

Water Availability and Drought Conditions Report

OCTOBER 2021

Executive Summary

- This Water Availability and Drought Conditions Report provides an update on conditions throughout Manitoba for October 2021. This will be the last report of the 2021 calendar year. The next drought report will be issued in spring of 2022.
- Although conditions have improved in some areas, drought conditions continue to persist and above normal rainfall prior to freeze-up and throughout the winter is needed to fully alleviate the extensive dryness.
- For more information on conditions, indicators, and resources for those impacted by drought conditions, please visit the Manitoba Drought Monitor at www.manitoba.ca/drought.
- Precipitation conditions over the past month, three month, and twelve month periods are as follows:
 - During October, most of agri-Manitoba experienced normal (85 – 115 % of median) to above normal (<115 %) precipitation conditions. In northern Manitoba, conditions ranged from moderately (60 – 85 %) to severely (40 – 60 %) dry in the west to above normal in the east.
 - Over the past three months (August, September, October), most of agri-Manitoba experienced normal to above normal conditions. Northern Manitoba observed normal precipitation amounts except for a band of moderately dry conditions and severely to extremely (<40 %) dry conditions surrounding The Pas and Flin Flon.
 - Over the past 12 months, agri-Manitoba experienced moderately to severely dry conditions. Conditions in northern Manitoba ranged from moderately dry to normal.
- As of October 31, 2021, flows and levels across southern Manitoba ranged from much below normal (<10th percentile) to normal (25 – 75th percentile), with the below normal conditions predominately occurring in the Winnipeg River, Souris River and Lake Manitoba basins. Flows and levels in northern Manitoba generally ranged from normal to much above normal (>90th percentile).
- The October 31, 2021 Canadian Drought Monitor assessment showed an improvement in conditions in the southwest and central regions of agri-Manitoba. However, drought conditions continued to persist with large portions of agri-Manitoba still classified as D3 (extreme drought) or D4 (exceptional drought). Drought conditions extended northward, with a region of D1 (moderate drought) surrounding Thompson and D0 (abnormally dry) conditions extending to Brochet at the Saskatchewan border.
- Most provincial water supply reservoirs remain above 70 % of full supply level, except for Lake Minnewasta and Jackson Lake. Provincial water control structures continue to be operated to mitigate low water level conditions as required. Some municipalities continued implementing water conservation restrictions (either voluntary or mandatory) during October. However, in many cases restrictions were downgraded.
- Although topsoil moisture is near optimal, soils remain dry at depth (120 cm) across large regions of agri-Manitoba.
- Livestock producers who have been affected by dry conditions on pasture in Manitoba can apply for funding to support water source development under [Ag Action Manitoba](#) (BMP 503). While applications are no longer being accepted for 2021, the 2022 intake will open on November 8, 2021 and will cover eligible expenses from April 1, 2022.

- There is currently a severe shortage of forage throughout the province. [AgriRecovery programing](#) is available to assist eligible producers with livestock feed and transportation expenses. The [Manitoba Hay Listing Service](#) is active; producers with extra feed or looking for feed are encouraged to list their available supplies for sale. See the Manitoba ARD [Dry Conditions & Drought page](#) for resources on managing livestock, forage, and crops during drought; including available financial assistance.
- The [Manitoba Farm, Rural & Northern Support Services](#) hotline is available 24/7 for farmers and ranchers dealing with crises and stressful situations at 1-866-367-3276.
- As of November 4, 2021, wildfire danger was low across Manitoba. The Manitoba Wildfire Service reported 460 wildfires this year to date, burning a total area of 1,266,550 hectares. There are no active provincial fire or travel restrictions in place at this time.

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.

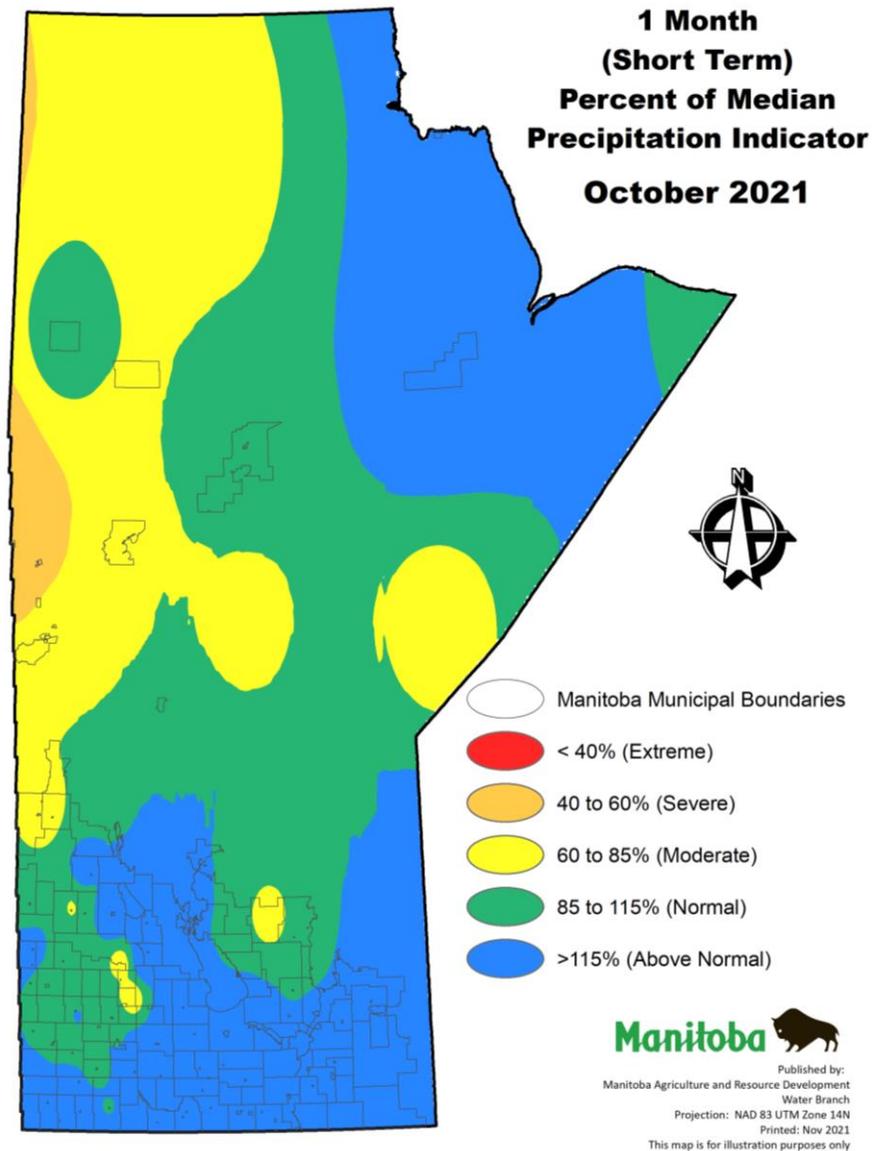


Figure 1: One month (short term) per cent of median precipitation indicator.

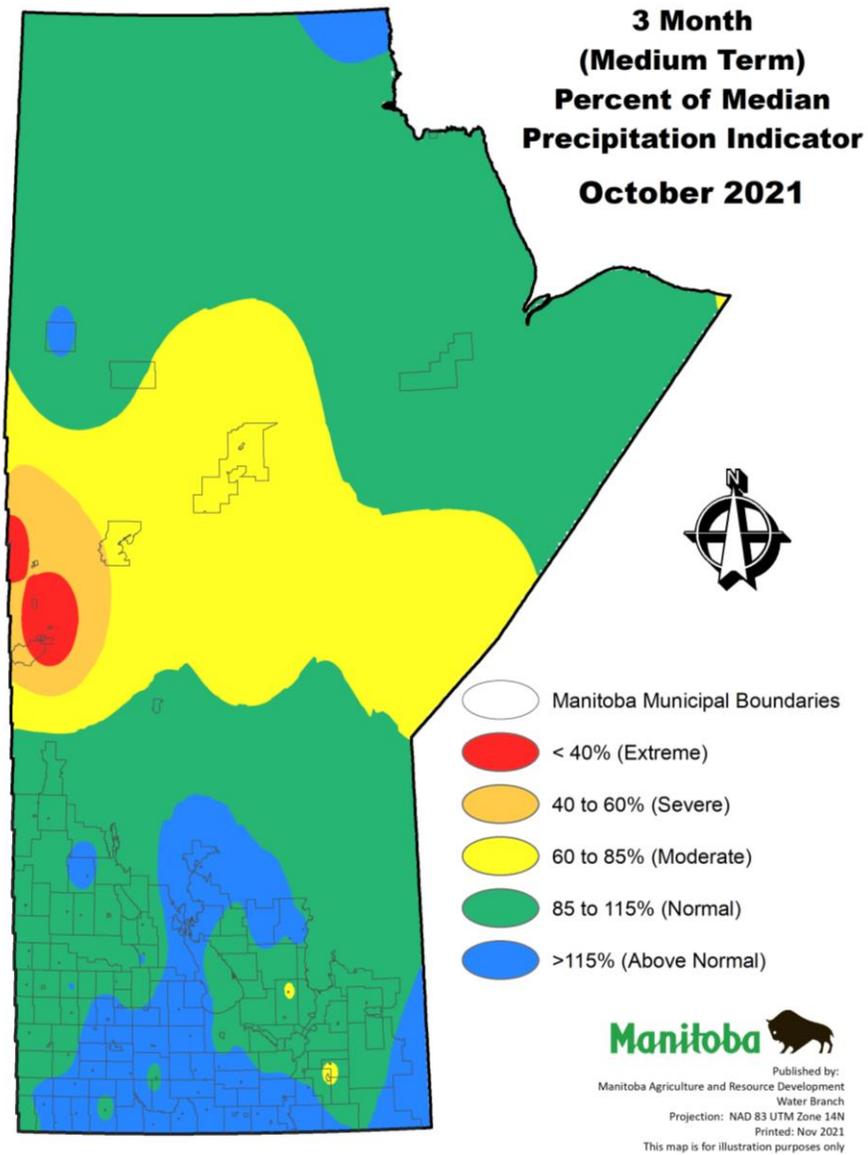


Figure 2: Three month (medium term) per cent of median precipitation indicator.

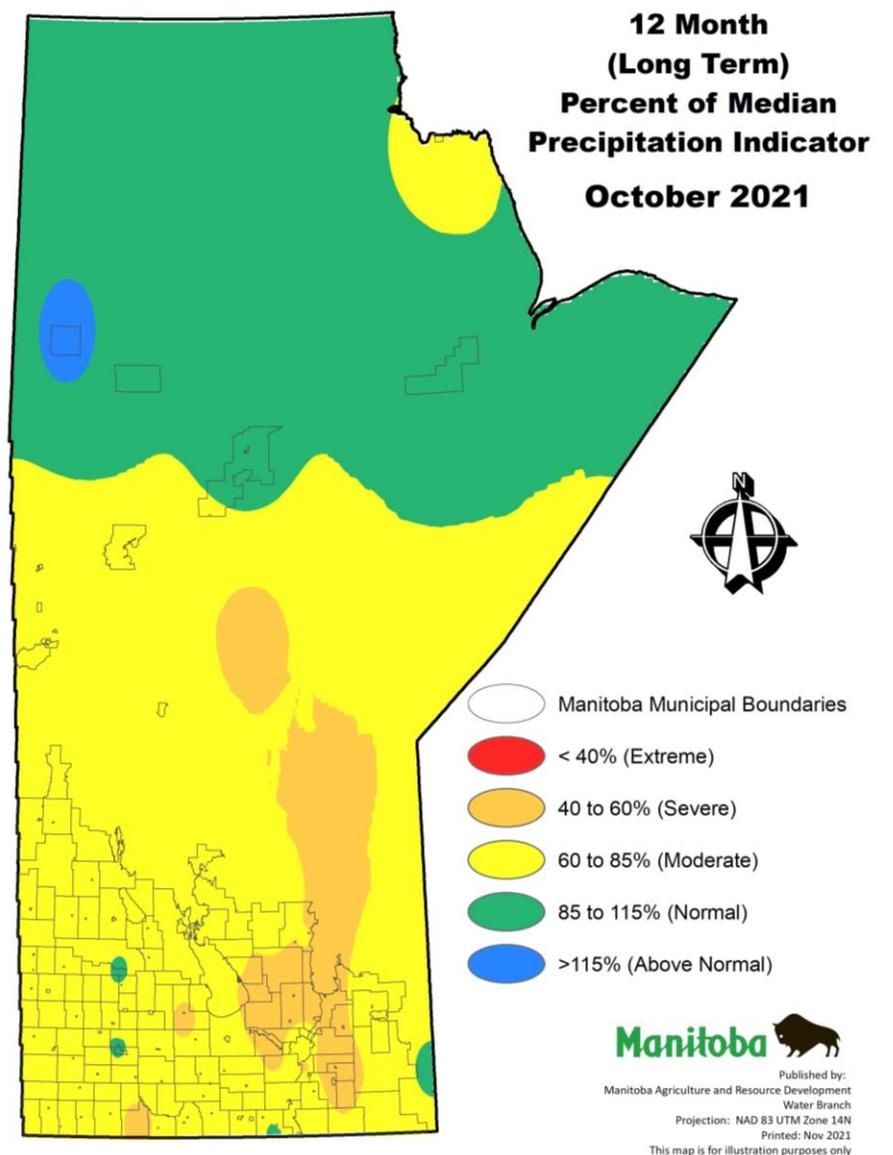


Figure 3: Twelve month (long term) per cent of median precipitation indicator.

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, 2021.

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.

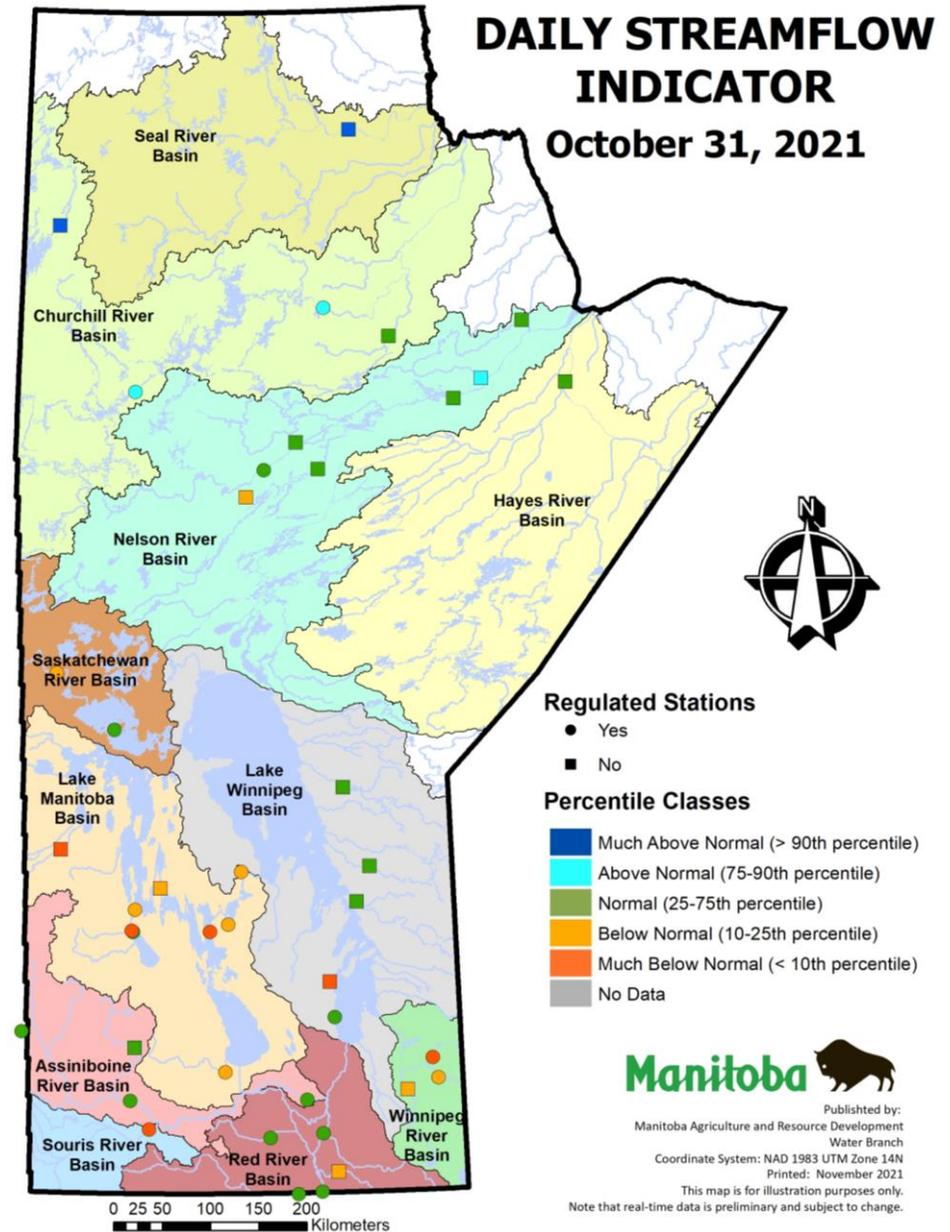


Figure 4: Daily streamflow and lake level indicator for October 31, 2021

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).

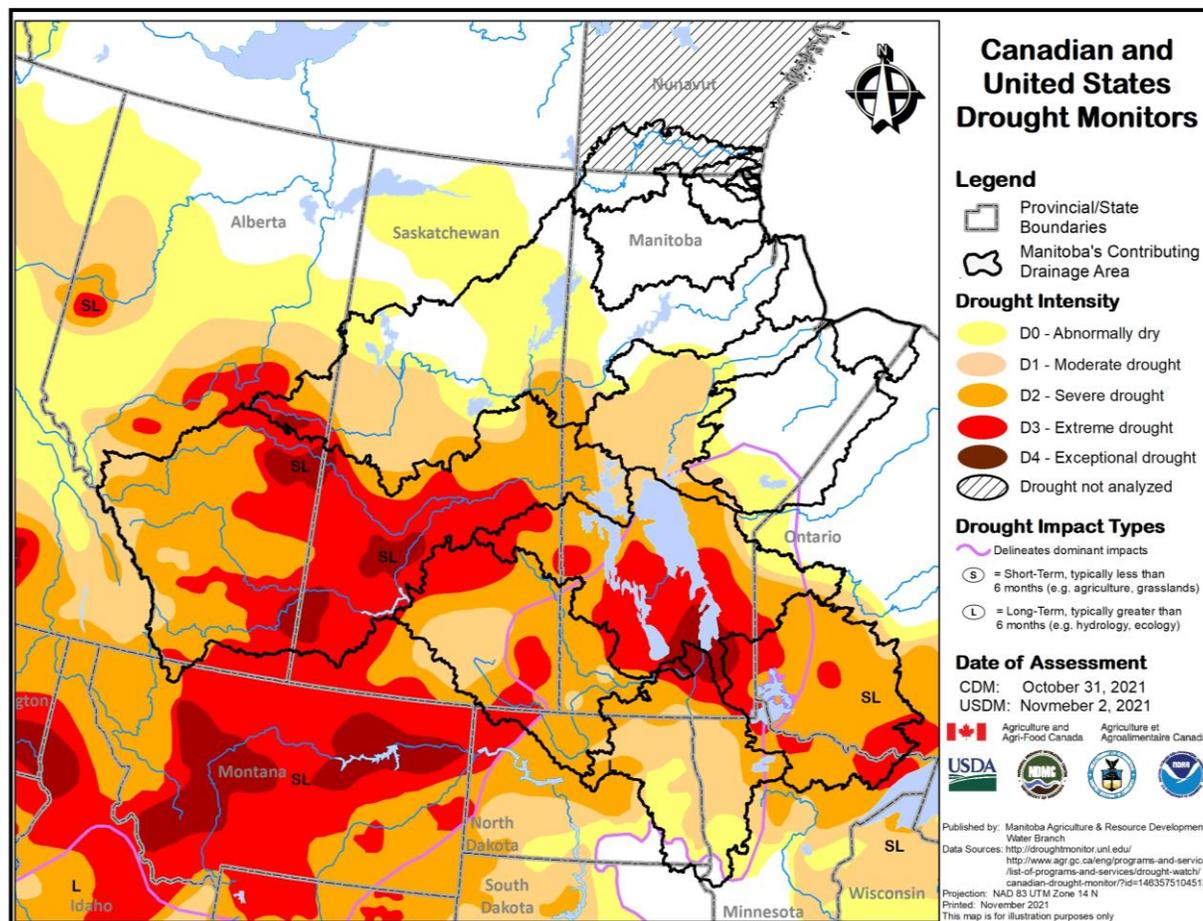


Figure 5: Canadian and United States Drought Monitors' classification of short-term (S) and long-term (L) drought conditions assessed as of October 31, 2021.

Water Availability

Reservoir Conditions – Southern Manitoba

Water Supply Reservoir Levels and Storages - November 1, 2021								
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	1399.06	November 1, 2021	-3.44	300,000	257,604	86%
Lake Wahtopanah (Rivers)*	Rivers	1,536	1535.13	November 1, 2021	-0.87	24,500	23,543	96%
Minnewasta (Morden)*	Morden	1,082	1071.16	November 1, 2021	-10.84	3,150	1,601	51%
Stephenfield*	Carman, Pembina Valley Water Co-op	972	969.29	November 1, 2021	-2.71	3,810	2,709	71%
Vermilion*	Dauphin	1,274	1273.81	November 1, 2021	-0.19	2,600	2,550	98%
Goudney (Pilot Mound)*		1,482	1481.67	November 1, 2021	-0.33	450	427	95%
Jackson Lake*		1,174	1168.32	November 1, 2021	-5.68	2,990	1,638	55%
Manitou (Mary Jane)*		1,537	1535.91	November 1, 2021	-1.09	1,150	1,053	92%
Turtlehead (Deloraine)*	Deloraine	1,772	1767.67	November 1, 2021	-4.33	1,400	1,080	77%
Lake Irwin*		1,178	1176.40	November 1, 2021	-1.60	3,800	2,961	78%
Minnedosa*		1,682	1681.26	November 1, 2021	-0.74	1,688	1,485	88%
Boissevain*	Boissevain	1,697	1694.86	November 1, 2021	-2.14	505	358	71%
Elgin*		1,532	1530.90	September 28, 2021	-1.10	520	443	85%
St. Malo*		840	839.88	October 14, 2021	-0.12	1,770	1,751	99%
Kenton Reservoir		1,448	1446.36	September 28, 2021	-1.64	600	509	85%
Killarney Lake		1,615	1612.72	October 25, 2021	-2.28	7,360	6,313	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 Crop Report Issue 25: Seasonal Summary (published October 13, 2021) are provided in Table 1.

Table 1: On Farm Water Supply (Dugout) Conditions.

Region	General Dugout Condition
Eastern	Rain is needed to improve overwinter pasture survivability and replenish dugouts and sloughs, which are generally low at this time.
Interlake	Sloughs are dry and dugouts are low to almost dry, as there has been minimal rainfall for some time, but should have some replenishment after the October rains.
Southwest	Sloughs are dry and dugouts are low to almost dry as there has been minimal rainfall for some time.
Central	Thanksgiving weekend rains helped to improve topsoil moisture conditions but soils still need more to replenish subsoil moisture across the region.
Northwest	Dugouts are low and fall rains and significant snowfall will be required to replenish sources for next year.

Soil Moisture

A regional representation of soil moisture conditions for the top 120 cm relative to the field capacity is shown for October 31, 2021. Soil moisture mapping is displayed as relative to Field Capacity to better depict the differences in water availability based on soil texture under dry conditions.

Soil moisture maps are created by classifying current values that are less than 25 % of available water as Very Dry, between 25 % - 50 % as Dry, 50 % to field capacity as Optimal, field capacity to 75 % of saturation minus field capacity as Wet, and above this level as Very Wet.

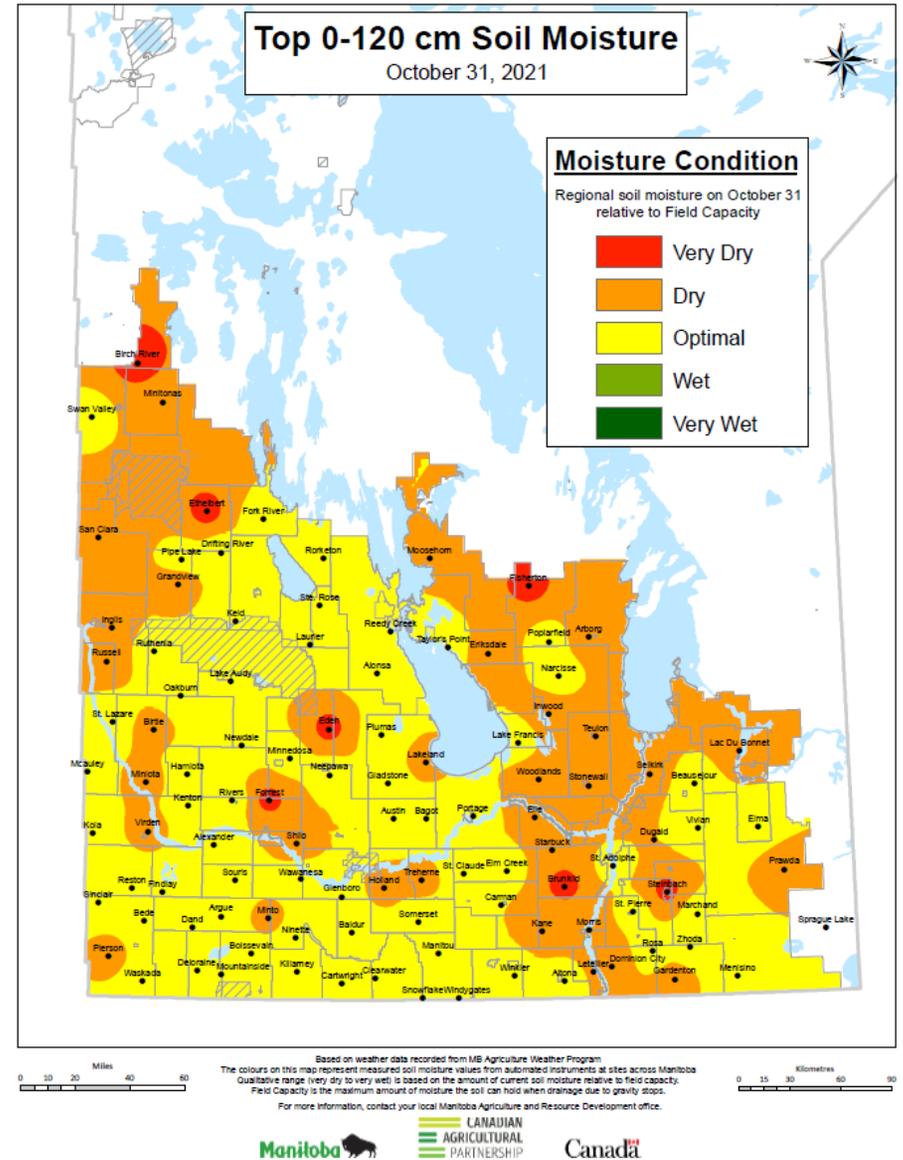


Figure 6: Manitoba Agriculture and Resource Development's October 31, 2021 mapping of soil moisture conditions in the top 0 – 120 cm.

Wildland Fires

As of November 4, 2021, the Manitoba Wildfire Service reported 460 wildfires this year to date, burning a total area of 1,266,550 hectares. Most of the burned area occurred in the eastern region. The fire danger is generally low across the province; however, the drought code (referred to as DC or Mop-up Difficulty) remains high. Drought code is a rating of the average moisture content of deep, compact organic layers and is an indicator of seasonal drought effects on forest fuels.

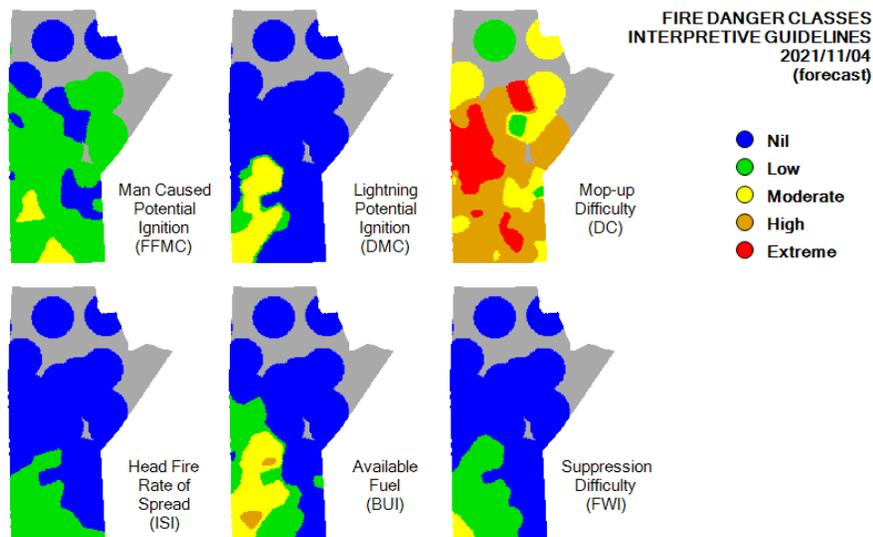


Figure 7: Fire Danger mapping by the Manitoba Wildfire Service.

Some municipalities continue to implement burning restrictions. Additional information is available through the local municipal offices or through the interactive [Current Municipal Burning Restrictions](#) map. There are no active provincial fire or travel restrictions in place at this time.

Drought Impacts

Crops & Forages

Crop yields in 2021 were generally lower than average due to the lack of precipitation. However, yields were extremely variable across agri-Manitoba. Despite their high quality and record commodity prices, the lower crop yields will negatively impact farmers' cash flow for this coming year. October rains have helped to recharge soil moisture ahead of the 2022 crop. Fall tillage and fieldwork has progressed faster than expected due to the dry soil conditions and need for moisture conservation ahead of next years crop.

Cattle producers continue to face serious feed shortfalls due to low forage and pasture yields, and have had to supplement cattle for portions of the summer. Recent regrowth has alleviated some pressure and cattle producers have been creative in finding alternative feeds and stockpiling for winter, baling straw and bulrushes, and increasing greenfeed. [AgriRecovery programing](#) is available to assist eligible producers with livestock feed and transportation expenses. The [Manitoba Hay Listing Service](#) is active and producers with extra feed are encouraged to list their available supplies for sale.

The [Manitoba Farm, Rural & Northern Support Services](#) hotline is available 24/7 for farmers and ranchers dealing with crises and stressful situations by calling 1-866-367-3276.

Water Supplies

Livestock producers who have been affected by dry conditions on pasture in Manitoba can apply for funding to support water source development under [Ag Action Manitoba](#) (BMP 503). While applications are no longer being accepted for 2021, the 2022 intake will open on November 8, 2021 and will cover eligible expenses from April 1, 2022.

Provincial water control structures are being operated to mitigate low water level conditions where required. Continued fall rains are needed to further increase soil moisture and baseflows prior to freeze-up and to increase runoff potential in the spring.

Some municipalities and water providers continue to implement mandatory or voluntary conservation restrictions. However, in many cases restrictions have been downgraded. Along some rivers, there are concerns over water levels and ice formation affecting intakes heading into winter.

Departments are tracking and actively managing several water supply “hot spots” including Lake Minnewasta, Jackson Lake, and several rivers in the Winnipeg River system where levels remain much below normal. Manitoba, through multiple departments, is supporting municipalities and water providers by providing conditions updates, engineering, technical and planning support, regulatory approvals and guidance, and in some cases, funding support through the Manitoba Water Services Board.

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 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/>