

by **Hughbert Collier**

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## Techniques for Determining Groundwater Quality from Borehole Geophysical Logs

In many parts of the world, techniques are needed to accurately assess the quality and quantity of fresh and saline groundwater resources. In determining the water quality of an aquifer there is certainly nothing equal to a laboratory analysis of the water. Unfortunately, however, water samples are frequently not available. This is true for fresh as well as saline water aquifers.

In the absence of a water analysis, water quality can be calculated from borehole geophysical logs. Often, this is the only available method. Plus, logging data are much more abundant and more easily accessible than water analyses. In hydrocarbon-producing areas tens of thousands of borehole geophysical logs are available for aquifers that have only a few water analyses.

Determining water quality from logs has long been a subject of interest to log analysts. However, most of the research has been conducted by the petroleum industry and has centered on very saline and brine waters. Few papers have addressed groundwater quality determination from logs of less saline waters. ■

### Biographical Sketch

HUGHBERT COLLIER's professional experience includes twenty years of consulting, research, technical support for litigation, and teaching throughout the United States. Dr. Collier, along with his staff and associates at Collier Consulting, provides a wide range of geological services to environmental and petroleum clients. Recent consulting work has involved field and office supervision of technical staff conducting hydrogeological inves-

tigations, supervising the design and drilling of water wells, supervising the remediation of water wells, resolving groundwater contamination problems, reviewing technical reports, and conducting geological investigations of oil fields. These studies

include extensive utilization of GIS programs, geological software, and computer graphics to conduct the investigations and illustrate the conclusions.

Hughbert has authored a dozen papers, including a textbook, *Borehole Geophysical Techniques for Determining the Water Quality and Reservoir Parameters of Fresh and Saline Water Aquifers in Texas*. He has taught undergraduate and graduate geology and hydrogeology

courses at Tarleton State University, Stephenville, Texas. He has instructed short courses for the National Ground Water Association and Environmental Education Enterprises.

After receiving BS and MAT degrees in geology from Mississippi State University, Hughbert completed a PhD in geosciences from the University of Texas at Dallas. Professional associations include the Association of Ground Water Scientists and Engineers and the Society of Professional Well Log Analysts. Hughbert is licensed as a professional geologist in the State of Florida (PG 2221).

