

Modelling Alberta's Base of Groundwater Protection Surface

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Abstract

The Base of Groundwater Protection (BGP) is an assigned depth above which groundwater is deemed useable without treatment and thereby entitled to protection under various Alberta Environment (AENV) and Alberta Energy and Utilities Board (EUB) directives and regulations. The BGP within Alberta is defined as the depth below which groundwater salinity exceeds 4,000 mg/L total dissolved solids (TDS), to a maximum depth of 600 metres below ground level and is currently catalogued and made available through the EUB. The Alberta Geological Survey (AGS) and AENV are developing a regional BGP surface incorporating original BGP information as well as new data, for release by March 31, 2007.

Groundwater chemistry data were compiled from several sources and were subjected to a rigorous quality assessment process. This thorough examination was completed to ensure that subsequent phases of the project had access to the highest quality data possible. Initial investigations of the data indicate regional relationships exist between TDS concentrations and depth, elevation, and hydrostratigraphy. These relationships will provide valuable insight into regional changes in TDS concentrations as the BGP surface is developed, tested and finalized.

Upon completion, the BGP surface will be made publicly available through the use of a web-based data management system. The web service should streamline the current BGP request process, which requires approximately 10-12 days from request to response. The final BGP surface will provide the various users of the system with a consistent, defensible product that will assist in the protection of Alberta's fresh groundwater resources.