Government of Alberta ■
Environment and Water

Groundwater Information Letter 1/2010

Clarification of the Method Used to Determine Total Dissolved Solids for Regulatory Purposes in Alberta

Purpose

The purpose of this Groundwater Information Letter is to provide clarification regarding a standardized method for determining the total dissolved solids (TDS) concentration in groundwater.

Scope

The scope of this Groundwater Information Letter includes but is not limited to:

- Applications for existing and/or renewal of *Water Act* licences and/or approvals for the diversion/use of non-saline groundwater;
- Energy Resources Conservation Board rules, regulations and requirements (e.g. Directive 044);
- Base of Groundwater Protection mapping; and
- Deep well disposal assessments.

Background

The *Water* Act, and its predecessor *Water Resources Act*, gives the authority over all water, saline and non-saline, to the Crown in right of Alberta. The requirement to obtain a *Water Resources Act* authorization to divert saline groundwater was discontinued in 1996 with the adoption of the definition of saline groundwater as water with a TDS concentration exceeding 4,000 milligrams per litre (mg/L). Authorizations previously granted under the *Water Resources Act* to divert saline groundwater were either cancelled or not renewed. Alberta Environment and Water continues this approach to saline water resources under similar provisions of the *Water Act*, and the Energy Resources Conservation Board continues to track the diversion of saline groundwater by the oil industry.

The immediate issue to be resolved is discrepancies in TDS results based on analyses of water collected from the same industrial source water wells from the mid 1990s to September 2010. In some cases the discrepancies were significant enough to re-classify the water from saline to non-saline and necessitate an authorization to divert groundwater

The discrepancies were found to be related to the use of different TDS test methods coupled with high bicarbonate concentrations in groundwater, and not due to changes in groundwater chemistry. Consequently this has resulted in varying TDS values in groundwater analyses and confusion over classifying groundwater as non-saline versus saline (or brackish) in borderline analyses from source/production wells.

Alberta Environment and Water and the Energy Resources Conservation Board require the following methodology to be used to determine TDS concentrations in groundwater.

Detail

The TDS method standard for groundwater is referenced in the *Standard Methods for the Examination of Water and Wastewater,* published jointly by the American Public Health Association, American Water Works Association, and the Water Environment Federation, 1998, as amended.

Enquiries

Enquiries on this Groundwater Information Letter should be addressed to the Groundwater Policy Section, Water Policy Branch, Alberta Environment and Water.