

**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 – Newcastle Aquifer**  
Sheet 54 of 55

by  
D. Palombi and B.J. Rostron

This contour map was produced using fluid pressures and well data derived from 30 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 – Newcastle 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 54 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

Newcastle-Viking zero edge

Aquifer eroded

Control point

Lake

Contour Interval = 40m

Transverse Mercator Projection  
Central Meridian 101° W

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

106°W 104°W 102°W 100°W 98°W 96°W

55°N 54°N 53°N 52°N 51°N 50°N 49°N

Saskatchewan Manitoba

Lake Winnipeg

Lake Winnipegosis

Lake Manitoba

0 50 km

1:3 000 000