



## SPECIAL AREA 2

### Hydrogeological Assessment of a Water Well in the Buried Calgary Valley near Wardlow, Alberta

In response to water supply concerns in Special Area 2, and the additional adverse effects of recent drought conditions in Eastern Alberta, a groundwater investigation was launched by Agriculture and Agri-Food Canada's Prairie Farm Rehabilitation Administration (PFRA) in order to confirm the long-term yield possible from the Buried Calgary Valley Aquifer near Wardlow, Alberta. Extra Rural Water Development Program (RWDP) funding for the 2001-2002 year enabled AAFC-PFRA to contract Clifton Associates Ltd. to perform this study.

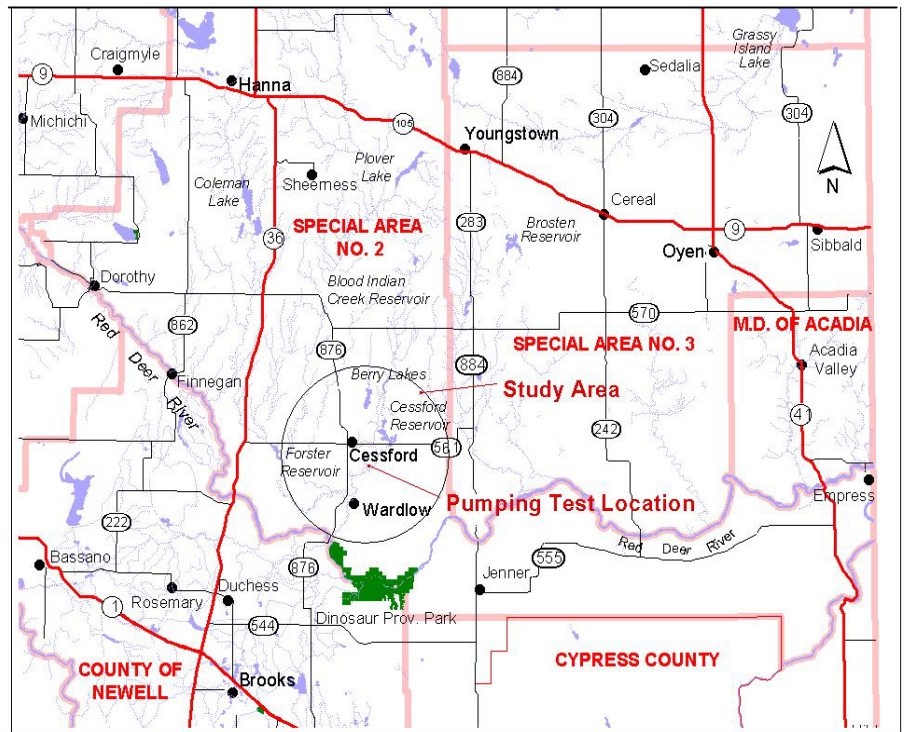
#### Area of Study

The study was carried out in the vicinity of an existing water well, located about 6.5 km north-northeast of Wardlow, in LSD 1-30-023-11 W4M.

#### Background

Hydrogeological information from the area suggested that surficial deposits in the Wardlow area that are associated with the Buried Calgary Valley may yield potable groundwater rates up to 680 m<sup>3</sup>/day (about 105 igpm).

In December 2001, a domestic water well was drilled for a landowner located in 1-30-023-11 W4M. The well was drilled to a depth of 48.5 m (159 ft) and was completed in Buried Calgary Valley sand and gravel deposits.



Location Map

Rather than carry out exploratory test drilling within S1/2-28-023-11 W4M as originally proposed, an extended pump test was conducted on the domestic well to assess the general development potential (yield and water quality) of the Buried Calgary Valley Aquifer in this general area.

#### Objective

The objective of the study was to:

- Confirm the potential long-term well yield and water quality that may be possible from the surficial or buried deposits in this area.
- Gather the information necessary to determine the feasibility of constructing wells in the surficial or buried deposits at the specific site location.

## Study Methodology

To meet these objectives, the consultant undertook an aquifer pumping and recovery test on the domestic water well to assess the hydrogeological parameters and boundary conditions of the aquifer. Representative groundwater samples were also collected to assess the suitability of the aquifer as a potable water supply.

## Study Findings

The pumping test on the existing well indicated that the saturated gravel aquifer being tested was limited in a real extent, and the potential long-term yield, although indeterminate, was expected to be significantly less than 145 m<sup>3</sup>/day or 100 L/min (22 igpm).

The water quality testing results indicate that all the chemical parameters tested were below the Maximum Acceptable Concentration (MAC) for the protection of human health or, where included in *Guidelines for Canadian Drinking Water Quality*, the aesthetic objective (A0).

The possibility for wells in the area to provide long-term yields in excess of 100 L/min (22 igpm) cannot be discounted at this time. An increase in gravel aquifer saturated thickness may result in higher yielding wells. Potential locations would include those with either a higher water table or lower bedrock surface. Locations most likely to meet these criteria would be found in the deepest part of the Buried Calgary Valley located south and east of the site.

## For additional information, contact:

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## Report

Clifton Associates Ltd., March 2002, Potable Groundwater Investigation,  
Aquifer Evaluation Wardlow Area, Special Area 2, Alberta,  
Prepared for Agriculture and Agri-Food Canada.