

WATER AVAILABILITY AND DROUGHT CONDITIONS REPORT Manitoba

July 25, 2012

Synopsis/Overview

As of July 23rd, moderate meteorological drought conditions are prevailing in localized areas of southeastern Manitoba around Winnipeg, Emerson and Sprague and in northern Manitoba in the Churchill and Seal River areas (based on 90 day percent of average precipitation).

Over the last 30 days, below average precipitation was received in southern Manitoba in much of the Red, Assiniboine, and Winnipeg River basins, in areas around Barrens River, Gimli, and Neepawa, and east of Dauphin. In northern Manitoba, below average precipitation occurred in the Hayes and Saskatchewan Rivers basins, and in areas around Flin Flon, Lynn Lake, Thompson, Norway House and Grand Rapids.

A number of rivers across the province are experiencing low flow conditions. In southern Manitoba, flows remain below normal in the Red (upstream of Winnipeg), Pembina, Boyne, Roseau, Icelandic, Whitemud and Whitemouth Rivers and in the Souris River at Westhope. Flows are particularly low in the Whitemouth and Boyne Rivers. In northern Manitoba, flows are also below normal in the Seal River, the Burntwood River above Leaf Rapids, the Odei River near Thompson, the Cochrane River near Brochet and in the lower Churchill River.

A number of lakes in southeastern Manitoba are still experiencing low water levels including Big Whiteshell, Falcon and West Hawk lakes.

Most water supply reservoirs in southern and western Manitoba are at full or near supply levels. Reservoirs have sufficient water supplies for the balance of the year if they are properly managed.

Manitoba Agriculture, Food and Rural Initiatives reports that water levels in dugouts were lower than normal in the Interlake, Central and the Eastern regions. Dugouts are 80 % full in the southwest region. Some producers are using alternate sources for watering in the Central region and 10 - 20 % reductions in hay production are expected in the Eastern region.

Outlook

Environment Canada's seasonal forecast for the next three months (July, August and September 2012) for Manitoba is for above normal temperatures and below normal precipitation for the entire province (Attachment 4).

Precipitation

Over the last 30 days, below average precipitation was received in southern Manitoba in much of the Red, Assiniboine, and Winnipeg River basins, in areas around Barrrens River, Gimli, and Neepawa, and east of Dauphin. In northern Manitoba, below average precipitation occurred in the Hayes and Saskatchewan Rivers basins, and in areas around Flin Flon, Lynn Lake, Thompson, Norway House and Grand Rapids.

Over the last 90 days, average to above average precipitation has also been received across much of Manitoba except for the Winnipeg, Gimli, Portage la Prairie, Westbourne, Steinbach, Emersion, Sprague, Grand Rapids, Norway House, Churchill and Seal River areas where precipitation received was below average (Table 1 and Attachment 1).

Stream and River Flows

Most streamflows in southern Manitoba are generally above median except for the Red (upstream of Winnipeg), Pembina, Boyne, Roseau, Icelandic, Whitemud and Whitemouth Rivers and the Souris River at Westhope where flows are generally below median.

Most streamflows in northern Manitoba are above median except for the Seal River, the Burntwood River above Leaf Rapids, the Odei River near Thompson, the Cochrane River near Brochet and the lower Churchill River where flows are below median (Table 1 and Attachment 2).

Lake/Reservoir Conditions

A number of lakes in southeastern Manitoba are still experiencing low water levels including Big Whiteshell, Falcon and West Hawk lakes.

(http://www.gov.mb.ca/mit/floodinfo/floodoutlook/lakes_information.html).

Most water supply reservoirs in southern and western Manitoba are at full or near full supply levels (Attachment 3).

On Farm Water Supply

Manitoba Agriculture, Food and Rural Initiatives reports that water levels in dugouts were lower than normal in the Interlake, Central and the Eastern regions. Dugouts are 80 % full in the southwest region. Some producers are using alternate sources for watering in the Central region and 10 - 20 % reductions in hay production are expected in the Eastern region.

Aquifers

Groundwater levels in aquifers are generally very good due to significant recharge from last spring. Water level responses to seasonal or yearly 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 shallow sand aquifers and large-diameter wells constructed into these aquifers. Many of these areas are serviced by water supply pipelines.

Forest and Grassland Fires

Due to hot and dry conditions, new fires are still occurring across the province. More detailed information on fire conditions is available on the Manitoba Conservation and Water Stewardship under the Fire Program (website <http://www.gov.mb.ca/conservation/fire/>).

Potential Impacts

Southeastern rivers and tributaries are experiencing low flow conditions with particularly low flows in the Whitemouth River. With the Environment Canada outlook for below normal precipitation with above normal temperatures, there are concerns the province could see prolonged low flow conditions in southeastern Manitoba leading to hydrological drought for some small rivers. There is also a risk of prolonged dry conditions in the Churchill and Seal River areas.

Table 1: Detail by Major River Basin (Attachments: 1, 2 and 5)

Basin (in Manitoba)	Indicators		Major River Flow Conditions as of July 23, 2012
	1 month Precipitation as of July 23, 2012	3 month Precipitation as of July 23, 2012	
Red River	Well below average except above average for Pilot Mound, Killarney and Boissevain	Below to above average	Below median except above median for Red River at Selkirk and Joubert Creek at St. Pierre-Jolys. Well below median for Boyne and Pembina Rivers.
Winnipeg River	Well below average	Below to above average	Above median except well below median for Whitemouth River.
Assiniboine River-Souris River	Below to above average	Below to above average	Above median except below median for Souris River near Westhope.
Lake Manitoba	Below to above average. Well above average for Swan River area	Below to above average. Well above average for Swan River	Above median except below median for Whitemud River
Lake Winnipeg	Below to above average	Below to above average	Above median except below median for Icelandic River
Saskatchewan River	Below average	Below to above average	Above median
Nelson River	Below to above average	Below to above average	Above median except below median for Burntwood River above Leaf Rapids and Odei River near Thompson
Hayes River	Below average	Average	Not available
Churchill River	Below to above average	Below to above average	Above median except below median for Cochrane and lower Churchill Rivers
Seal River	Below to above average	Below average	Below median

Note: Median is 50th percentile.

Acknowledgements

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

- Agriculture and Agri-food Canada (Drought watch); North America Drought Monitor:
<http://www4.agr.gc.ca/DW-GS/current-actuelles.jsp?lang=eng>
 - Regional site: [30 and 90 precipitation](#)
 - National Site: [Palmer Drought](#) and [Standard Precipitation Indices](#)
- Manitoba Infrastructure and Transportation: Flow and Lake information:
http://www.gov.mb.ca/mit/floodinfo/floodoutlook/river_conditions.html
http://www.gov.mb.ca/mit/floodinfo/floodoutlook/lakes_information.html
- Environment Canada: Flow and Lake information
http://www.wateroffice.ec.gc.ca/index_e.html
- Fire Hazard: <http://www.gov.mb.ca/conservation/fire/>
- Environment Canada 3 month climatic outlook:
http://weatheroffice.gc.ca/saisons/index_e.html
- Manitoba Agriculture, Food and Rural Initiatives
- Manitoba Conservation and Water Stewardship Fire Program

For further information, please contact: Abul Kashem, Surface Water Management Section, Manitoba Conservation and Water Stewardship, 945-6397

Definition of drought

Meteorological Drought is generally defined by comparing the rainfall in a particular place and at a particular time with the average rainfall for that place. Meteorological drought leads to a depletion of soil moisture and this almost always has an impact on agricultural production. Meteorological droughts only consider the reduction in rainfall amounts and do not take into account the effects of the lack of water on water reservoirs, human needs or on agriculture. A meteorological drought can occur without immediately impacting streamflow, groundwater, or human needs. If a meteorological drought continues, it will eventually begin to affect other water resources.

Agricultural Drought occurs when there is not enough water available for a particular crop to grow at a particular time. Agricultural drought depends not only on the amount of rainfall but also on the use of that water. Agricultural droughts are typically detected after meteorological drought but before a hydrological drought. If agricultural drought continues, plants will begin to protect themselves by reducing their water use, which can potentially reduce crop yields.

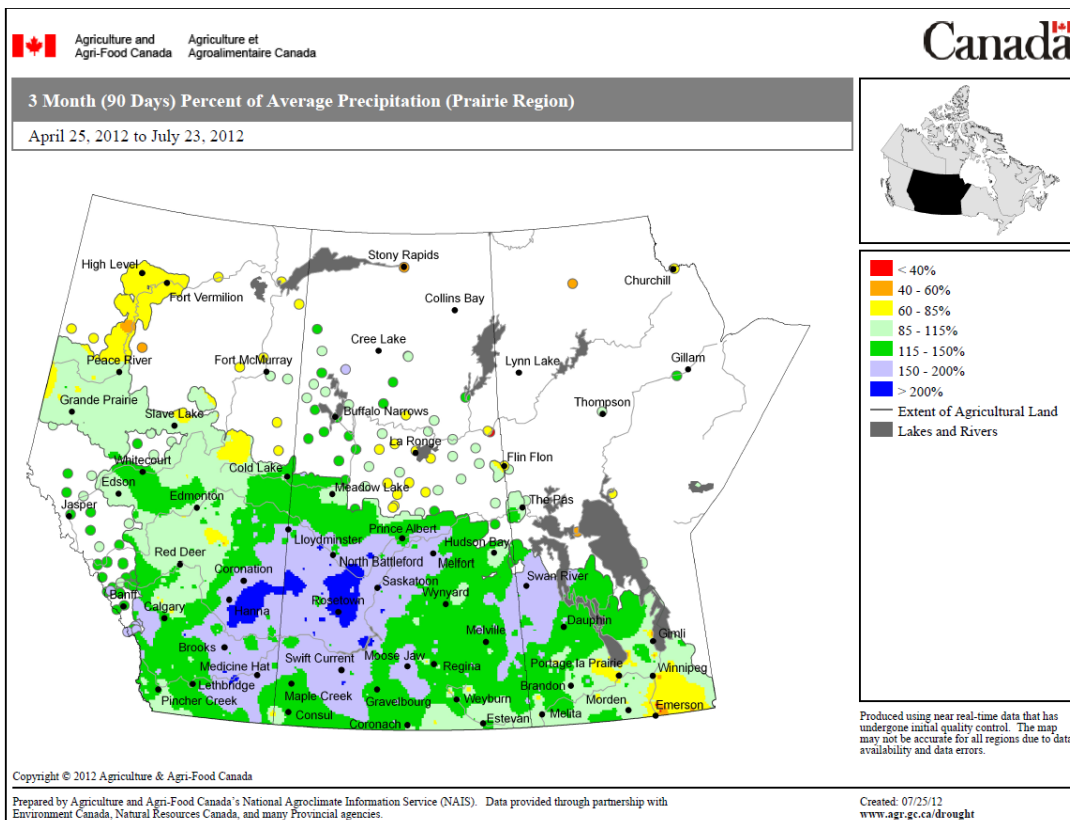
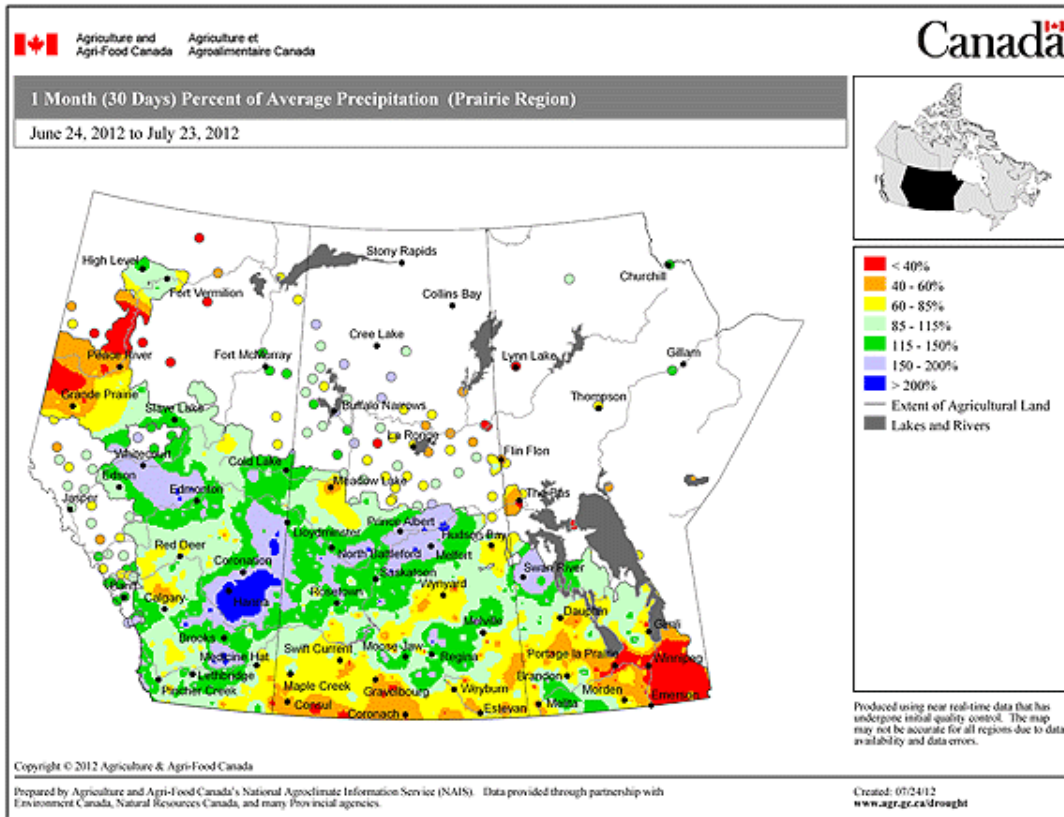
Hydrological Drought is associated with the effect of low rainfall on water levels in rivers, reservoirs, lakes, and aquifers. Hydrological droughts are usually noticed some time after meteorological droughts. First, precipitation decreases and after some time, water levels in rivers and lakes drop. Hydrological drought affects uses that depend on water levels. Changes in water levels affect ecosystems, hydroelectric power generation, and recreational, industrial and urban water use. A minor drought may affect small streams causing low streamflows or drying. A major drought could impact surface storage, lakes, and reservoirs thereby affecting water quality and causing municipal and agricultural water supply problems.

Rainfall also recharges groundwater aquifers through infiltration through the soil and run-off into streams and rivers. Once groundwater and surface waters are significantly impacted by lack of precipitation, a "hydrologic drought" occurs. Aquifer declines can range from a quick response (shallow sand) to impacts extending over multiple years. Impacts can include depletion of shallow depth wells, drying of farm dugouts, and changes to ground water quality.

Socioeconomic Drought occurs when the supply fails to meet the demand for an economic good(s) such as domestic water supplies, hay/forage, food grains, fish, and hydroelectric power, due to weather related water supply shortages from one or both of natural or managed water systems. At any time during meteorological, hydrological, or agricultural droughts, a socioeconomic drought can occur.

Attachments

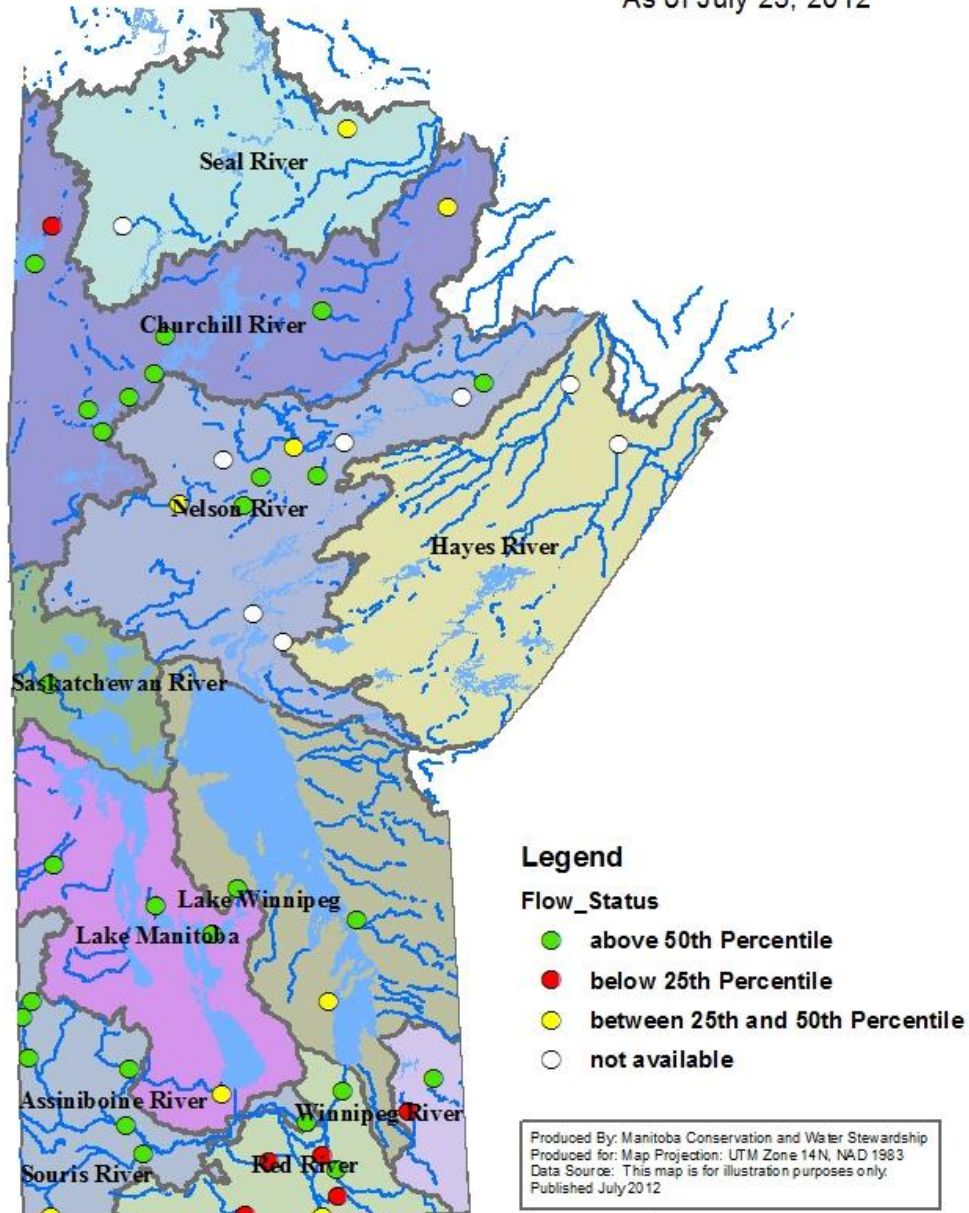
1. Precipitation (Percent of average: 30 days and 90 days)



2. Major River Flow Status

Major River Flow Status Map

As of July 23, 2012



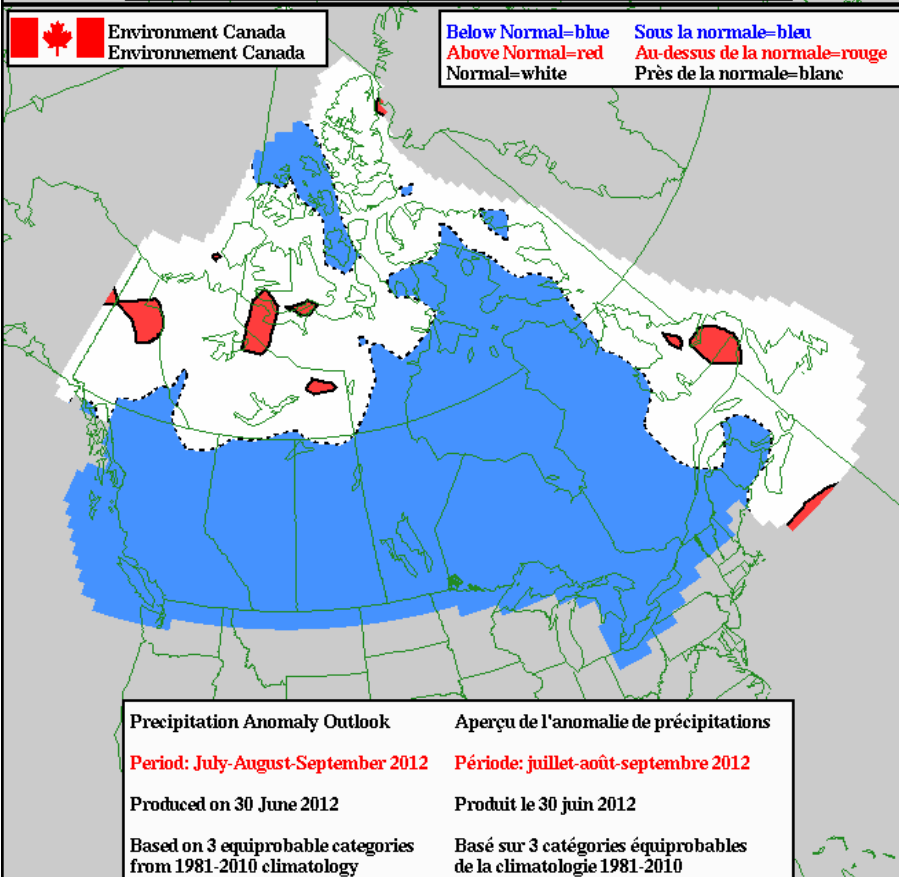
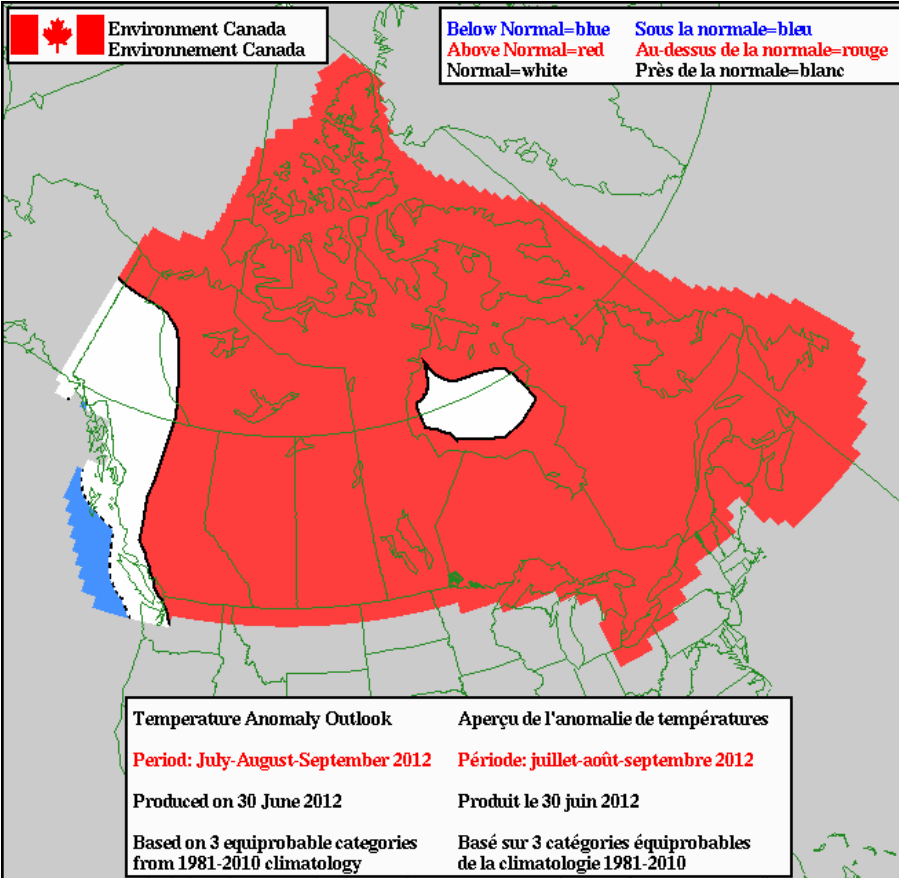
0 30 60 120 180 240
Kilometers

3. Water Supply Reservoir Status (Southern and Western)

Water Supply Reservoir Levels and Storages								
July 23, 2012								
Lake or Reservoir	Community	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) (%)
Elgin	Elgin	1532.00	1531.64	July 18, 2012	-0.4	520	495	95%
Goudney (Pilot Mound)	Pilot Mound	1482.00	1482.08	July 23, 2012	0.1	450	454	101%
Irwin		1178.00	1177.82	July 16, 2012	-0.2	3,800	3,692	97%
Jackson		1174.00	1173.05	March 21, 2012	-1.0	2,870	2,750	96%
Kenton (Kenworth)	Kenton	1448.00	1447.81	July 19, 2012	-0.2	600	600	100%
Lake of the Prairies (Shellmouth)*	Brandon, Portage	1402.50	1410.97	July 23, 2012	8.5	300,000	428,246	143%
Killarney	Killarney	1615.00	1615.77	May 8, 2012	0.8	7,360	7,714	105%
Manitou (Mary Jane)	Manitou	1537.00	1537.30	July 23, 2012	0.3	1,150	1,159	101%
Minnewasta (Morden)	Morden	1082.00	1080.28	July 23, 2012	-1.7	3,040	2,866	94%
Rapid City	Rapid City	1573.50	1573.74	April 25, 2012	0.2	200	217	108%
Lake Wahtopanah (Rivers)	Rivers	1536.00	1536.48	July 23, 2012		24,500	25,580	104%
Stephenfield	Carman	972.00	971.44	July 23, 2012	-0.6	3,810	3,550	93%
Turtlehead (Deloraine)	Deloraine	1772.00	1771.69	July 18, 2012	-0.3	1,400	1,385	99%
Vermilion	Dauphin	1274.00	1274.05	July 23, 2012	0.0	2,600	2,605	100%

* Summer Target level and storage.

4. Environment Canada 3 Month Outlook



5. Major River Basin

