Using groundwater chemistry to find mineral resources is not a new concept. Literature references show that groundwater chemistry has been used to search for various mineral deposit types since the 1930’s. Early success with groundwater chemistry exploration was variable, largely due to poor sampling methods, limited understanding of groundwater chemistry, and relatively primitive analytical techniques.

The growth of the environmental industry over the last 15 years has resulted in significant advances in analytical and sampling technology. The improved technology has led to an improved understanding of element mobility in groundwater, including the groundwater chemistry of mineralization. With analytical detection limits down to parts per trillion and accurate characterizations of the groundwater chemistry surrounding mineralization, geoscientists now have better tools than ever before to use groundwater as a mineral exploration-sampling medium.

Below is a selected bibliography of technical groundwater chemistry (hydrogeochemistry) literature:


Leybourne, M. I., 2001, Mineralogy and geochemistry of suspended sediments from groundwaters associated with undisturbed Zn-Pb massive sulfide deposits, Bathurst Mining Camp, New Brunswick, Canada. The Canadian Mineralogist, 39, 1597-1616.


Reimann, C., Siewers, U., Skarphagen, H., & Banks, D. 1999a. Does bottle type and acid-washing influence trace element analyses by ICP-MS on water samples?: A test covering 62 elements and four bottle types: high density polyethene (HDPE), polypropene (PP), fluorinated ethene propene copolymer (FEP) and perfluoroalkoxy polymer (PFA). The Science of the Total Environment, 239, 111-130.


Wolery, T.J., and S.A. Daveler, 1989. EQ6 – A computer program for reaction path modeling of aqueous geochemical systems: user’s guide and documentation. Lawrence Livermore National Laboratory, Univ. of Calif.

