

Water Availability and Drought Conditions Report

SEPTEMBER 2020

Executive Summary

- This Water Availability and Drought Conditions Report provides an update on conditions throughout Manitoba for September 2020.
- Precipitation conditions over the past month, three month, and twelve month periods are as follows:
 - During September, southern Manitoba experienced severely (40 – 60 % of median) to extremely (< 40 %) dry conditions. In northern Manitoba, conditions ranged from moderately dry (60 – 85 %) in the south to normal (85 – 115 %) or above normal (> 155 %) in the north.
 - Over the past three months (July, August, September), moderately dry conditions with pockets of severe dryness were observed in parts of the Interlake, central, southwest, and northwest regions of agri-Manitoba. Conditions in northern Manitoba were normal to above normal.
 - 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 normal to above normal.
- As of September 30, 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, Qu'Appelle River, Souris River and Winnipeg River, and much below normal (< 10th percentile) conditions on Lake Manitoba.
- With the exception of the carbonate aquifer near Anola, water levels from indicator wells that do not show nearby pumping influence range from normal (25th – 75th percentile) to above normal (75th – 90th percentile). The Oak Lake station is currently off-line.
- The September 30, 2020 Canadian Drought Monitor assessment showed abnormally dry conditions (D0) extending across most of agri-Manitoba, including the southwest, northwest, Interlake and central regions. Regions of moderate drought (D1) conditions were located between Morden and Boissevain and north of Virden.
- Reservoirs are generally at or close to full supply levels and there are currently no concerns over reservoir water supplies. Dugout water levels are classified as low to adequate with some shortages reported in the southwest region.
- As of September 27, 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 shortages are anticipated in some regions however supplies are somewhat better than last year and greenfeed silage supplies have boosted some farmers' outlook for overwintering feedstocks. The [Manitoba Hay Listing](#) service is available to assist farmers in searching for or making available sources of livestock feed.

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.

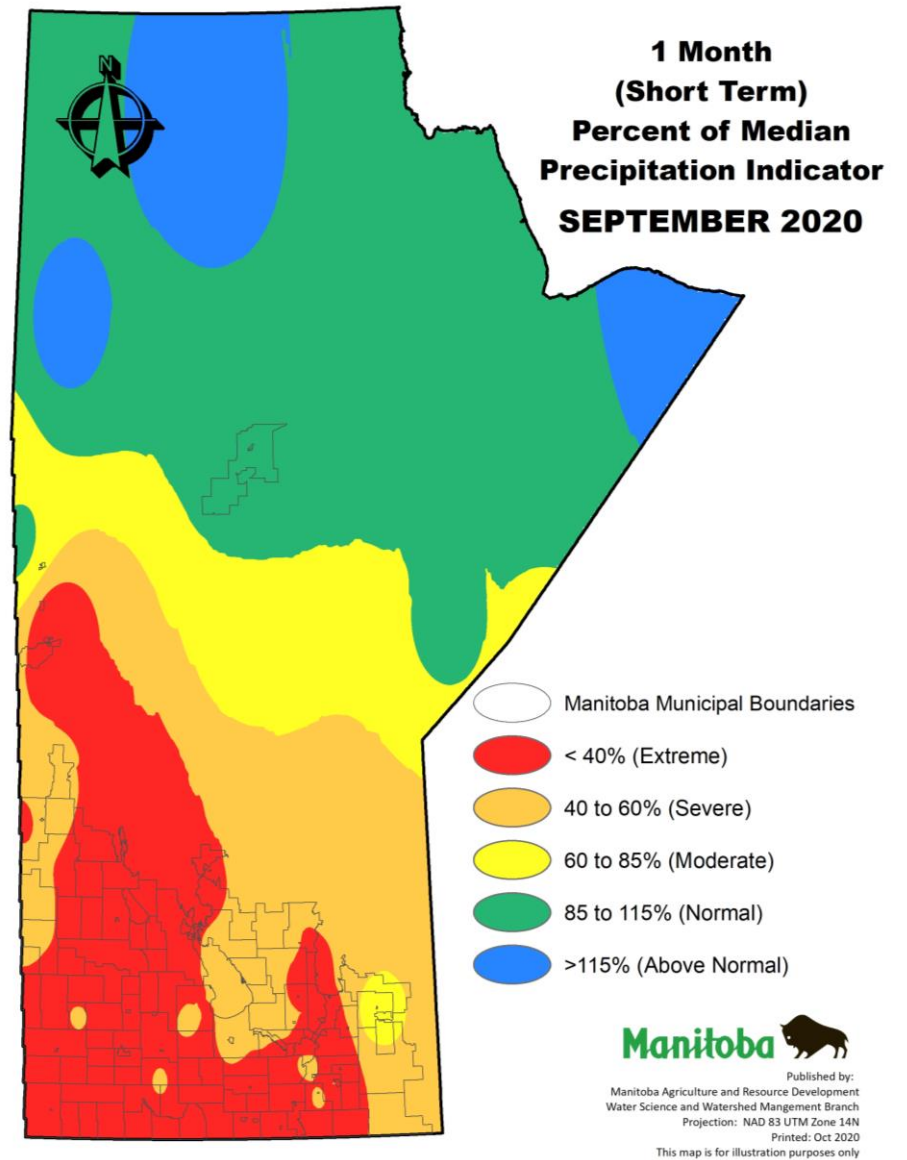


Figure 1: One month (short term) per cent of median precipitation indicator.

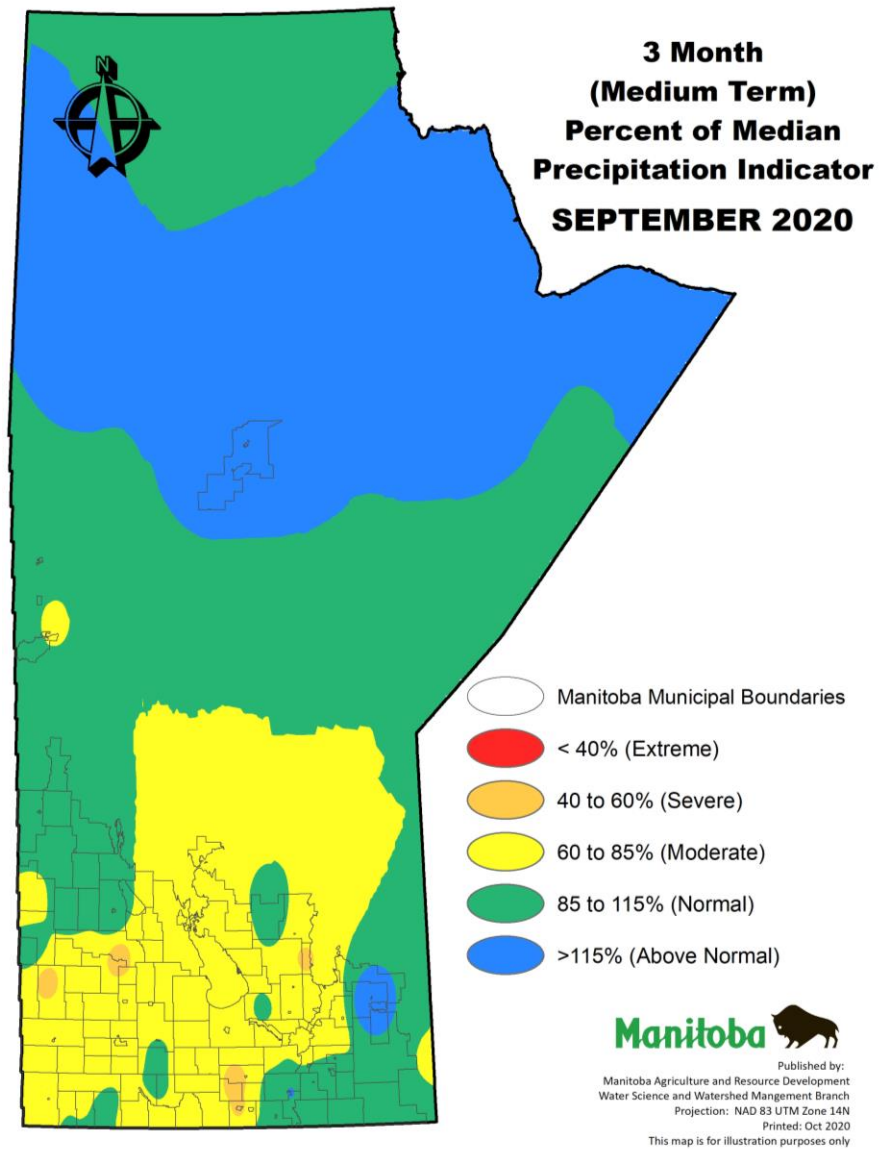


Figure 2: Three month (medium term) per cent of median precipitation indicator.

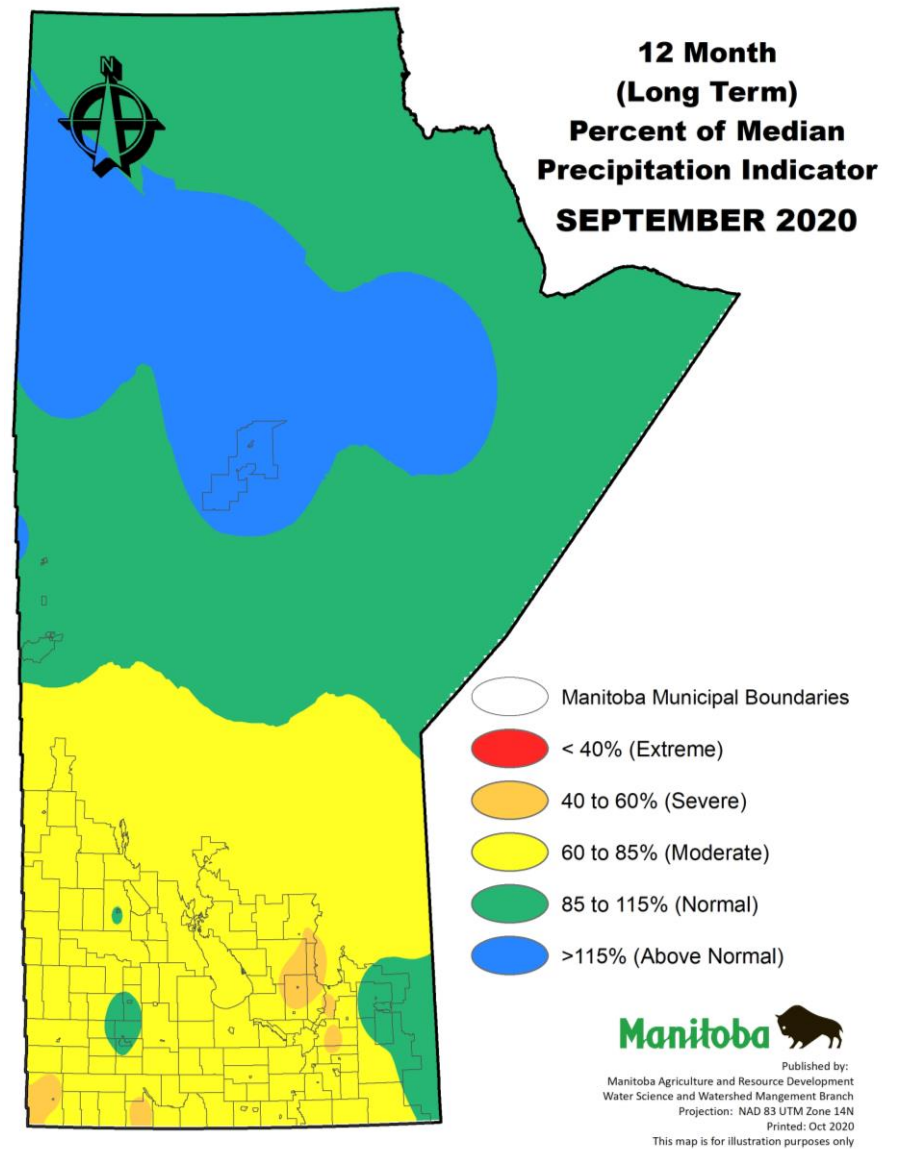


Figure 3: Twelve month (long term) per cent of median precipitation indicator.

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 September 30, 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.

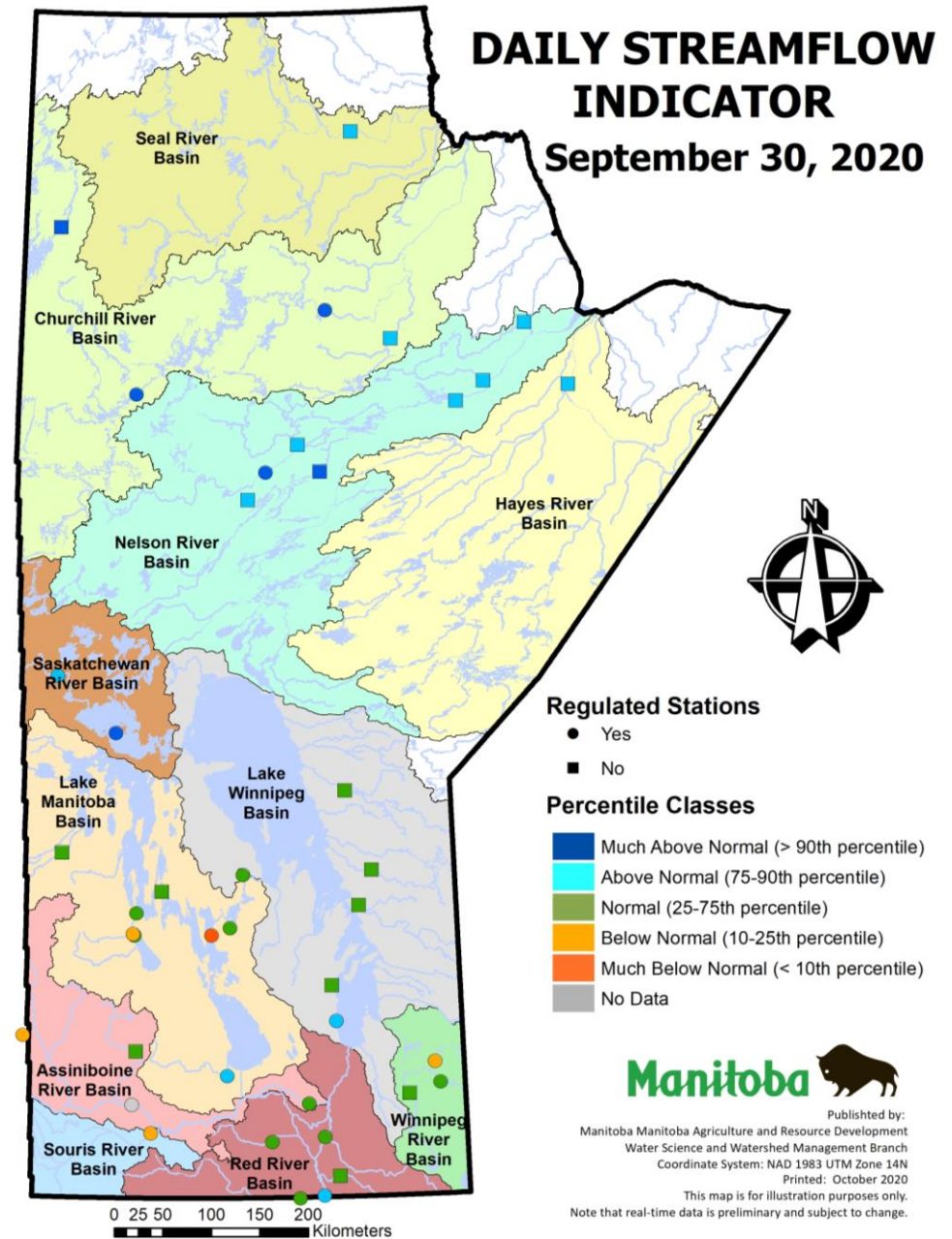


Figure 4: Daily streamflow and lake level indicator for September 30, 2020.

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.

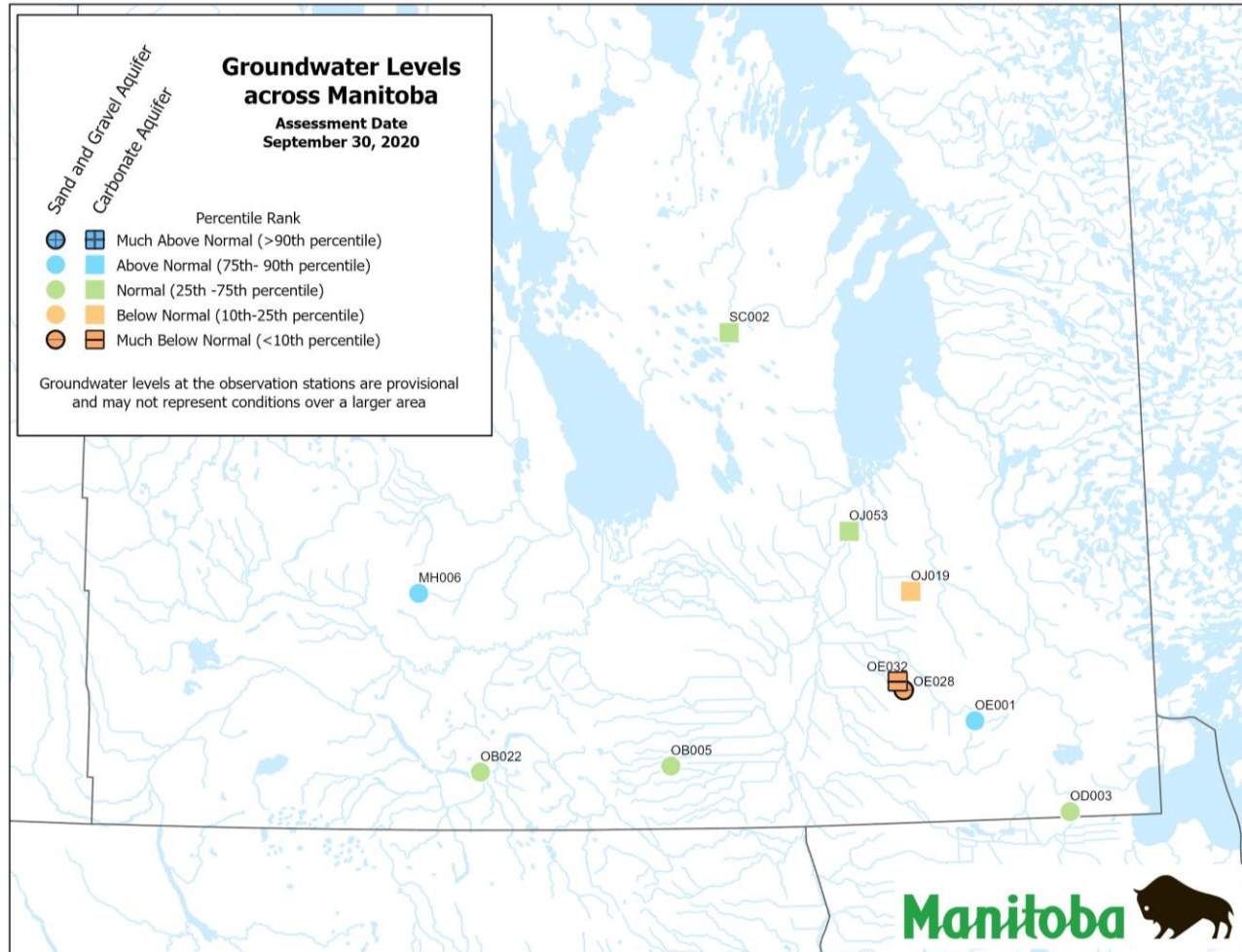


Figure 5: Groundwater indicator on September 30, 2020 for select groundwater monitoring sites.

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).

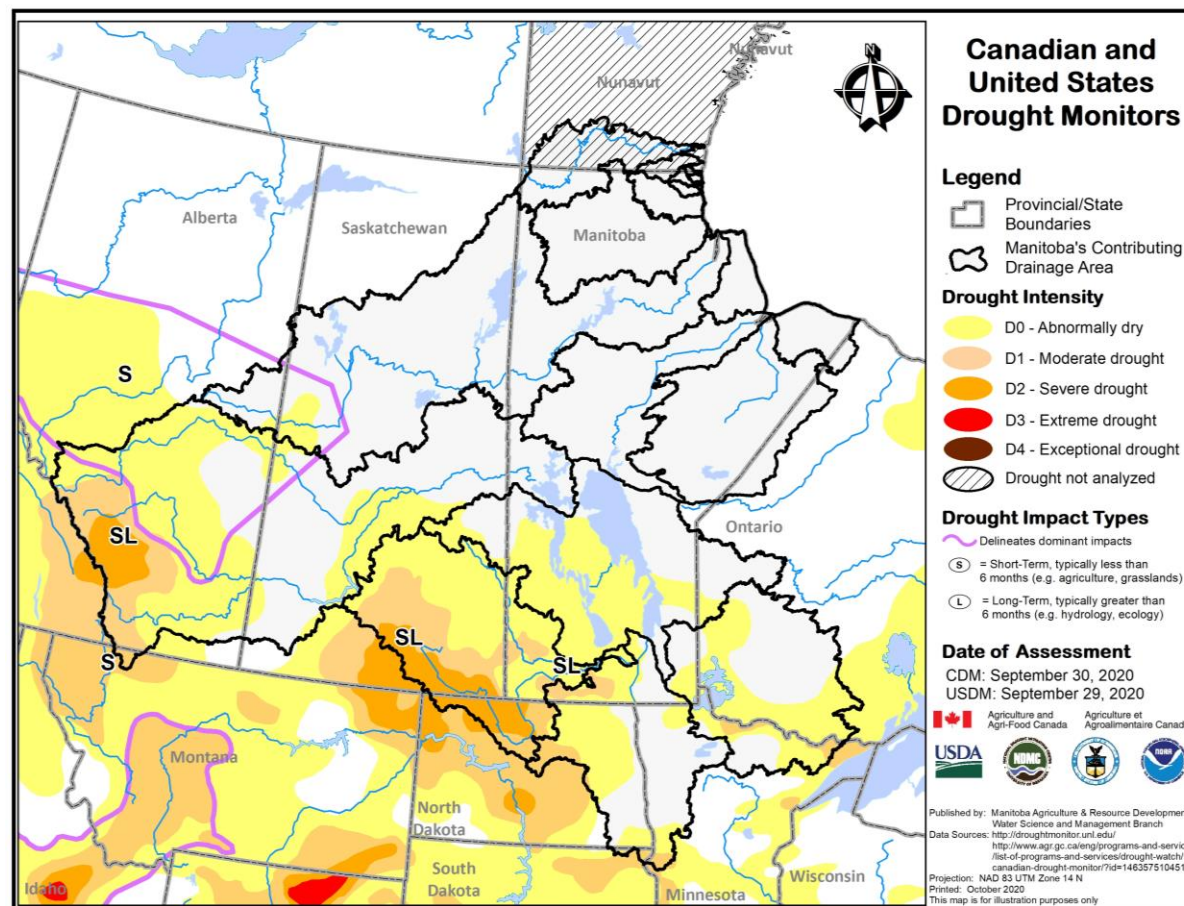


Figure 6: Canadian and United States Drought Monitors' classification of short-term (S) and long-term (L) drought conditions assessed as of September 30, 2020.

Water Availability

Reservoir Conditions

Table 1: Water Supply Reservoir Levels and Storages – October 1, 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	1402.46	September 29, 2020	-0.04	300,000	299,463	100%
Lake Wahtopanah (Rivers)*	Rivers	1,536	1531.73	October 1, 2020	-4.27	24,500	19,664	80%
Minnewasta (Morden)*	Morden	1,082	1079.26	October 1, 2020	-2.74	3,150	2,713	86%
Stephenfield*	Carman, Pembina Valley Water Co-op	972	969.70	October 1, 2020	-2.30	3,810	2,808	74%
Vermilion*	Dauphin	1,274	1270.80	October 1, 2020	-3.20	2,600	1,759	68%
Goudney (Pilot Mound)*		1,482	1481.89	October 1, 2020	-0.11	450	442	98%
Jackson Lake*		1,174	1171.75	October 1, 2020	-2.25	2,990	2,432	81%
Manitou (Mary Jane)*		1,537	1535.77	October 1, 2020	-1.23	1,150	1,041	91%
Turtlehead (Deloraine)*	Deloraine	1,772	1770.28	October 1, 2020	-1.72	1,400	1,307	93%
Lake Irwin*		1,178	1176.53	October 1, 2020	-1.47	3,800	3,011	79%
Minnedosa*		1,682	1680.77	October 1, 2020	-1.23	1,688	1,370	81%
Kenton Reservoir		1,448	1447.83	July 5, 2020	-0.17	600	588	98%
Killarney Lake		1,615	1615.16	July 27, 2020	0.16	7,360	7,433	101%
Elgin		1,532	1531.04	August 18, 2020	-0.96	520	453	87%
St. Malo		840	840.16	August 10, 2020	0.16	1,770	1,796	101%
Boissevain	Boissevain	1,697	1696.98	August 18, 2020	-0.02	505	504	100%

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 22 (published September 29, 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.
Interlake	Livestock water supply is currently adequate; some dugout levels have improved with recent rains, while others are reported as getting low.
Southwest	Areas in the southwest corner of the region are reporting shortages of water for livestock. Dugouts are at 70 % capacity, on average.
Central	Water sources on pasture are adequate, but some are getting low.
Northwest	Livestock water supplies are low to adequate.

Soil Moisture

Manitoba Agriculture and Resource Development's mapping shows the soil moisture conditions for the top 120 cm on September 27, 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).

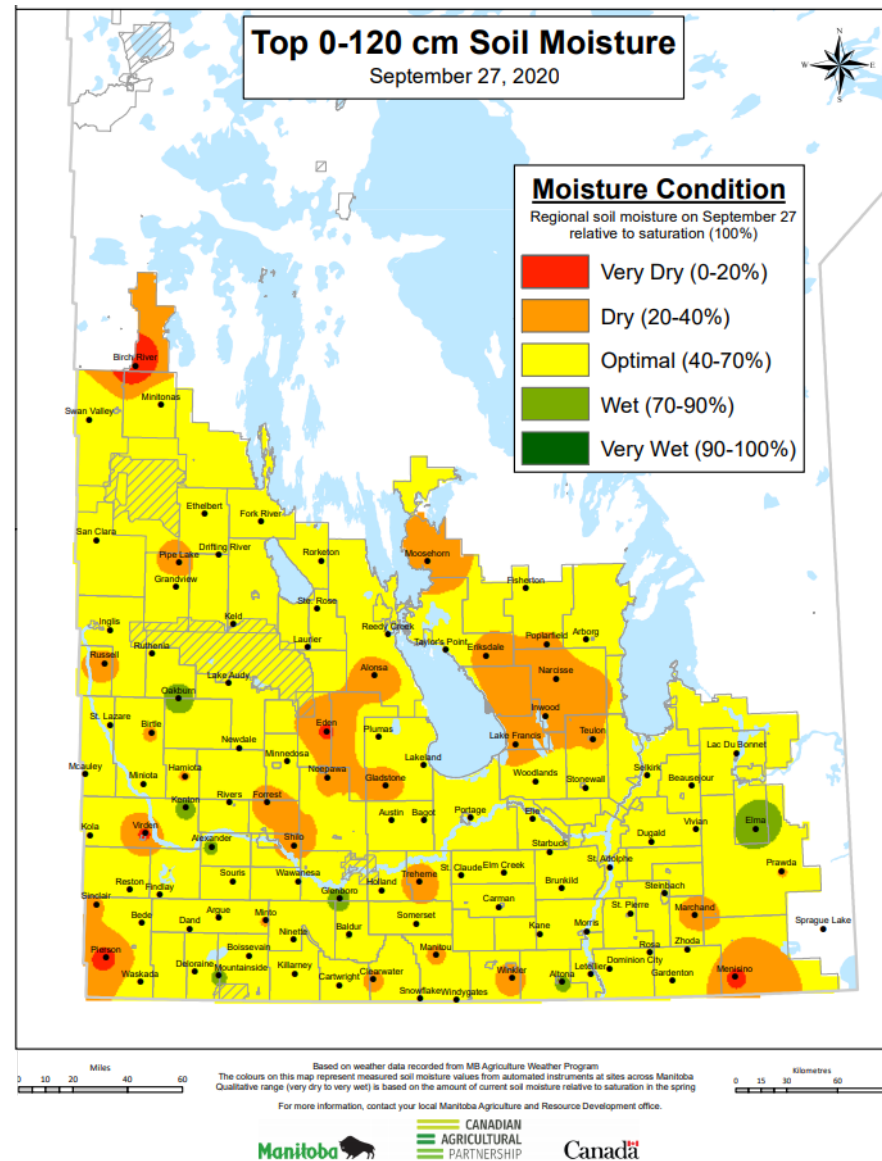


Figure 7: Manitoba Agriculture and Resource Development's September 27, 2020 mapping of soil moisture conditions in the top 0 – 120 cm.

Wildland Fires

As of October 5, 2020, Conservation and Climate's Wildfire Program reported 148 wildfires this year, burning a total area of 49,526 hectares to date. Most of the burned area occurred in the eastern and western regions. There has been very minimal wildfire activity during the month of September.

Natural Resources Canada mapping of Fire Danger as of October 1, 2020 showed wildfire danger was generally low across the province.

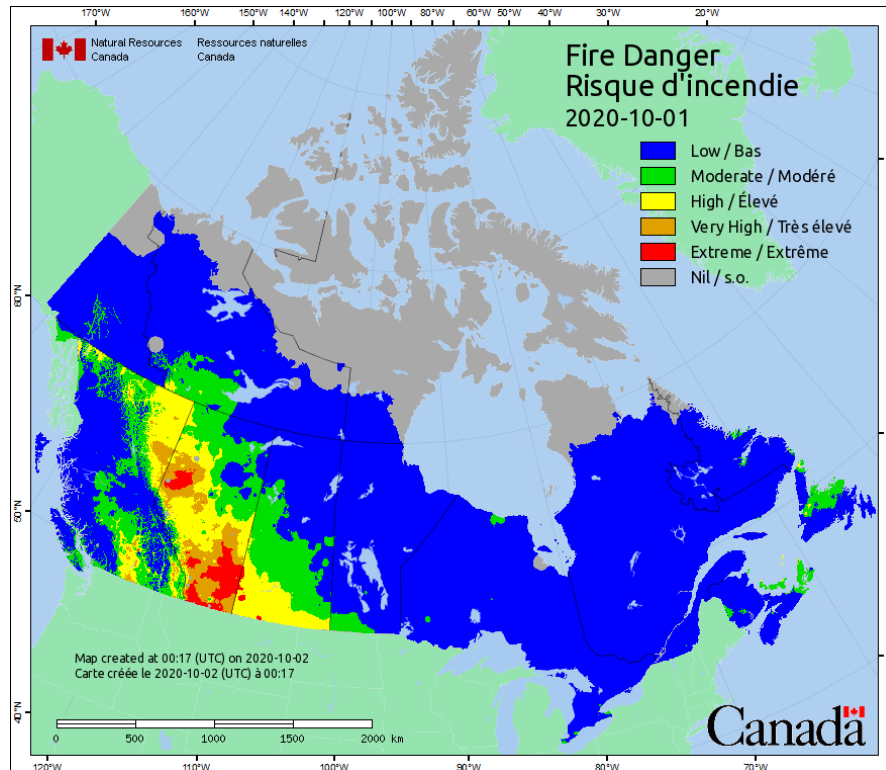


Figure 8: Fire Danger mapping by Natural Resources Canada.

Impacts due to Dry Conditions

Harvest continues across agri-Manitoba. Please see the weekly [Crop Reports](#) for details on harvest progress and yields.

Crop Report Issue 22 reported that forage shortages are anticipated due to dry conditions, particularly in parts of the Interlake. However, supplies are somewhat better than last year and greenfeed silage supplies have boosted some farmers' outlook for overwintering feedstocks. Pastures are generally in fair to poor condition, with very dry surfaces. The [Manitoba Hay Listing](#) service is available to assist farmers in searching for or making available sources of livestock feed.

Most of agri-Manitoba is looking for post-harvest rainfall to benefit soil moisture levels for next year, improve tillage conditions in some soils, and for germination of winter seeded crops.

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/>