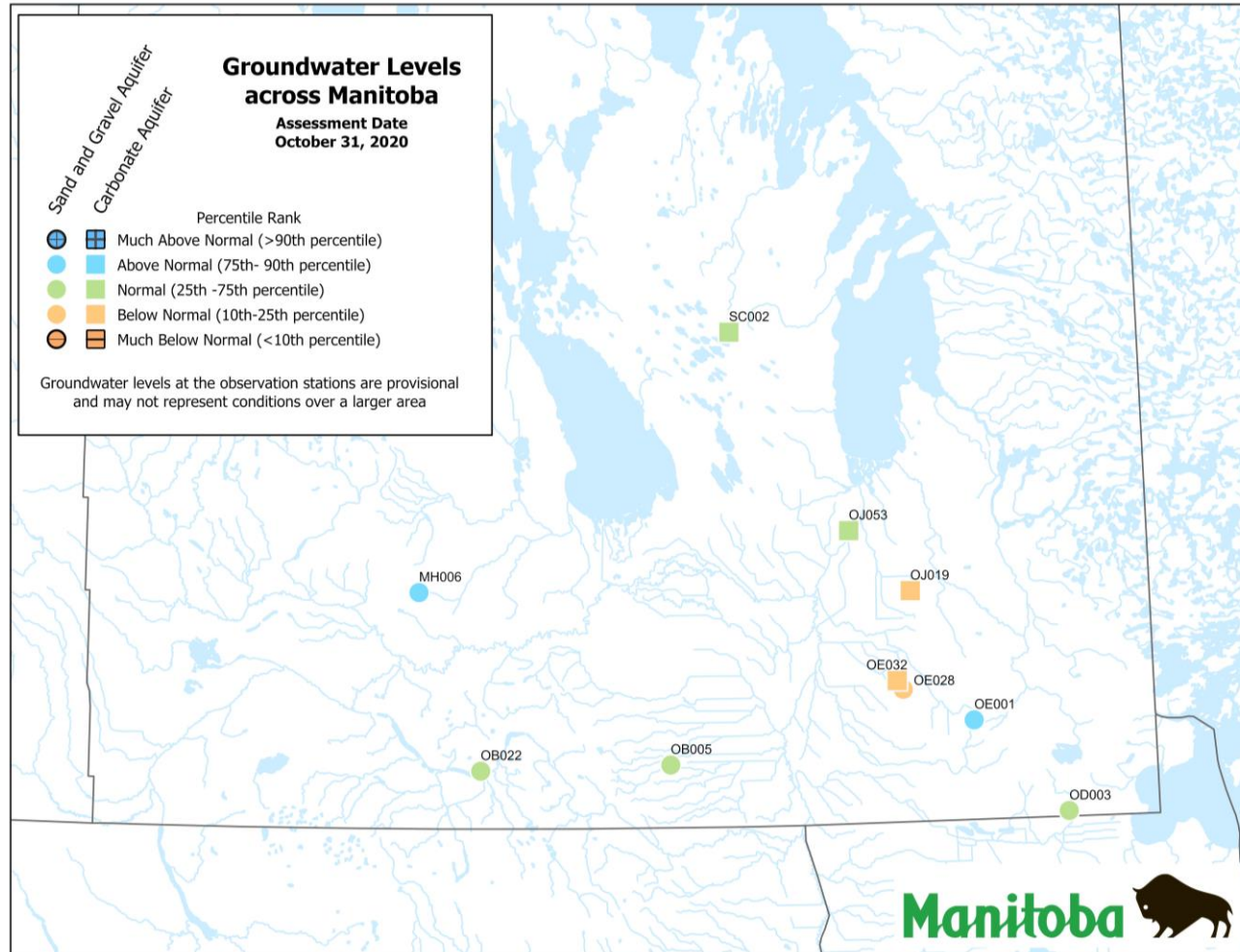


Figure 5: Groundwater indicator on October 31, 2020 for select groundwater monitoring sites.

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).

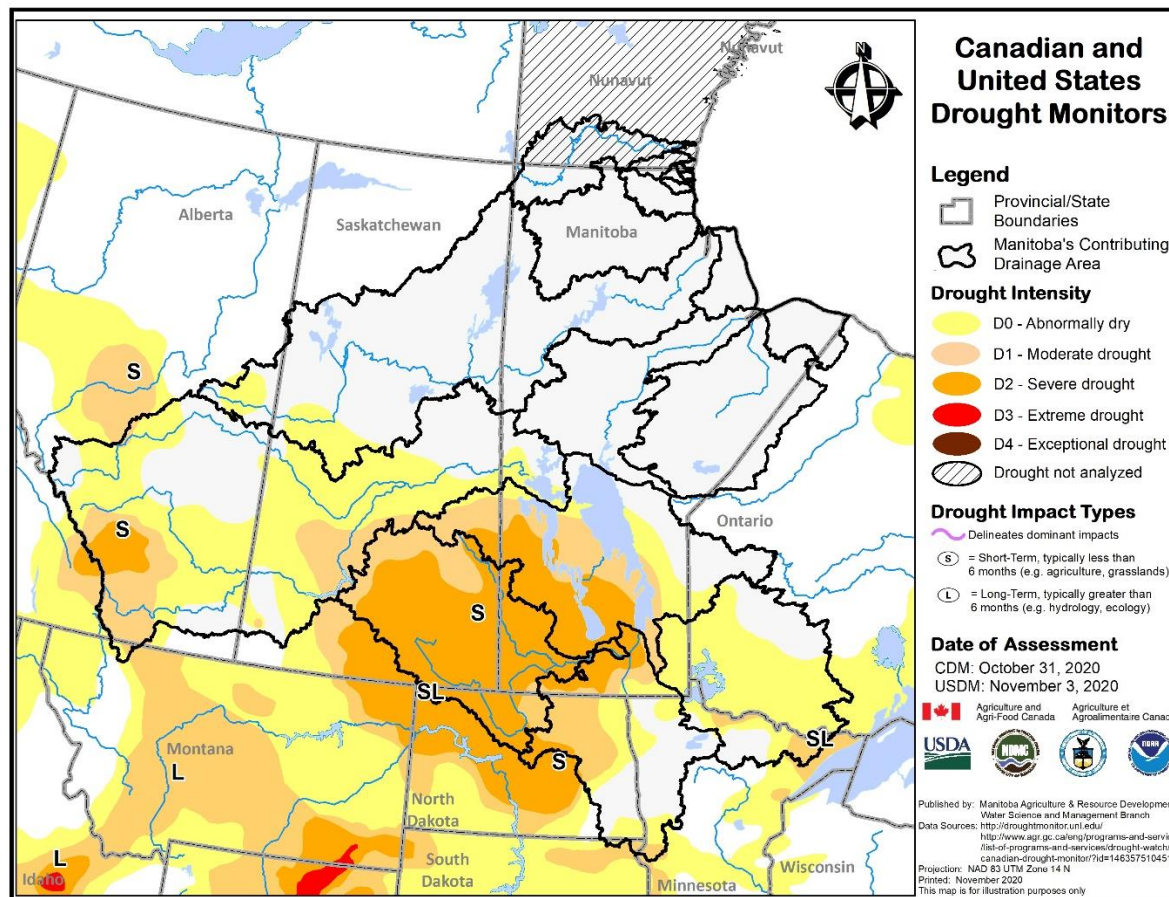


Figure 6: Canadian and United States Drought Monitors' classification of short-term (S) and long-term (L) drought conditions assessed as of October 31, 2020.

Water Availability

Reservoir Conditions

Table 1: Water Supply Reservoir Levels and Storages – November 2, 2020 (Southern and Western Manitoba).

Lake or Reservoir	Community or Co-ops 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 ¹	1401.14	October 27, 2020	-1.36	300,000	283,312	94%
Lake Wahtoppanah (Rivers)*	Rivers	1,536	1532.80	November 2, 2020	-3.20	24,500	20,917	85%
Minnewasta (Morden)*	Morden	1,082	1078.59	November 2, 2020	-3.41	3,150	2,617	83%
Stephenfield*	Carman, Pembina Valley Water Co-op	972	969.49	November 2, 2020	-2.51	3,810	2,757	72%
Vermilion*	Dauphin	1,274	1271.69	November 2, 2020	-2.31	2,600	1,993	77%
Goudney (Pilot Mound)*		1,482	1481.97	November 2, 2020	-0.03	450	448	99%
Jackson Lake*		1,174	1171.79	November 2, 2020	-2.21	2,990	2,441	82%
Manitou (Mary Jane)*		1,537	1535.77	November 2, 2020	-1.23	1,150	1,041	91%
Turtlehead (Deloraine)*	Deloraine	1,772	1770.18	November 2, 2020	-1.82	1,400	1,301	93%
Lake Irwin*		1,178	1176.20	November 2, 2020	-1.80	3,800	2,882	76%
Minnedosa*		1,682	1681.82	November 2, 2020	-0.18	1,688	1,639	97%
Kenton Reservoir		1,448	1447.83	July 5, 2020	-0.17	600	588	98%
Killarney Lake		1,615	1614.04	October 26, 2020	-0.96	7,360	6,919	94%
Elgin		1,532	1531.04	August 18, 2020	-0.96	520	453	87%
St. Malo		840	840.00	October 13, 2020	0.00	1,770	1,770	100%
Boissevain	Boissevain	1,697	1696.04	October 26, 2020	-0.96	505	436	86%

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

On Farm Water Supply

Farm water supply updates from Manitoba Agriculture and Resource Development's 2020 Crop Report Summary (published October 20, 2020) are provided in Table 2.

Table 2: On Farm Water Supply (Dugout) Conditions.

Region	General Dugout Condition
Eastern	Livestock water supply was rated as adequate (October 13, 2020).
Interlake	Dugouts are low to almost dry, as there has been minimal rainfall for some time.
Southwest	Overall dry conditions persisted, which is causing shortages of water for livestock. Pasture water access is a concern in some areas. (October 13, 2020)
Central	Most water sources on pasture will last until the cattle are removed (October 13, 2020). Dugout water sources on pasture are now starting to freeze up.
Northwest	Little to no rainfall in late summer and fall has created dry conditions and producers are concerned for next season's forage growth and water supplies. Dugouts are low, particularly in the Ethelbert, Rorketon and Eddystone areas where some have dried up. In the Swan River area, there is fear that the surface wells and dugouts will not be able to sustain herds over the winter.

Soil Moisture

Manitoba Agriculture and Resource Development's mapping shows the soil moisture conditions for the top 120 cm on October 25, 2020.

Soil moisture levels are rated as follows: < 20 % Very Dry, 20 – 40 % Dry; 40 – 70 % Optimal; 70 – 90 % Wet and >90 % Very Wet in relation to the soil saturation level (maximum recorded at that station).

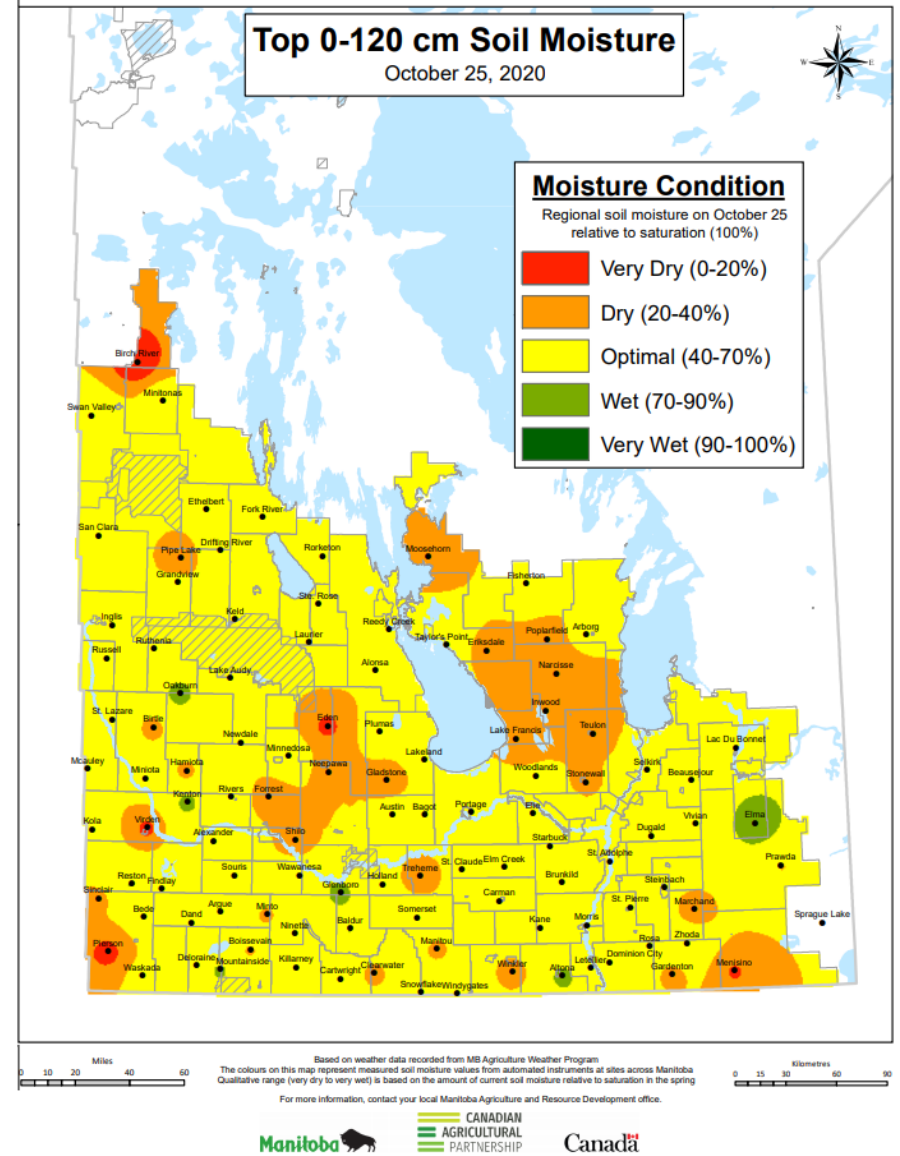


Figure 7: Manitoba Agriculture and Resource Development's October 25, 2020 mapping of soil moisture conditions in the top 0 – 120 cm.

Impacts due to Dry Conditions

The 2020 Crop Report Summary reported crop yields have been average for most cereals and canola, and disappointing to farmers in some areas, though average to slightly better than average in others. Yields for later season crops like soybeans, corn, and sunflowers have been a pleasant surprise, given a dry August and September. Sunflower yields in particular are expected to be near-record average highs.

Livestock feed supply has been a challenge this year, because of three consecutively dry summers, depending on locale. Forage yields have generally been 33 to 66 % of normal, causing cattle producers to look at alternative feed sources, such as baling non-conventional crop residue and increased greenfeed silage.

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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Manitoba Infrastructure - Reservoir level information:

<https://www.gov.mb.ca/mit/floodinfo/index.html>

Manitoba Conservation and Climate's Fire Program:

<https://www.gov.mb.ca/sd/fire/>

Manitoba Agriculture and Resource Development:

Crop Reports:

<http://www.gov.mb.ca/agriculture/crops/seasonal-reports/crop-report-archive/index.html>

Topsoil moisture conditions:

<https://www.gov.mb.ca/agriculture/weather/weather-conditions-and-reports.html>

Environment and Climate Change Canada:

Flow and lake level information:

http://www.wateroffice.ec.gc.ca/index_e.html

Agriculture and Agri-Food Canada:

Canadian Drought Monitor:

<https://www.agr.gc.ca/eng/agriculture-and-climate/drought-watch>

United States Drought Monitor:

<https://droughtmonitor.unl.edu/>