




Government  
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Ministry of the Economy




Manitoba



MANITOBA  
GEOLOGICAL  
SURVEY  
1925



WILLISTON BASIN



UNIVERSITY OF ALBERTA  
EDMONTON

Open File 2010-45  
Saskatchewan Ministry of the Economy  
Saskatchewan Geological Survey

Open File OF2011-3  
Manitoba Innovation, Energy and Mines  
Manitoba Geological Survey

### Targeted Geoscience Initiative (TGI) II

## WILLISTON BASIN ARCHITECTURE AND HYDROCARBON POTENTIAL

### Freshwater Hydraulic Head – Bakken Aquifer

Sheet 24 of 55

by  
D. Palombi and B.J. Rostron

This contour map was produced using fluid pressures and well data derived from 69 drillstem tests retrieved from public data sources. A rigorous quality control procedure was implemented in order to best represent the natural hydraulic head distribution. Control points were gridded using a kriging interpolation algorithm in Golden Software Inc.'s Surfer Version 8.0. The resultant grid was contoured and projected using Generic Mapping Tools (GMT) with manual modifications when necessary. Areas in which anomalies may be present may not be accurately portrayed and are likely the result of data control, interpolation, and mapping algorithms.

Although the Saskatchewan Ministry of the Economy has exercised all reasonable care in the compilation, interpretation, and production of this map, it is not possible to ensure total accuracy, and all persons who rely on the information contained herein do so at their own risk. The Saskatchewan Ministry of the Economy and the Government of Saskatchewan do not accept liability for any errors, omissions or inaccuracies that may be included in, or derived from, this product.

**This map may be referenced as:**  
Palombi, D. and Rostron, B.J. (2013): Freshwater Hydraulic Head – Bakken Aquifer, Williston Basin Architecture and Hydrocarbon Potential, Targeted Geoscience Initiative II; Saskatchewan Ministry of the Economy, Saskatchewan Geological Survey, Open File 2010-45/Manitoba Innovation, Energy and Mines, Manitoba Geological Survey, Open File OF2011-3, sheet 24 of 55, 1:3 000 000-scale map.

**This entire series may be referenced as:**  
Palombi, D. and Rostron, B.J. (2013): Regional hydrogeological characterization of the northeastern margin of the Williston Basin; Saskatchewan Ministry of the Economy, Saskatchewan Geological Survey, Open File 2010-45/Manitoba Innovation, Energy and Mines, Manitoba Geological Survey, Open File OF2011-3, set of 55 1:3 000 000-scale maps.

This Open File is available for free download at [www.WillistonTGI.com](http://www.WillistonTGI.com).

Equipotential line

Edge of Phanerozoic cover

Torquay zero edge

Bakken zero edge

Aquifer eroded

Control point

Lake

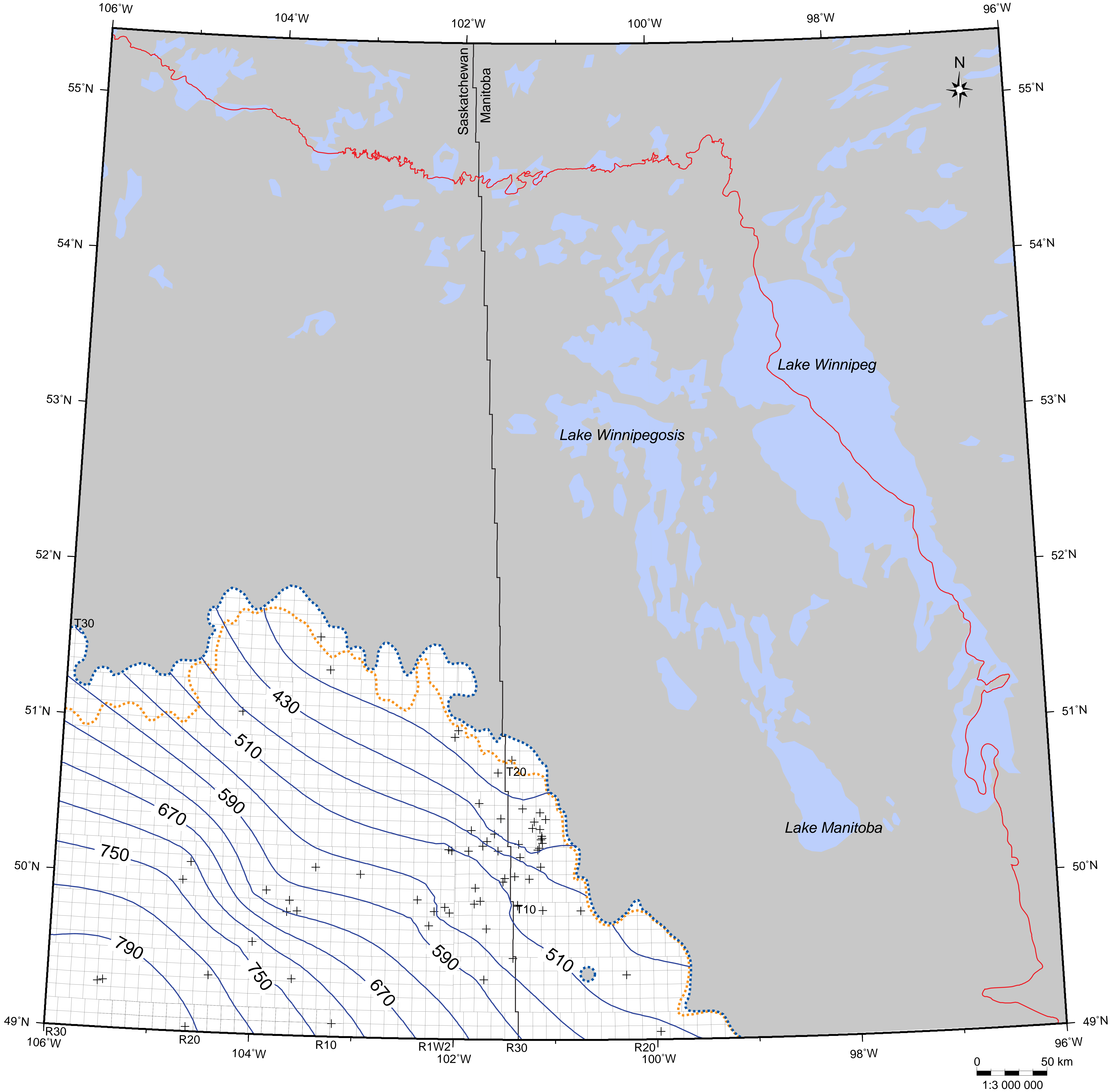
Contour Interval = 40m

Transverse Mercator Projection  
Central Meridian 101° W

### Hydrostratigraphy

	RAVENSCRAG
	Bearpaw
	JUDITH RIVER
	Colorado-Lea Park
	NEWCASTLE
	Joli Fou
	MANNVILLE
	Masefield-Waskada
	JURASSIC
	Watrous
	POPLAR
	RATCLIFFE
	MIDALE
	FROBISHER
	ALIDA
	TILSTON
	SOURIS VALLEY
	BAKKEN
	Three Forks
	BIRDBEAR
	Seward
	DUPEROW
	Souris River
	MANITOBA
	Prairie Evaporite
	WINNIPEGOSIS
	Ashern
	ORDO-SILURIAN
	Stony Mountain
	RED RIVER
	Winnipeg
	CAMBRO-ORDOVICIAN
	Precambrian

aquifer aquitard aquiclude



The map displays the Williston Basin region, spanning from 106°W to 96°W and 49°N to 55°N. It shows equipotential lines (blue solid lines) with values ranging from 430 to 790. The map includes the edges of the Phanerozoic cover (red solid line) and the Torquay zero edge (blue dotted line). The Bakken zero edge is marked with an orange dotted line. The map also shows the location of Lake Winnipeg, Lake Winnipegosis, and Lake Manitoba. A north arrow is located in the top right corner. A scale bar indicates 0 to 50 km. The map is labeled with coordinates and grid lines (R30, R20, R10, R1W2, R30, R20, R10, R30, R20, R10).