08Water Availability and Drought Conditions Report

MAY 2020

Executive Summary

- This Water Availability and Drought Conditions Report provides an update on conditions throughout Manitoba for May 2020.
- Precipitation conditions over the past month, three month, and twelve month periods are as follows:
  - During May, most of agro-Manitoba observed severely (40 to 60 % of median) to extremely (< 40 %) dry conditions, with some regions of moderately dry (40 to 60 %) to normal (85 to 115 %) conditions. Conditions in northern Manitoba ranged from above normal in the west and surrounding Norway House to moderately dry in the central and east.
  - Over the past three months (March, April, May), most of agro-Manitoba observed severely to extremely dry conditions with regions of moderately dry conditions. Conditions in northern Manitoba ranged from above normal in the west and surrounding Norway House to moderately dry in the central and east.
  - Over the past 12 months, the southern portion of agro-Manitoba observed normal conditions, while the northern portion of agro-Manitoba observed moderately dry conditions with a pocket of severely dry conditions surrounding Swan River. In northern Manitoba, conditions generally ranged from normal to moderately dry.
- As of June 1, 2020, streamflows and lake levels were generally normal (25^{th} – 75^{th} percentile). Below normal (10^{th} – 25^{th} percentile) conditions were observed on the Cochrane, Swan and Winnipeg Rivers and much below normal (< 10^{th} percentile) conditions on Lake Manitoba.
- Water levels from indicator aquifers range from normal (25^{th} – 75^{th} percentile) to much above normal (> 90^{th} percentile) as of May 31, 2020.
- The May 31, 2020 Canadian Drought Monitor assessment showed similar conditions as the April 30, 2020 assessment, with additional regions of abnormally dry conditions (D0) developing in southwest and central agro-Manitoba. Regions of abnormally dry conditions extending from Swan River eastward into the Interlake and a small region of moderate drought conditions (D1) located just north of Lake Manitoba extending from Ste. Rose to Ashern persisted through May.
- Reservoirs are generally at or close to full supply levels after spring runoff. There are currently no concerns over reservoir water supplies.
- As of June 1, 2020, the majority of the southern region of agro-Manitoba was experiencing optimal to wet soil moisture conditions at 0 - 120 cm depth. Areas near Birch River and Menisino showed dry to very dry moisture conditions, likely due to the low water holding capacity of these soils.
- Recent rains and warm weather have improved pasture and forage land. However, some regions are reporting slow regrowth. In the Interlake, forage availability is still a concern for those impacted by the dry conditions in 2018 and 2019.

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.

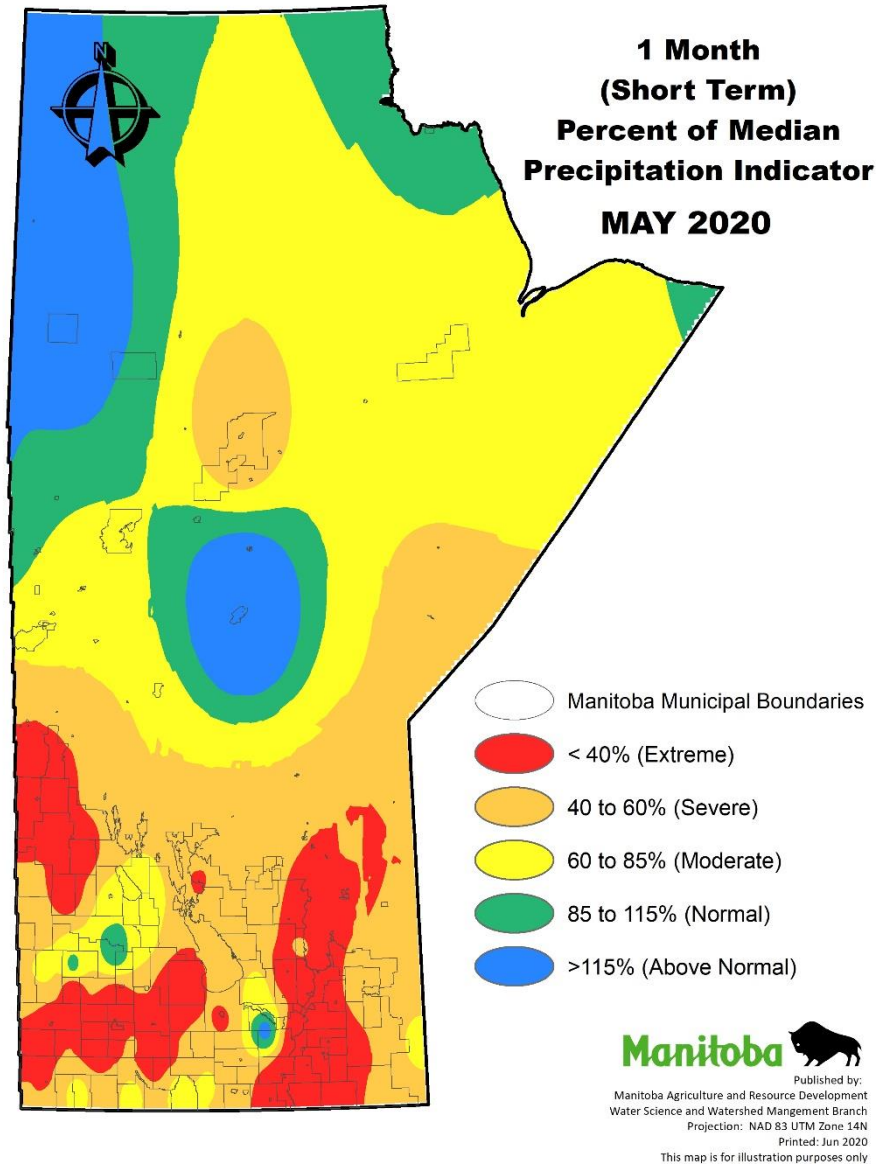

Figure 1: One month (short term) per cent of median precipitation indicator.

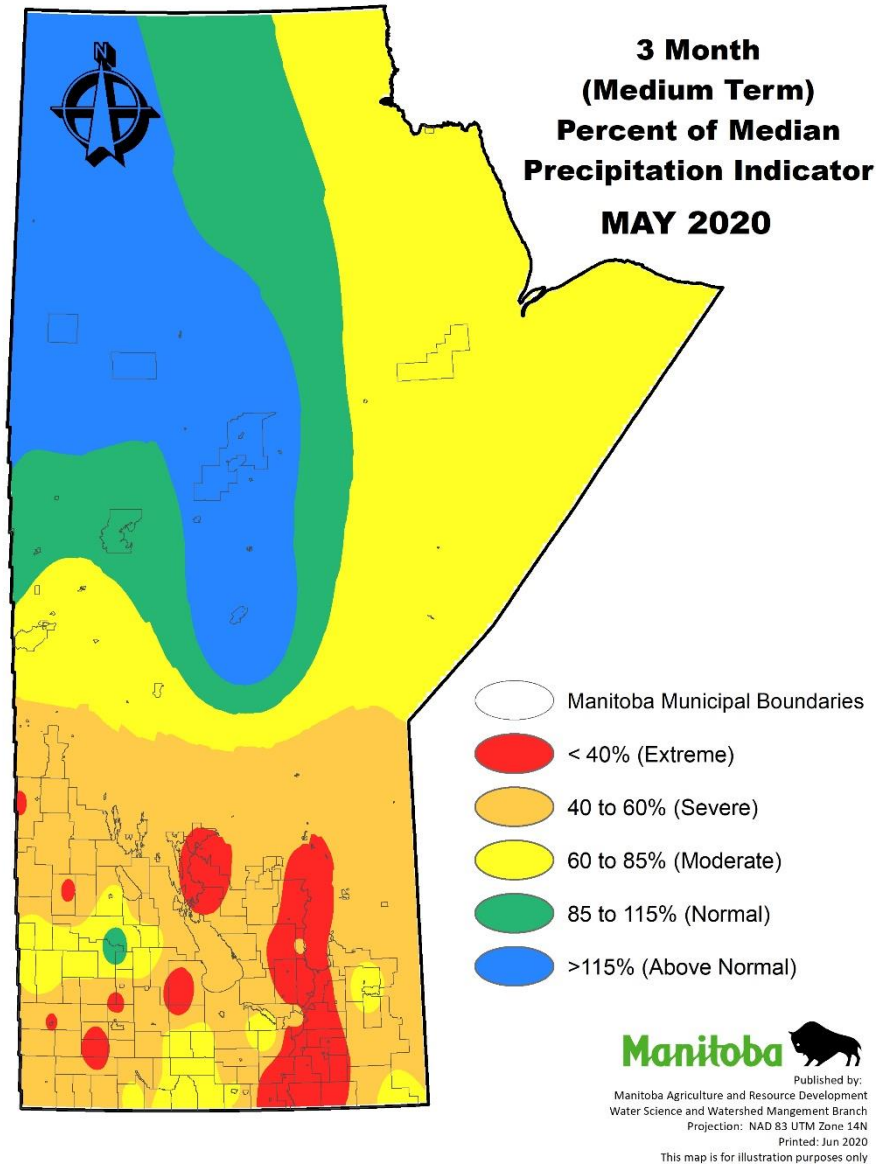

Figure 2: Three month (medium term) per cent of median precipitation indicator.

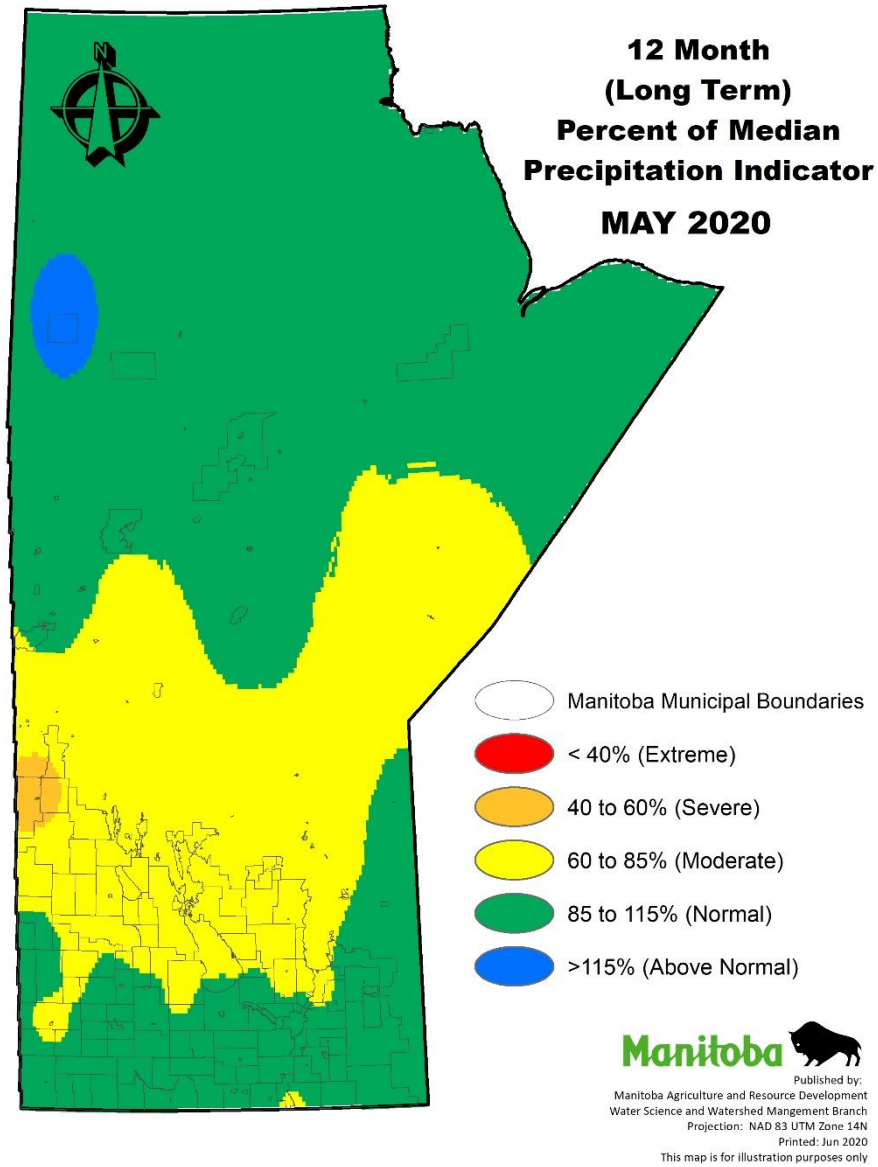

Figure 3: Twelve month (long term) per cent of median precipitation indicator.

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 June 1, 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.

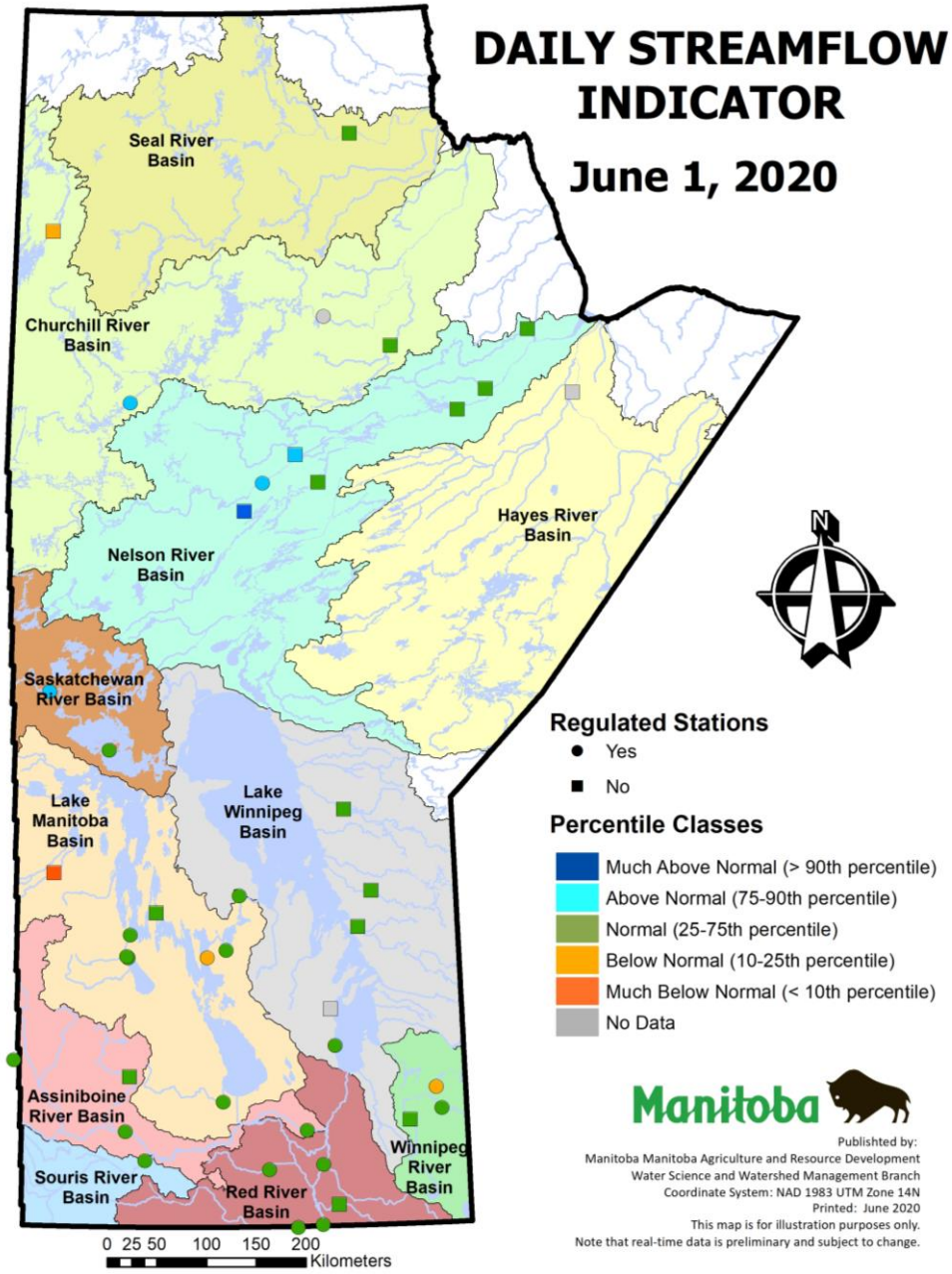

Figure 4: Daily streamflow and lake level indicator for June 1, 2020.

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.

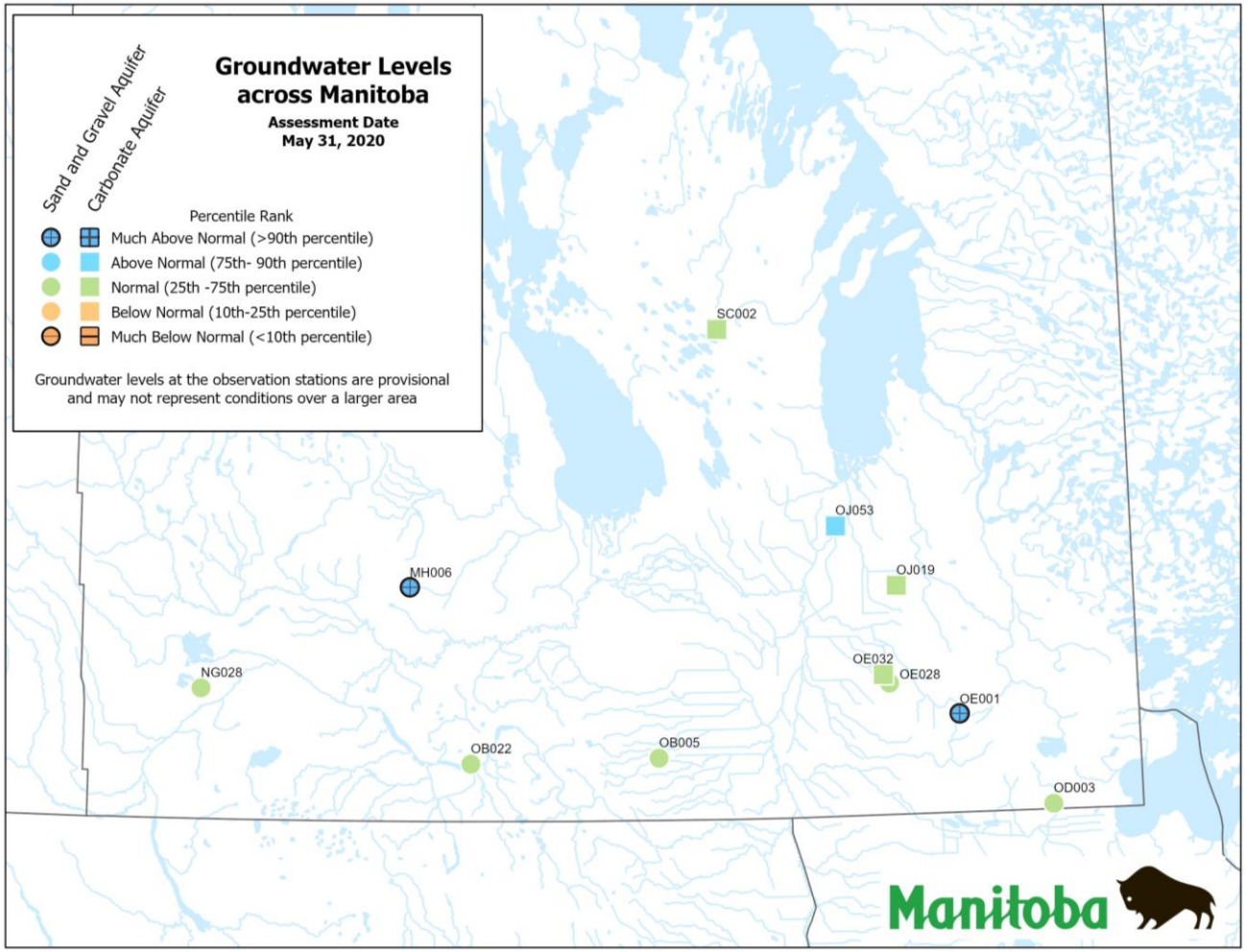

Figure 5: Groundwater indicator on May 31, 2020 for select groundwater monitoring sites.

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).

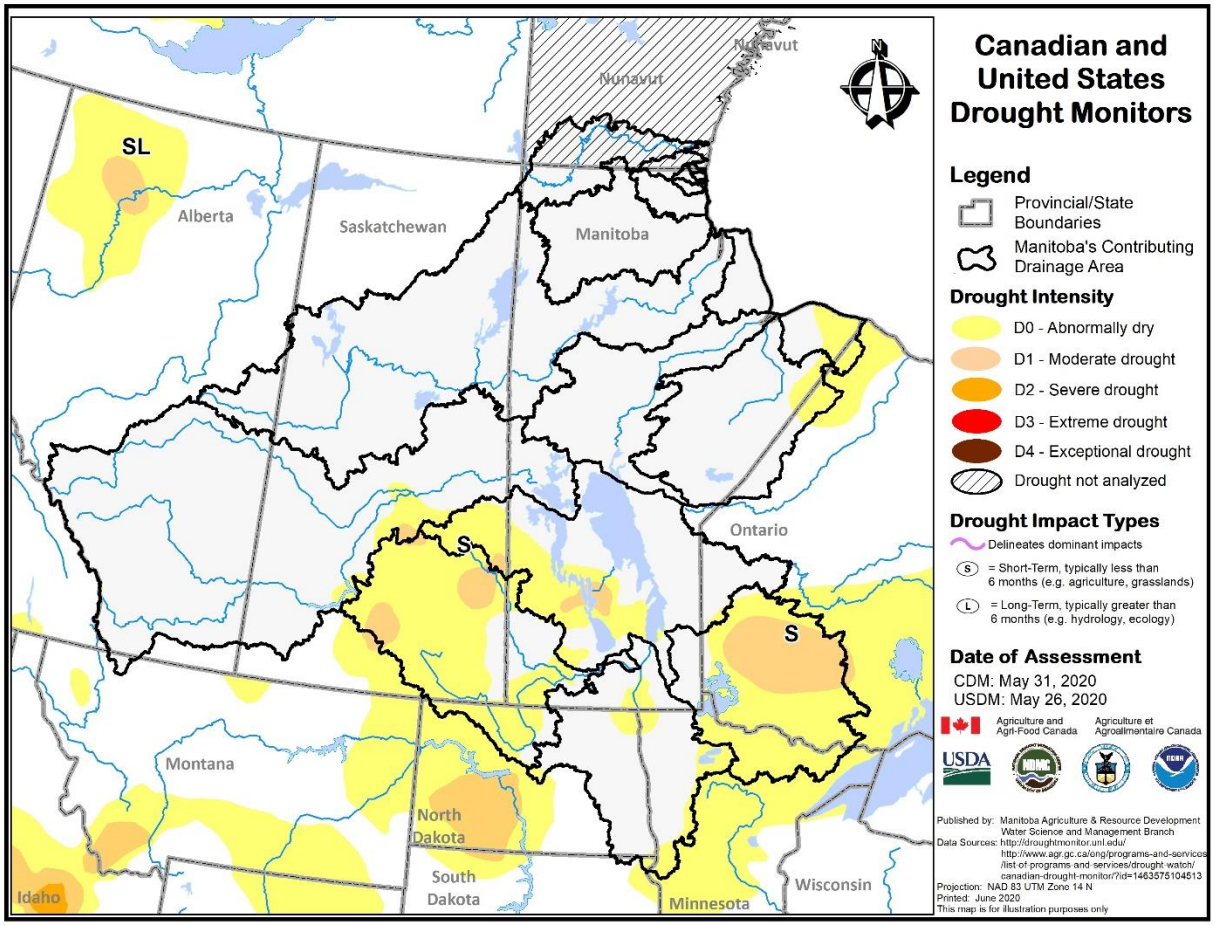

Figure 6: Canadian and United States Drought Monitors' classification of short-term (S) and long-term (L) drought conditions assessed as of May 31, 2020.

Water Availability

Reservoir Conditions

Most reservoirs are at or near full supply level (Table 1) and there are no concerns over reservoir water supplies at this time.

Table 1: Water Supply Reservoir Levels and Storages – June 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]	1402.39	June 1, 2020	-0.11	300,000	298,656	100%
Lake Wahtopanah (Rivers)*	Rivers	1,536	1536.87	June 1, 2020	0.87	24,500	26,455	108%
Minnewasta (Morden)*	Morden	1,082	1081.84	June 1, 2020	-0.16	3,150	3,121	99%
Stephenfield*	Carman, Pembina Valley Water Co-op	972	972.49	June 1, 2020	0.49	3,810	4,039	106%
Vermilion*	Dauphin	1,274	1274.51	June 1, 2020	0.51	2,600	2,720	105%
Goudney (Pilot Mound)*		1,482	1482.32	June 1, 2020	0.32	450	466	104%
Jackson Lake*		1,174	1173.99	June 1, 2020	-0.01	2,990	2,987	100%
Manitou (Mary Jane)*		1,537	1537.23	June 1, 2020	0.23	1,150	1,157	101%
Turtlehead (Deloraine)*	Deloraine	1,772	1772.49	**April 1, 2020**	0.49	1,400	1,454	104%
Rapid City*		1,573.5	1574.48	June 1, 2020	0.98	200	269	134%
Kenton Reservoir		1,448	1447.93	**May 1, 2020**	-0.07	600	595	99%
Killarney Lake		1,615	1615.20	**March 18, 2020**	0.20	7,360	7,451	101%
Lake Irwin		1,178	1178.01	May 30, 2020	0.01	3,800	3,808	100%
Elgin		1,532	1532.06	**March 9, 2020**	0.06	520	524	101%
St. Malo		840	841.15	**April 12, 2020**	1.15	1,770	1,960	111%
Minnedosa		1,682	1683.26	June 1, 2020	1.26	1,688	2,039	121%
Boissevain	Boissevain	1,697	1697.92	**March 9, 2020**	0.92	505	588	116%

[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 5 (published on June 2, 2020) are provided in Table 2.

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

Region	General Dugout Condition
Eastern	Availability of livestock water is adequate for the region.
Interlake	Livestock water supplies are currently adequate (Crop Report Issue 3: May 19, 2020)
Southwest	Dugouts are about 90 % full.
Central	Overall dugout recharge and water supplies are plentiful for cattle going to pasture.
Northwest	Livestock water supply are currently adequate (Crop Report Issue 4: May 26, 2020)

Soil Moisture

Manitoba Agriculture and Resource Management's mapping shows the soil moisture conditions for the top 120 cm on June 1, 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).

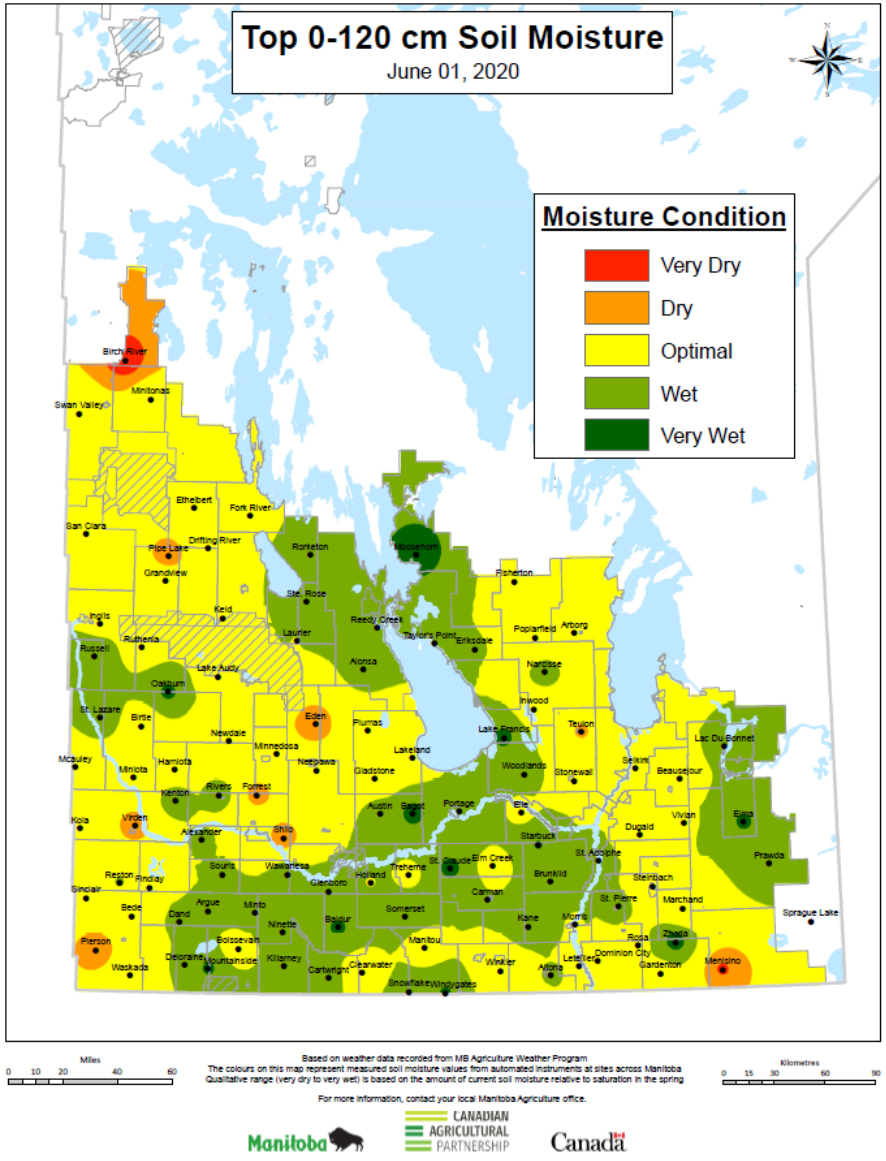

Figure 7: Manitoba Agriculture and Resource Management's June 1, 2020 mapping of soil moisture conditions in the top 0 – 120 cm.

Wildland Fires

As of June 1, 2020, Conservation and Climate's Wildfire Program reported 49 wildfires, burning a total area of 33,082 hectares. Mots of the burned area occurred in the western region.

Natural Resources Canada mapping of Fire Danger as of June 1, 2020 was high to extreme across much of southern Manitoba, and low to moderate in southeastern and northern Manitoba.

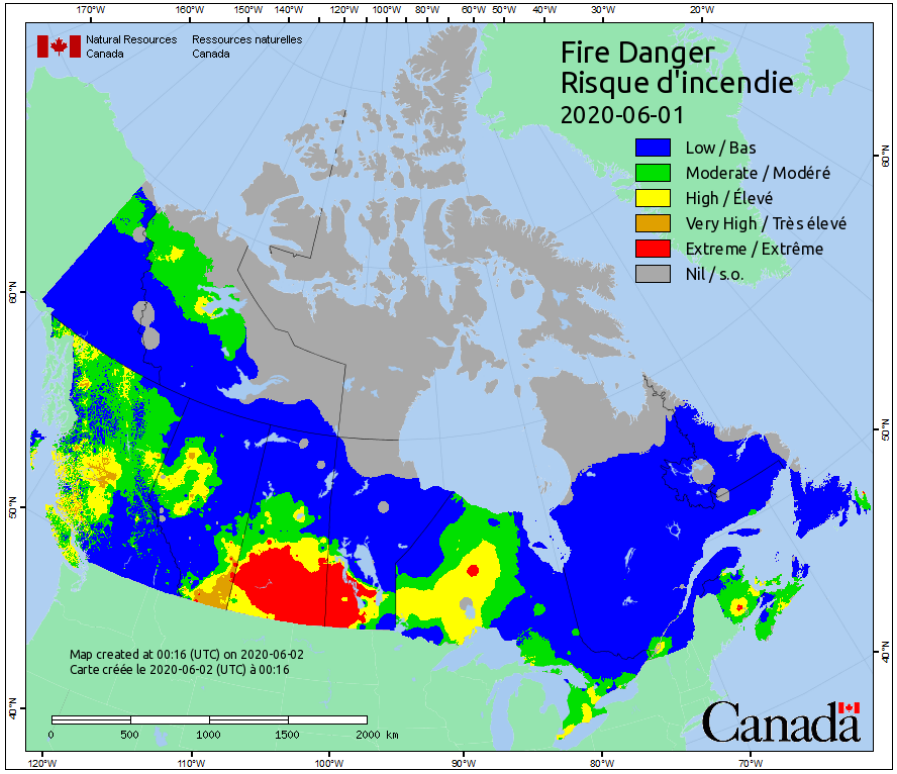

Figure 8: Fire danger mapping by Natural Resources Canada.

Provincial Burning Permits have been suspended for all areas within the Burn Permit Area until further notice as a COVID-19 precaution and a wildfire prevention measure. Additionally, 21 municipalities had burning restrictions in place as of June 2, 2020.

Impacts due to Dry Conditions

Crop reports have indicated that some of the community pastures have cut back their allocations due to two consecutive dry summers and a lack of grass regrowth. There are reports that in the Interlake region forage availability remains is a concern for those impacted most severely by dry conditions in the last two to three years.

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

Environment and Climate Change Canada:
Flow and lake level information:
http://www.wateroffice.ec.gc.ca/index_e.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

Canadian Drought Monitor: *http://www.agr.gc.ca/drought*
United States Drought Monitor: *https://droughtmonitor.unl.edu/*