

# Water Availability and Drought Conditions Report

MAY 2021

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## Executive Summary

- This Water Availability and Drought Conditions Report provides an update on conditions throughout Manitoba for May 2021. As of May 31, 2021, conditions remain dry across southern Manitoba with varied impacts occurring to water users including municipalities and water co-ops and to crop and livestock producers.
- For more information on conditions, indicators, and resources for those impacted by dry conditions, please visit the Manitoba Drought Monitor at [www.manitoba.ca/drought](http://www.manitoba.ca/drought)
- Precipitation conditions over the past month, three month, and twelve month periods are as follows:
  - During May, most of agri-Manitoba experienced moderately dry (60 – 85 % of median) to severely dry (40 – 60 %) conditions. In northern Manitoba conditions were moderately dry in the east. However, normal (85 – 115 %) to above normal (> 115 %) precipitation was received in the north and western portions of northern Manitoba.
  - Over the past three months (March, April, May), most of southern Manitoba experienced severely dry to extremely dry (< 40 %) conditions, except for eastern agri-Manitoba where moderately dry to normal conditions were observed. Conditions in northern Manitoba were moderately to severely dry in the east and normal to above normal in the west.
  - Over the past 12 months, most of agri-Manitoba observed moderately dry conditions with regions of severe dryness in the Interlake, central, and southwest regions. Conditions in northern Manitoba were normal to above normal.
- As of June 1, 2021, most rivers and lakes across southern Manitoba were showing below normal (10<sup>th</sup> – 25<sup>th</sup> percentile) to much below normal (< 10<sup>th</sup> percentile) conditions.
- As of May 31, 2021, groundwater levels in sand and gravel aquifers in western, central and southeastern regions were in the normal range (25<sup>th</sup> – 75<sup>th</sup> percentile), as was the carbonate aquifer at Selkirk. Sandilands remained above normal. Sand and gravel and carbonate aquifers in the Steinbach area were much below normal and carbonate aquifers in the Anola and central Interlake were below normal. Groundwater conditions in other wells may vary from the monitoring wells, especially in shallow aquifers of limited extents that may experience lower water levels due to lack of spring recharge.
- The May 31, 2021 Canadian Drought Monitor assessment showed that regions of exceptional drought conditions (D4) developed around Brandon and in southwest Manitoba along the United States border. The central, southwest and Interlake regions of agri-Manitoba are experiencing extreme drought conditions (D3). Severe drought conditions (D2) are occurring in the northwest and eastern regions, dissipating to moderate drought conditions (D1) towards the Ontario border.
- Most provincial water supply reservoirs are at or close to full supply level, except for Lake Minnewasta. Some communities have implemented water conservation restrictions including the City of Morden and the Pembina Valley Water Co-op. Seasonal demand for water is high, putting increased pressure on water treatment plants and distribution systems, including where raw water supplies are sufficient.
- In some regions, the spring runoff in small intermittent streams was insufficient to meet the demand for licensed water allocations. Late May precipitation helped to elevate streamflows for a few weeks, improving water supplies.

- Dugout water levels are generally classified as below normal and some are dry. There have been reports of well drilling and hauling water to supplement on-farm water supplies. Livestock producers can apply for funding to support water source development under [Ag Action Manitoba](#).
- For crops, topsoil is expected to dry further without timely rains and is a concern to growers, especially in areas with poor moisture conditions or lighter textured soils. Late May rainfall helped with topsoil moisture recharge, but more is needed. Although forages are greening up, dry conditions and frost continued to limit pasture and hay regrowth. Supplemental pasture feeding started in some regions.
- As of June 2, 2021, the wildfire danger was generally high to extreme in the south and low in the north. To date, 83 wildfires have burned a total area of 276,065 hectares. Provincial burning restrictions were in place for regions 1 - 3 and 5 - 9 due to the dry conditions. Additionally, many municipalities continued to implement burning restrictions.

## 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.

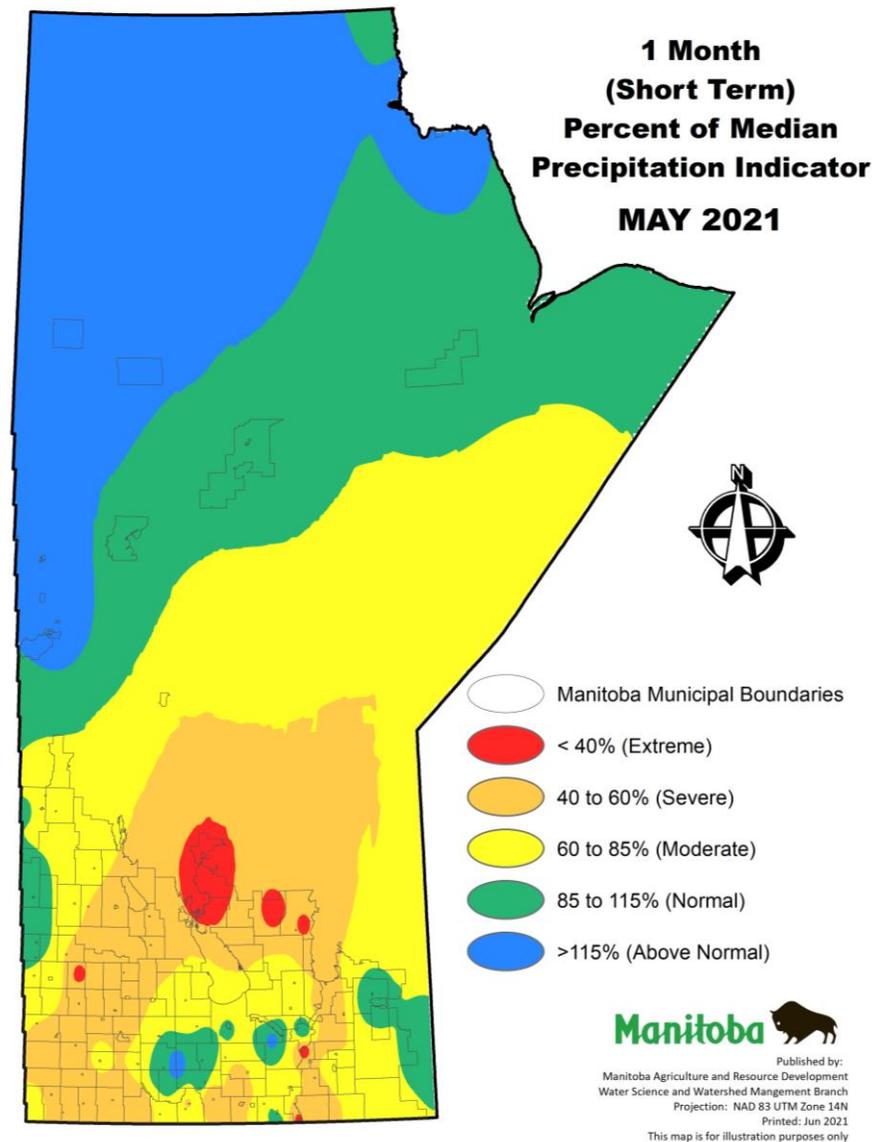


Figure 1: One month (short term) per cent of median precipitation indicator.

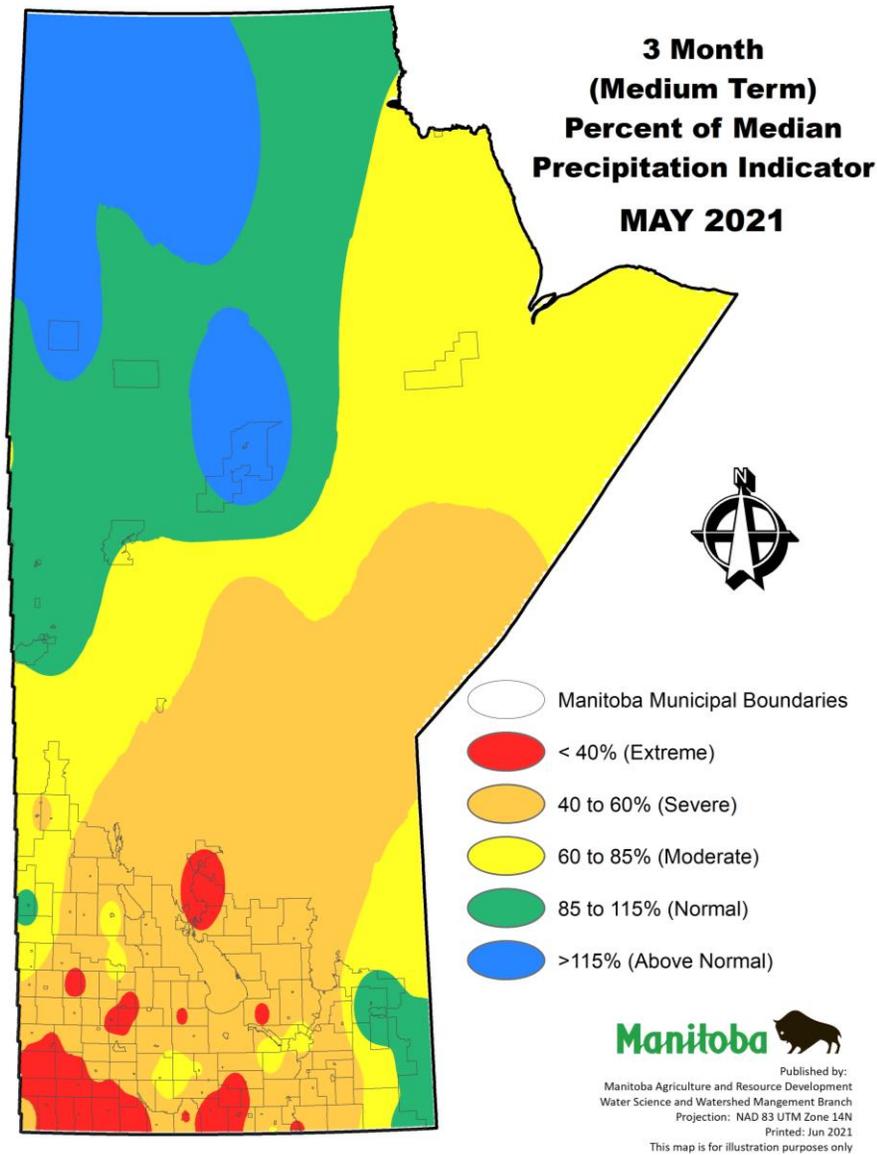


Figure 2: Three month (medium term) per cent of median precipitation indicator.

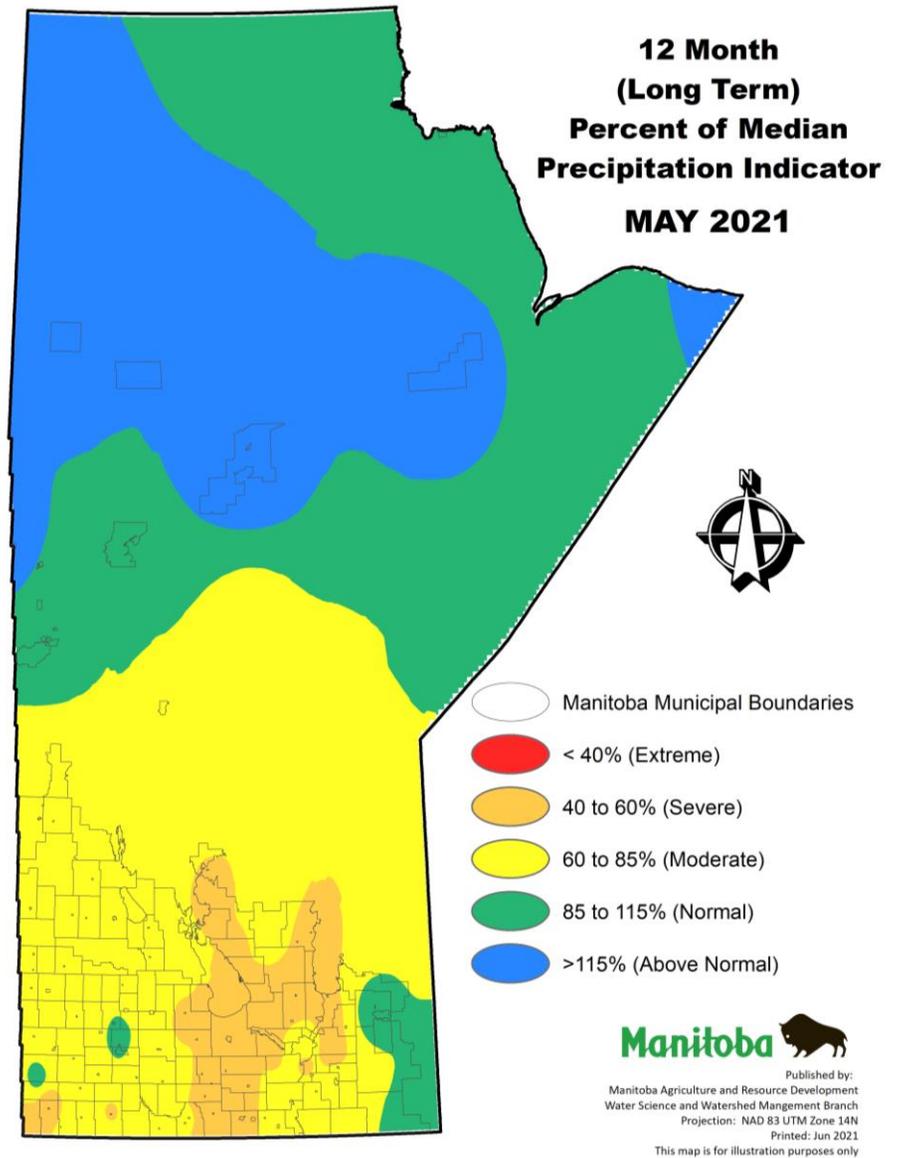


Figure 3: Twelve month (long term) per cent of median precipitation indicator.

### 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, 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.

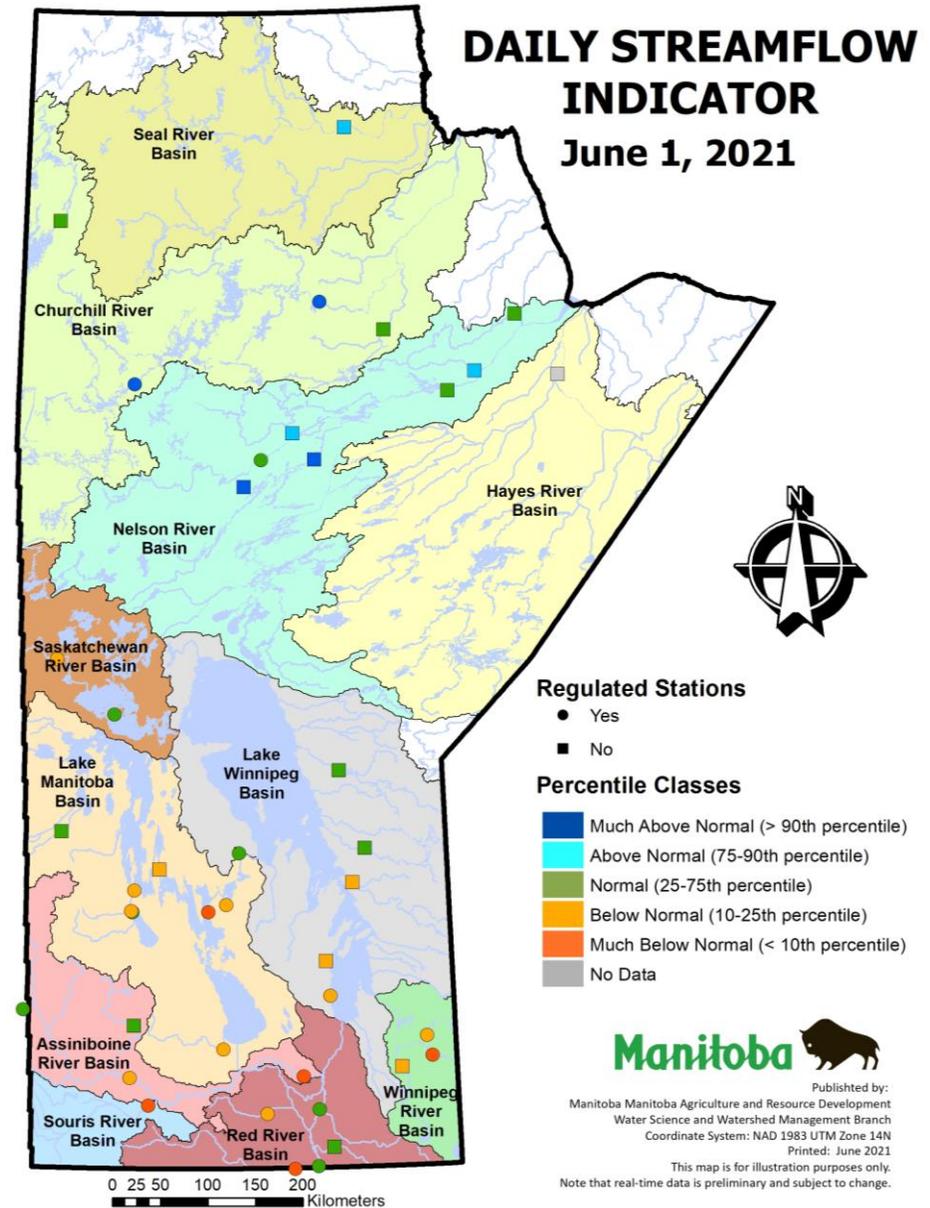


Figure 4: Daily streamflow and lake level indicator for June 1, 2021.

## 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.

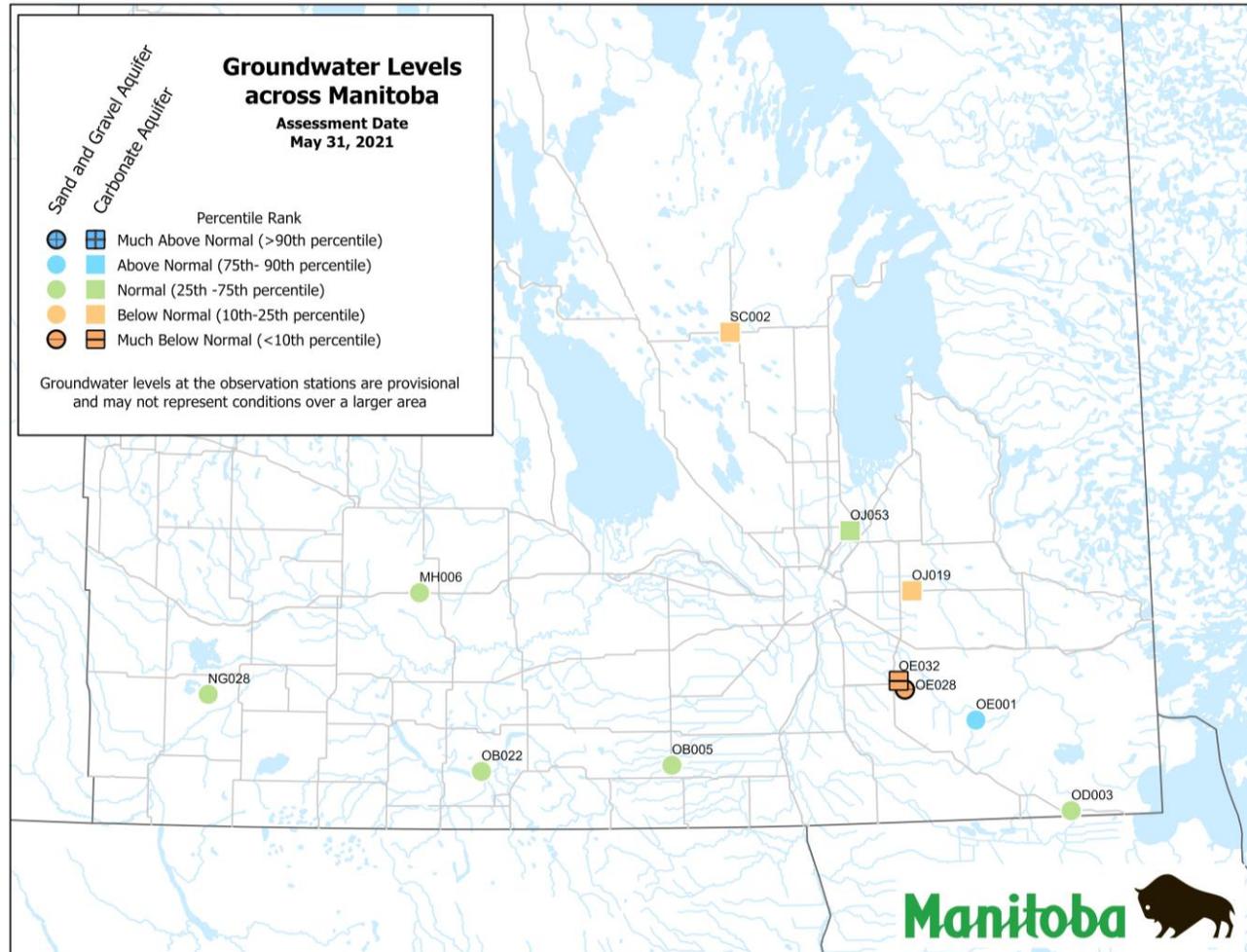


Figure 5: Groundwater indicator on May 31, 2021 for select groundwater monitoring sites.

## 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).

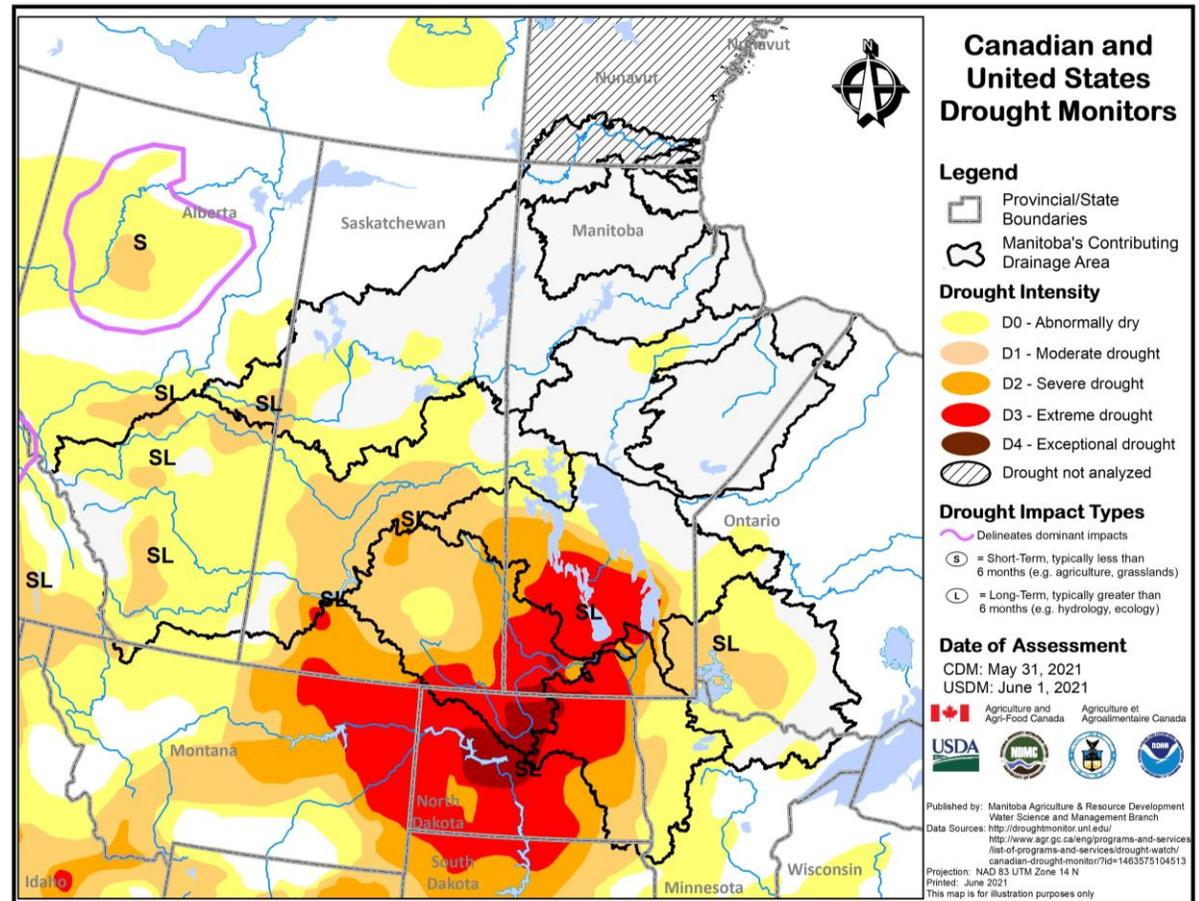


Figure 6: Canadian and United States Drought Monitors' classification of short-term (S) and long-term (L) drought conditions assessed as of May 31, 2021.

# Water Availability

## Reservoir Conditions

Table 1: Water Supply Reservoir Levels and Storages – May 31, 2021 (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) <sup>1*</sup> | Brandon, Portage, Cartier Regional Water Co-op | 1,402.5 <sup>1</sup> | 1401.92                      | May 31, 2021  | -0.58                                  | 300,000                             | 292,882                               | 98%   |
| Lake Wahtoppanah (Rivers)*                      | Rivers   | 1,536                | 1536.57                      | May 31, 2021  | 0.57                                   | 24,500                              | 25,790                                | 105%  |
| Minnewasta (Morden)*                            | Morden   | 1,082                | 1075.29                      | June 1, 2021  | -6.71                                  | 3,150                               | 2,142                                 | 68%   |
| Stephenfield*                                   | Carman, Pembina Valley Water Co-op             | 972                  | 972.50                       | May 31, 2021  | 0.50                                   | 3,810                               | 4,045                                 | 106%  |
| Vermilion*                                      | Dauphin  | 1,274                | 1274.53                      | May 31, 2021  | 0.53                                   | 2,600                               | 2,723                                 | 105%  |
| Goudney (Pilot Mound)*                          |  | 1,482                | 1482.15                      | May 31, 2021  | 0.15                                   | 450                                 | 458                                   | 102%  |
| Jackson Lake*                                   |  | 1,174                | 1173.11                      | May 31, 2021  | -0.89                                  | 2,990                               | 2,764                                 | 92%   |
| Manitou (Mary Jane)*                            |  | 1,537                | 1535.77                      | May 31, 2021  | -1.23                                  | 1,150                               | 1,042                                 | 91%   |
| Turtlehead (Deloraine)*                         | Deloraine                                      | 1,772                | 1769.06                      | May 31, 2021  | -2.94                                  | 1,400                               | 1,196                                 | 85%   |
| Lake Irwin*                                     |  | 1,178                | 1177.84                      | May 31, 2021  | -0.16                                  | 3,800                               | 3,703                                 | 97%   |
| Minnedosa*                                      |  | 1,682                | 1682.68                      | May 31, 2021  | 0.68                                   | 1,688                               | 1,872                                 | 111%  |
| Kenton Reservoir                                |  | 1,448                | 1447.09                      | May 19, 2021  | -0.91                                  | 600                                 | 532                                   | 89%   |
| Killarney Lake                                  |  | 1,615                | 1613.69                      | May 12, 2021  | -1.31                                  | 7,360                               | 6,756                                 | 92%   |
| Elgin   |  | 1,532                | 1531.76                      | May 12, 2021  | -0.24                                  | 520                                 | 503                                   | 97%   |
| St. Malo  |  | 840                  | 840.30                       | May 13, 2021  | 0.30                                   | 1,770                               | 1,819                                 | 103%  |
| Boissevain                                      | Boissevain                                     | 1,697                | 1696.01                      | May 12, 2021  | -0.99                                  | 505                                 | 434                                   | 86%   |

<sup>1</sup> 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 6 (published June 1, 2021) are provided in Table 2.

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

| Region    | General Dugout Condition   |
|-----------|--|
| Eastern   | Livestock water availability is rated as adequate.   |
| Interlake | Livestock water supplies are currently adequate for most, but concern about lack of supply continues to increase. Dugout levels are low for this time of year, with more reports of being completely dry. More reports of well drilling to secure water supply and some producers have started hauling water |
| Southwest | Dugout levels are below normal, and sometimes dry. Water supply is rated as 40 to 50% adequate.  |
| Central   | A few producers had to pump water to fill their reservoirs for irrigation or for livestock. With dugouts lower than normal to start the grazing season, there is concern how long the water will last.   |
| Northwest | Additional moisture is needed for dugouts as water supplies are low.   |

## Soil Moisture

Manitoba Agriculture and Resource Development's mapping shows the soil moisture conditions for the top 120 cm on May 30, 2021.

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).

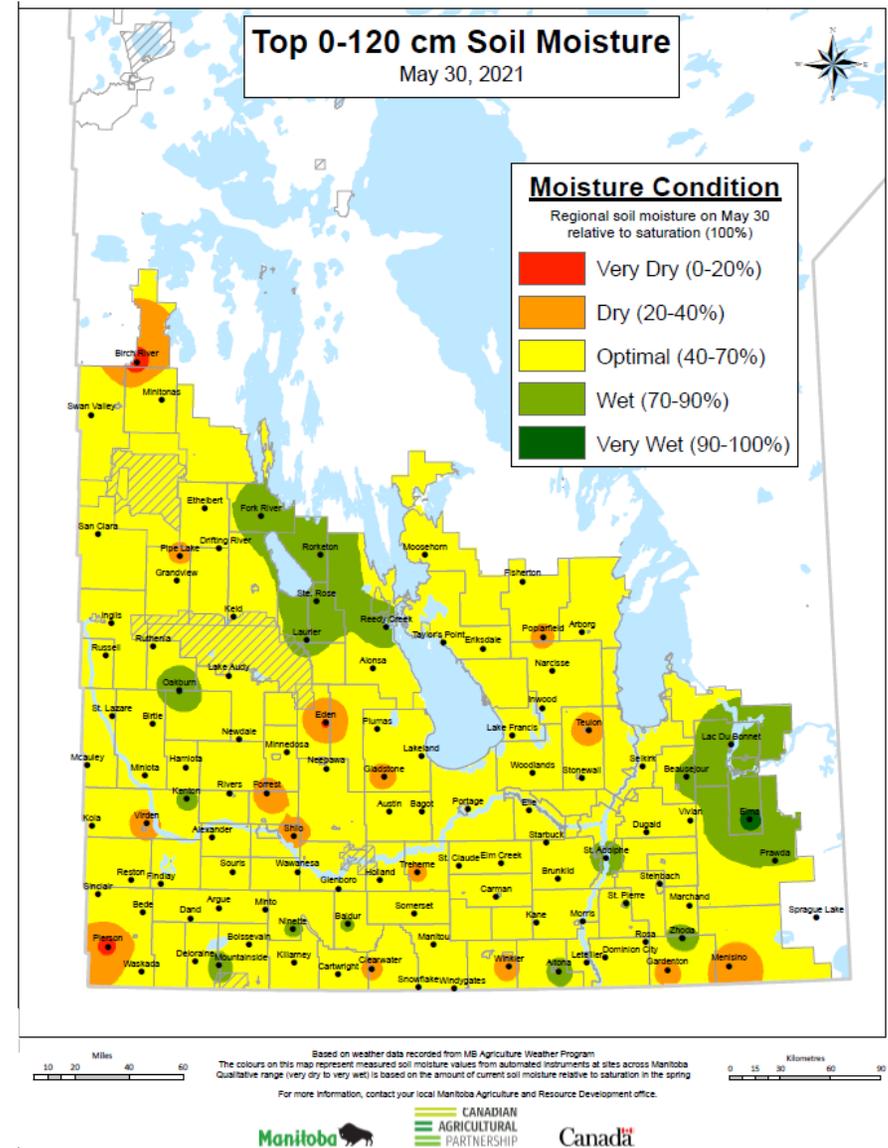


Figure 7: Manitoba Agriculture and Resource Development's May 30, 2021 mapping of soil moisture conditions in the top 0 – 120 cm.

## Wildland Fires

As of June 2, 2021 Conservation and Climate's Wildfire Program reported 83 wildfires this year to date, burning a total area of 276,065 hectares. Most of the burned area occurred in the western region. The wildfire danger is generally high to extreme in the south and low in the north.

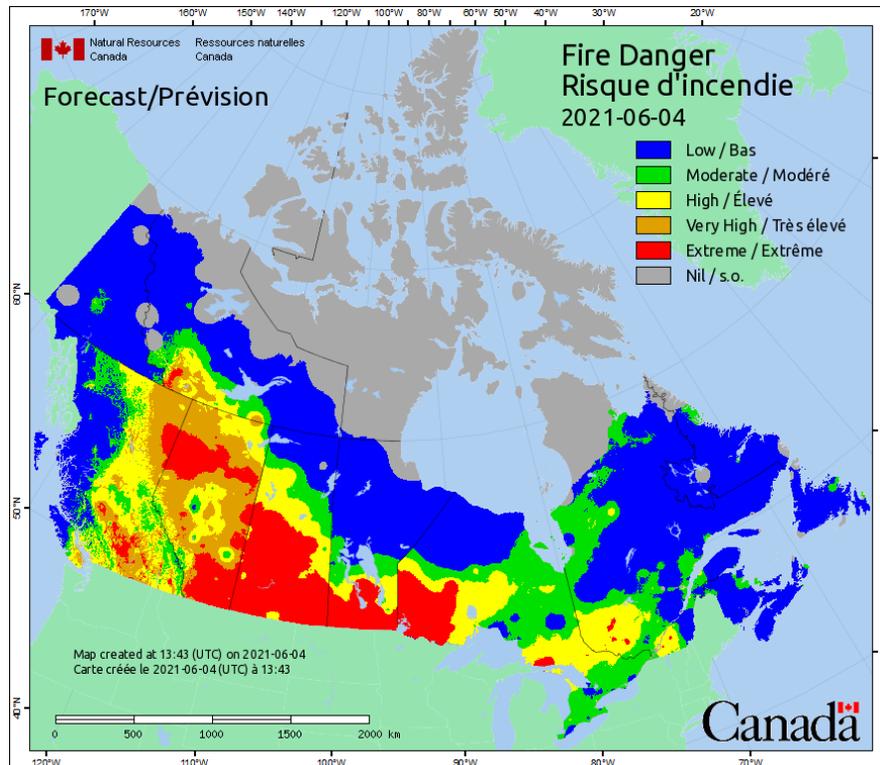


Figure 8: Fire Danger mapping by Natural Resources Canada.

Many municipalities continue to implement burning restrictions this spring. Additional information is available through the local municipal offices or through the interactive [Current Municipal Burning Restrictions](#) map.

## Impacts due to Dry Conditions

The Manitoba Wildfire Service advised that due to continued dry conditions and hot weather, burning permits would only be issued to essential burning, for rural municipalities, industrial operations and agriculture. All other burning permits would be restricted in southern Manitoba. Due to high wildfire danger levels, on Thursday June 3, Level 1 travel restrictions took effect across Area 1, 2, 3, 6, 7 and 9 and Level 2 restrictions took effect across Area 5 and 8 for the southwest and eastern regions of the province.

On farm water supplies are generally below or well below normal for this time of year. There have been many reports of well water tables significantly lower than normal, hauling water, moving livestock or drilling new/deeper wells to secure water sources. 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).

Topsoil is expected to dry further without timely rains and is a concern to growers, especially in areas with poor moisture conditions or lighter textured soils. Late May rainfall helped with topsoil moisture recharge, but more is needed. Although forages are greening up, dry conditions and frost continue to limit pasture and hay regrowth. Supplemental pasture feeding has started in some regions. Producers remain concerned about feed supplies going forward. Manitoba Agriculture and Resource Development recently announced that livestock producers can apply to temporarily cut hay on Crown lands not normally designated for agricultural use. More information can be found at: [www.manitoba.ca/agriculture/land-management/crown-land/](http://www.manitoba.ca/agriculture/land-management/crown-land/). Manitoba Agriculture's website has information and resources for producers on how to manage [crop and livestock production during dry conditions](#).

Spring hydrologic drought impacts continue to occur. Well below normal winter precipitation resulted in insufficient spring runoff to meet licensed allocations in some regions, particularly water supplies for irrigation. Some communities have implemented water conservation restrictions due to low reservoir levels, including the City of Morden. Agricultural spraying season coupled with the hot and dry conditions have resulted in extremely high water demands on some water treatment plants and distribution systems.

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

This report was prepared with information from the following sources which are gratefully acknowledged:

**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](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/>