



LEGEND

POTENTIOMETRIC SURFACE, METRES ABOVE
MEAN SEA LEVEL
EQUIPOTENTIAL CONTOUR, METRES ABOVE
MEAN SEA LEVEL
GENERALIZED GROUNDWATER FLOW DIRECTION

NOTE: CONTOUR INTERVAL
10m Below 300 metres above mean Sea Level
30m Above 300 metres above mean Sea Level

FLOWING WELL (a)

(a) All flowing wells on file are indicated on this map. However, the potentiometric surface has not been shown for deep flowing wells or where the elevation could not be accurately estimated.

DISCUSSION

In this Figure a two-dimensional plan view of the potentiometric surface¹ within the Neepawa map sheet area is presented and the generalized regional horizontal movement of groundwater is indicated. The potentiometric surface was constructed from water levels reported in water well drillers' logs on file with the Hydrotechnical Services Branch. Elevations were estimated from 1:50,000 NTS maps with a 25 foot contour interval. Well data has not been used in areas with steep topographic gradients where elevations could not be reasonably estimated. Given the magnitude of seasonal and long-term variations in groundwater levels in the period encompassed by the water well logs and the inherent inaccuracies in estimating elevations and in the reported static water levels, this map should be regarded as presenting only a generalized regional estimation of the potentiometric surface. It should not be used to determine groundwater flow directions in local areas. Vertical groundwater flows are not represented.

Regional groundwater flow within the map sheet area is dominated by two features: the Riding Mountain uplands form a regional recharge area in which a large potentiometric high has developed and the topographic low occupied by Lake Manitoba forms a regional groundwater discharge area.

In the western part of the map sheet area, the potentiometric surface elevation exceeds 800 m a.s.l. within the upland area but declines rapidly along the Manitoba Escarpment. Groundwater flow is generally from west to east along the escarpment but within the rugged topography of the upland area flow systems would be expected to be predominantly local to intermediate in nature with lakes and streams forming discharge areas. Regional groundwater movement is expected to be vertically downward within the low permeability materials underlying the uplands, with west to east horizontal transport in the more permeable strata such as the Swan River Formation.

Between the Manitoba Escarpment and Lake Manitoba regional groundwater flow continues to be dominantly west to east although a local potentiometric high in the north-central part of the map sheet area interrupts the general flow pattern. The regional potentiometric gradient is approximately 0.3%. Lake Manitoba forms a regional discharge area for this eastwardly moving water.

East of Lake Manitoba, groundwater movement is generally from east to west. A large potentiometric surface high exists between Lake Manitoba and Lake Winnipeg and groundwater moving westward from this high discharges into Lake Manitoba.

Generally, a potentiometric surface map is presented for a specific aquifer. In this case however, water level data from wells completed in many different aquifers and at different depths have been used in constructing the map although, where possible, water level data from the shallowest wells was used when both shallow well and deep well data were available. The potentiometric surface given here can best be thought of as an attempt to present the elevation of the top of the zone of saturation throughout the map sheet area, assuming that the geology consists of a single homogeneous unit.

SOURCE OF INFORMATION

MANITOBA DEPARTMENT OF NATURAL RESOURCES, 1989 Water Well
File, Hydrotechnical Services, Water Resources Branch, Winnipeg.

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PROVINCE OF MANITOBA
DEPARTMENT OF NATURAL RESOURCES
WATER RESOURCES BRANCH

GROUNDWATER AVAILABILITY STUDY NEEPAWA AREA

POTENTIOMETRIC SURFACE FIGURE 7

Town: Ville:
Village or Settlement: Village ou hameau:
Post Office: Bureau de poste:
Church: Église:
School: École:
Boundary monument: Bornes frontalières:
Horizontal control point: Point géodésique:
Stream: Cours d'eau:
Intermittent or dry: Intermittent ou à sec:
Rapid: Rapide:
Marsh or swamp: Marais ou marécage:
Lighthouse: Phare:
Airport: Aéroport:
Seaplane base: Base d'hélicoptères: