Manitoba
Conservation and Water Stewardship

WATER AVAILABILITY AND DROUGHT CONDITIONS REPORT
Manitoba

May 4, 2012

Synopsis/Overview

Moderate drought conditions (meteorological) are prevailing in some areas of southern Manitoba including around the Red, Assiniboine and Souris Rivers near Emerson, Boissevain, Morden, Brandon and Portage la Prairie. Moderate drought conditions are also prevailing in the northern Interlake and in areas around Dauphin, Swan River, Lynn Lake, Churchill, and the east side of Lake Winnipeg .

However, recent precipitation across much of Manitoba (except the far north, the northern Interlake and the east side of Lake Winnipeg) has helped to increase soil moisture levels. Due to abnormally dry conditions in agro-Manitoba, recent rainfall has not produced significant runoff.

Most streamflows in southern Manitoba are well below normal. Spring runoff peaks were very low in major rivers and their tributaries across southern Manitoba. Flows in the far north including the lower Churchill Basin are also below normal.

Most lakes in eastern Manitoba are experiencing low water levels including Big Whiteshell, Falcon and West Hawk lakes.

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

Information on farm water supplies has been provided by Manitoba Agriculture, Food and Rural Initiative. Dugouts are full or close to full in most areas but water levels are generally lower in the Portage, Gladstone, Treherne, Morden, Winkler and Eastman areas. These areas are experiencing prolonged dry conditions.

Outlook

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

Precipitation

Over the last 30 days, average to above average precipitation was received in the Assiniboine River watershed west of Brandon, the Souris River watershed, the Saskatchewan River basin and the Roblin area. The Red River, Winnipeg River, Hayes River, Lake Winnipeg and Churchill River basins and the eastern side of Lake Manitoba and Dauphin areas received below average precipitation.

Over the last 90 days, average to above precipitation was received in all regions of

Manitoba except areas near Emerson, Boissevain, Morden, and Portage la Prairie, the northern Interlake, Dauphin, Swan River, Lynn Lake, Churchill, the east side of Lake Winnipeg and the Hayes River Basin where precipitation was below normal (Table 1 and Attachment 1).

The standard precipitation index map for April prepared by Agriculture and Agri-food Canada is not yet available.

Stream and River Flows

Flows in southern Manitoba are generally well below median except for some parts of the Assiniboine, Souris, Fairford and Waterhen Rivers where flows are generally median to above median.

Flows in the far north are generally below median including the lower Churchill River Basin. Flows in the upper Churchill and the Nelson River basins are above median. Flows in Odei River are below median (Table 1 and Attachment 2).

Lake/Reservoir Conditions

Most lakes in eastern Manitoba are experiencing below normal water levels. Big Whiteshell, Falcon and West Hawk lakes are about a foot below the normal level.

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

Water supply reservoirs in southern and western Manitoba have risen to full supply levels and peaked due to recent snowmelt and rainfall. Reservoirs have sufficient water supplies for the balance of the year if they are properly managed (Attachment 3).

On Farm Water Supply

Information on farm water supplies has been provided by Manitoba Agriculture, Food and Rural Initiative as follows:

- Northwest – livestock water supplies are adequate.
- Interlake – while soil moisture is generally adequate for seeding, some areas have dugouts that are at lower than average levels for this time of the season.
- Southwest – north of the Trans Canada Highway, dugouts are not at capacity but average about 80 % full. By contrast, south of the Trans Canada Highway, surface soils are at capacity to wet in the south west corner.
- Central – dugouts are full or close-to-full throughout the region except for the Portage-Gladstone-Treherne and Morden-Winkler areas where dugouts are partially full
- Eastman – dugouts are reported as 50 % “adequate” and 50 % “inadequate” for livestock requirements.

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 the prolonged dry conditions there is a potential risk of forest and grass fires in southern Manitoba. 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

Southern Manitoba is experiencing low flows conditions as the spring runoff peaks were very low in major rivers and their tributaries in conjunction with prolong dry conditions. With the Environment Canada outlook for below normal precipitation with high temperature for southern Manitoba, there are concerns that the province could see prolong low flow conditions in southern Manitoba leading to hydrological drought. There is a risk of prolong dry conditions in northern Interlake areas.

There is also a potential risk of forest and grass fires in southern Manitoba.

Provincial water supply reservoirs have sufficient water supplies for the balance of the year if they are properly managed.

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

Basin (in Manitoba)	Indicators		Major River Flow Conditions As of April 30, 2012
	1 month Precipitation (April 1-30, 2012)	3 months Precipitation (February 1, 2012 to April 30, 2012)	
Red River	Below except Winnipeg area	Below to average	Below median
Winnipeg River	Below average	Average	Below median. Well below for Whitemouth River.
Assiniboine River-Souris River	Average to above average except lower Assiniboine River below average	Below to above average	Above median except below median for Shell, Souris (at Westhope),and Little Saskatchewan Rivers
Lake Manitoba	Below to above average	Below to average	Above median except below median for Swan and Whitemud Rivers
Lake Winnipeg	Below average	Below to average	Below median
Saskatchewan River	Above average	Average to above average	Below median
Nelson River	Average to above average	Average to above average	Above median except below median for Odei River
Hayes River	Below average	Below average	Above median
Churchill River	Below average	Below average	Above median except below median for Lower Churchill and Cochrane Rivers
Seal River	n/a	n/a	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.jspx?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.*

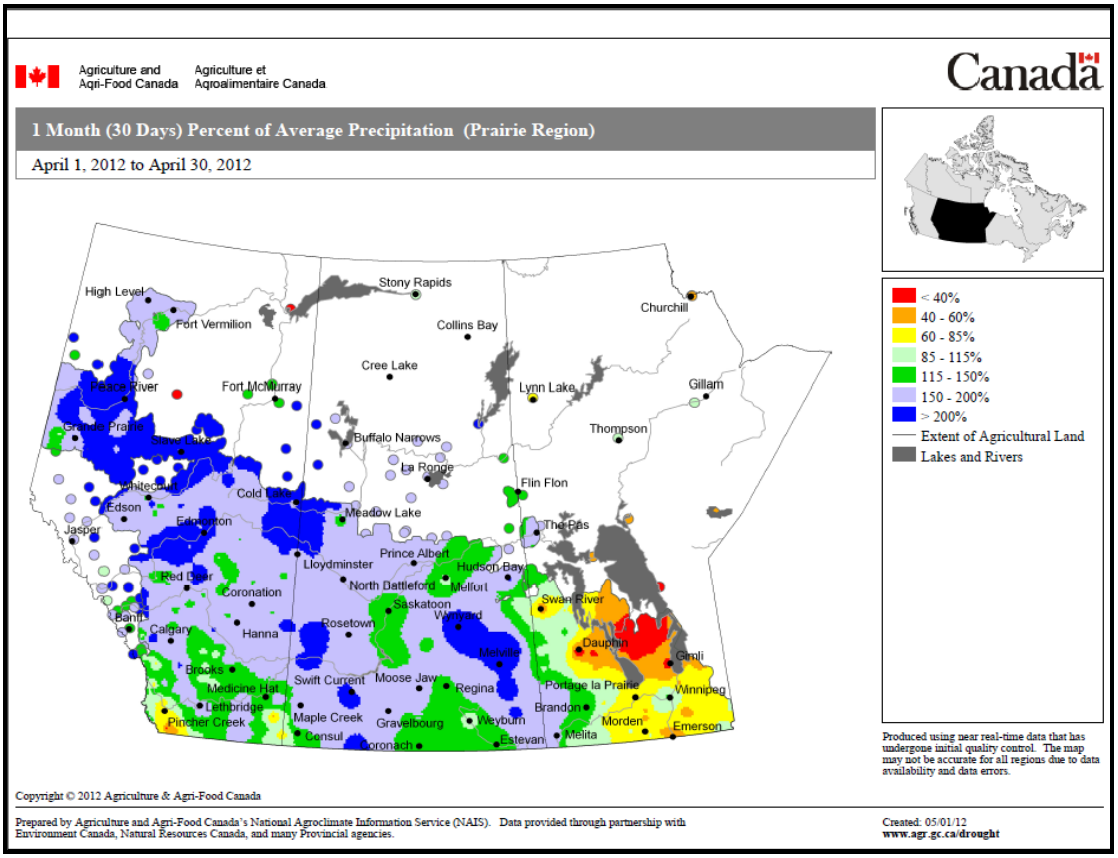
Hydrological Drought *is associated with the effect of low rainfall on water levels in rivers, reservoirs, lakes, and aquifers. Hydrological droughts are usually noticed some time after meteorological droughts. First, precipitation decreases and after some time, water levels in rivers and lakes drop. 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.*

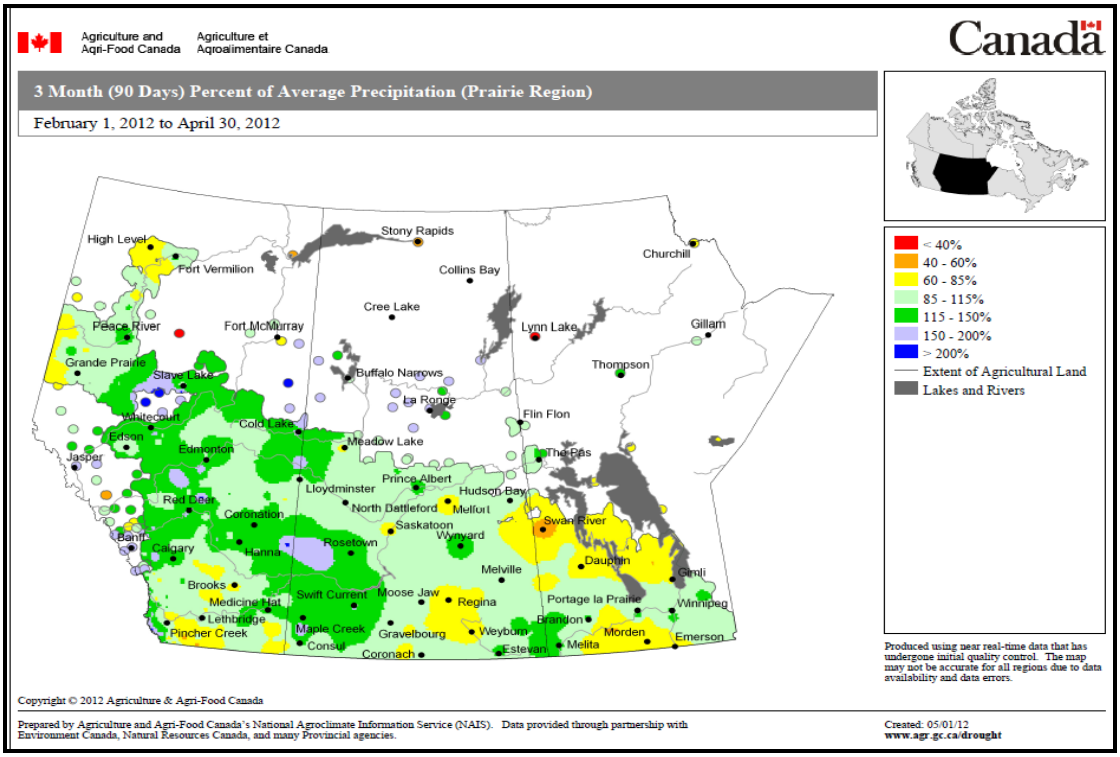
Rainfall also recharges groundwater aquifers through infiltration through the soil and run-off into streams and rivers. Once groundwater and surface waters are significantly impacted by lack of precipitation, a "hydrologic drought" occurs. Aquifer declines can range from a quick response (shallow sand) 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.*

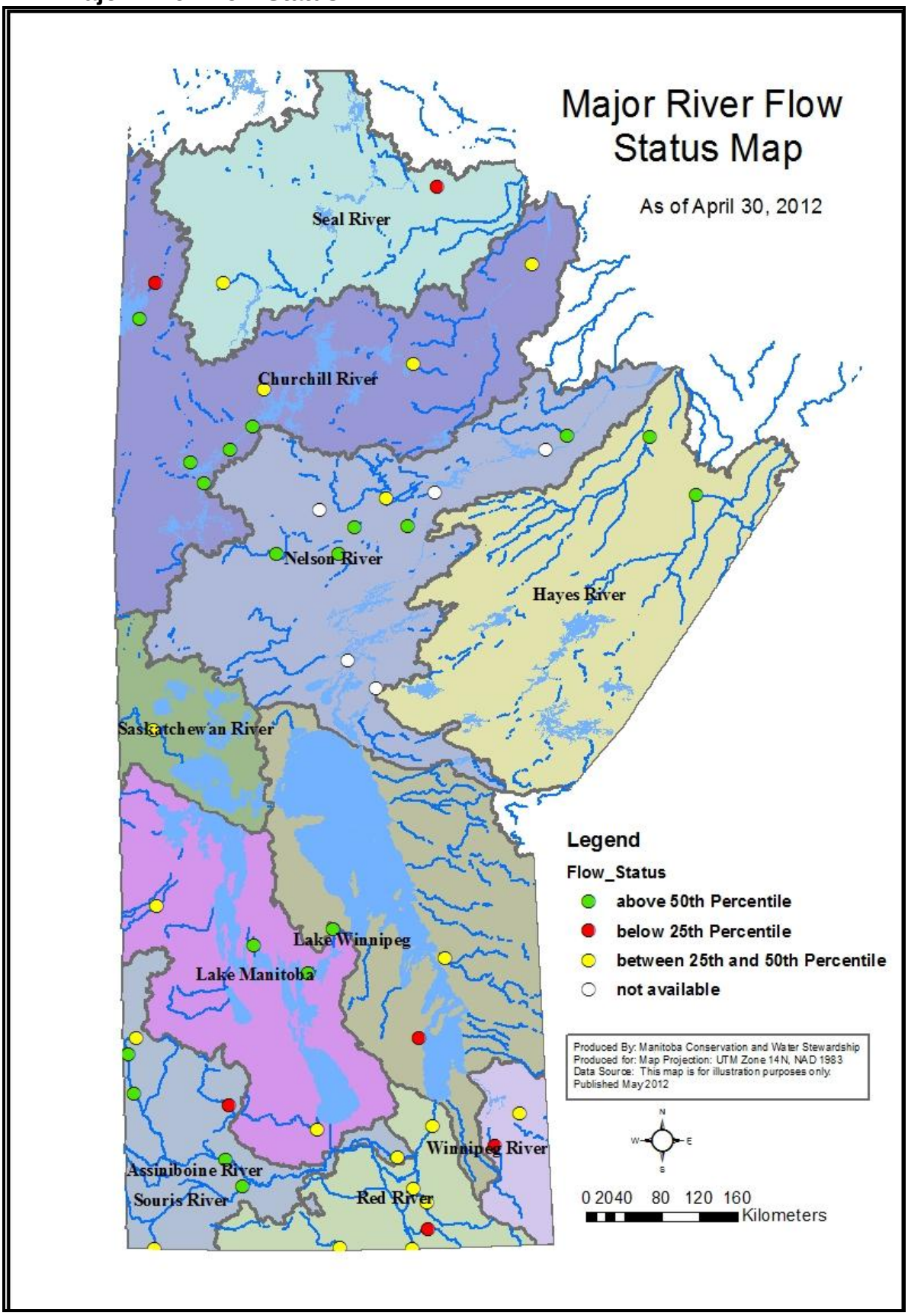
Attachments

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





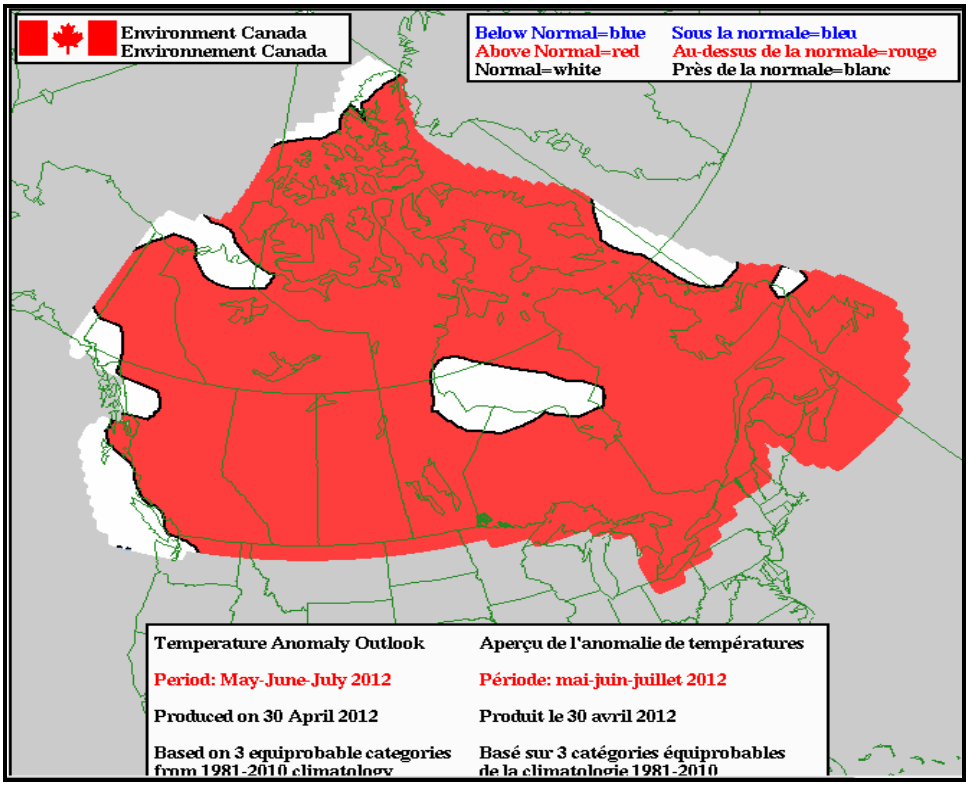
2. Major River Flow Status

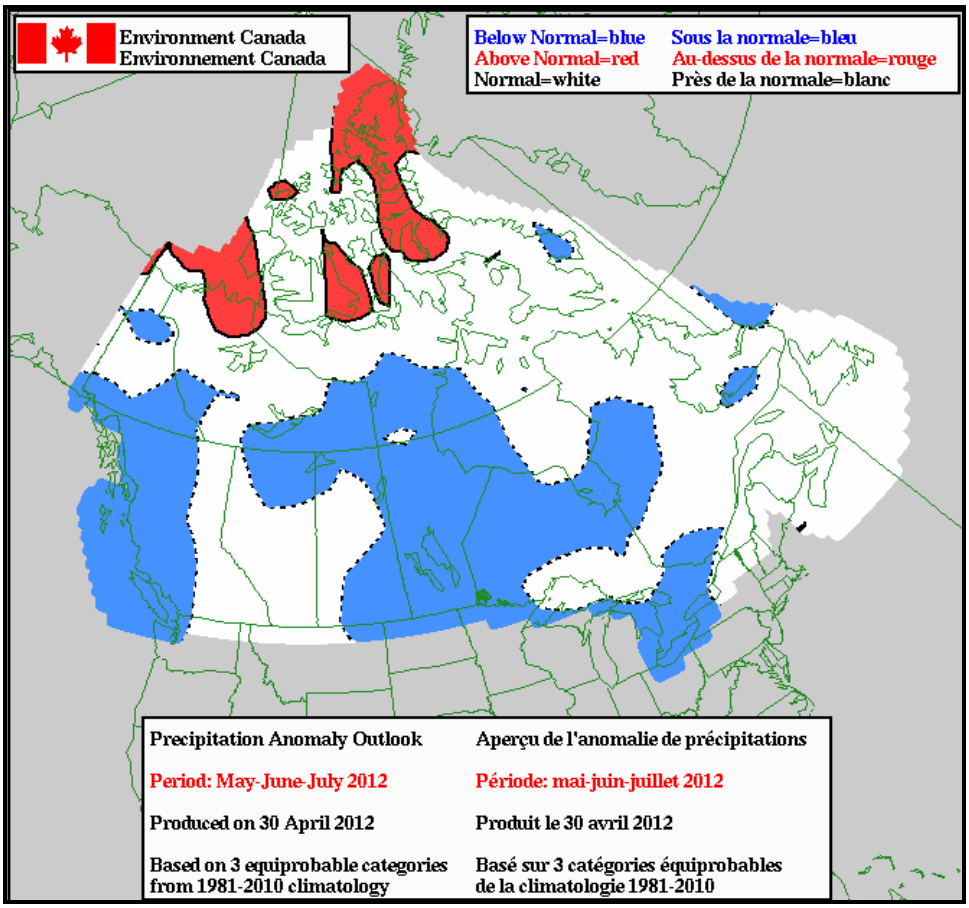


3. Water Supply Reservoir Status (Southern and Western)

	Water Supply Reservoir Levels and Storages							
	May 1, 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	1531.84	April 24, 2012	-0.2	520	509	98%
Goudney (Pilot Mound)	Pilot Mound	1482.00	1482.15	May 1, 2012	0.2	450	458	102%
Irwin	-	1178.00	1178.23	March 22, 2012	0.2	3,800	3,950	104%
Jackson	-	1174.00	1173.05	March 21, 2012	-1.0	2,870	2,750	96%
Kenton (Kenworth)	Kenton	1448.00	1447.85	April 25, 2012	-0.2	600	600	100%
Lake of the Prairies (Shellmouth)*	Brandon, Portage	1402.50	1405.32	May 1, 2012	2.8	300,000	340,167	113%
Killarney	Killarney	1615.00	1614.55	February 13, 2012	-0.5	7,360	7,153	97%
Manitou (Mary Jane)	Manitou	1537.00	1536.95	May 1, 2012	0.0	1,150	1,146	100%
Minnewasta (Morden)	Morden	1082.00	1080.63	May 1, 2012	-1.4	3,040	2,923	96%
Rapid City	Rapid City	1573.50	1573.74	April 25, 2012	0.2	200	217	108%
Lake Wahtopanah (Rivers)	Rivers	1536.00	1536.55	May 1, 2012		24,500	25,737	105%
Stephenfield	Carman and PVWC	972.38	972.33	May 1, 2012	0.0	3,810	3,965	104%
Turtlehead (Deloraine)	Deloraine	1772.00	1772.11	April 24, 2012	0.1	1,400	1,412	101%
Vermilion	Dauphin	1274.00	1274.30	April 29, 2012	0.3	2,600	2,610	100%
* Summer Target level and storage.								

4. Environment Canada 3 Month Outlook





5. Major River Basin