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WILLISTON BASIN



UNIVERSITY OF ALBERTA

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

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Manitoba Innovation, Energy and Mines
Manitoba Geological Survey

Targeted Geoscience Initiative (TGI) II

WILLISTON BASIN ARCHITECTURE AND HYDROCARBON
POTENTIAL

Total Dissolved Solids (TDS) – Tilston Aquifer
Sheet 28 of 55

by
D. Palombi and B.J. Rostron

This contour map was produced using water analyses from 175 wells retrieved from public and private data sources. A rigorous quality control procedure was implemented in order to best represent the natural salinity 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. A variable contour interval was chosen to illustrate significant changes in water chemistry across the isoconcentration lines. 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): Total Dissolved Solids (TDS) – Tilston 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 28 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.

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25

50

100

200

300

400

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Isoconcentration line

Edge of Phanerozoic cover

Tilston zero edge

Aquifer eroded

Control point

Lake

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

The map displays the TDS distribution in the Tilston Aquifer of the Williston Basin. The background is shaded grey to indicate eroded aquifer areas. Blue areas represent lakes: Lake Winnipeg, Lake Winnipegosis, and Lake Manitoba. A red line marks the edge of the Phanerozoic cover, and a blue dotted line indicates the Tilston zero edge. Contours of Total Dissolved Solids (TDS) are shown in various colors (cyan, blue, purple, green, yellow, red) corresponding to the legend. The map is overlaid with a grid of latitude and longitude coordinates. A north arrow is located in the upper right corner. A scale bar at the bottom right indicates a distance of 50 km at a scale of 1:3 000 000. The legend on the left defines the symbols for TDS (g/L), isoconcentration lines, the edge of Phanerozoic cover, the Tilston zero edge, eroded aquifer, control points, and lakes. The hydrostratigraphic column on the right lists geological units from Precambrian to Ravenscrag, with the Tilston unit highlighted in red. A coordinate grid is shown at the bottom with labels R30, R20, R10, R1W2I, and R30.