

## About Schlumberger Water Services

We offer innovative groundwater solutions through professional expertise to meet the advancing technological requirements of today's professionals.

Schlumberger Water Services specializes in assessing, developing, and managing groundwater resources using some of the finest, advanced and cost-effective technologies available today.

Whether you're looking for field-scale data collection, data management, modeling, or resource decision-making solutions, our teams of specialists are here to help you address all your groundwater projects safely and efficiently.

## Applied Technologies:

- Mini-Diver
- Micro-Diver
- Baro-Diver
- Cera-Diver
- CTD-Diver
- Pocket-Diver
- LoggerDataManager

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## Monitoring Groundwater Resources for Municipalities

Guelph, Ontario, Canada



Groundwater monitoring using Diver dataloggers in the City of Guelph, Ontario, Canada

### Highlights:

- Deployment of automated data acquisition sensors to support water supply studies
- Determining effectiveness of automated sensors versus manual and frequent data collection
- Utilizing sensors to correct and compensate for changes to climatic conditions
- Applying 3D visualization software for displaying and mapping water elevations

### Background

The City of Guelph is located in south western Ontario, Canada with a growing population of over 110,000. Currently, Guelph relies one hundred percent on groundwater as their source of water supply. In April of 2006, the City of Guelph Waterworks Department was approached to participate in a pilot study developed by Schlumberger Water Services. The study was intended to evaluate the effectiveness of Diver\* dataloggers and to quantify the benefit of electronic data collection solutions for environmental monitoring. Twenty Diver dataloggers were deployed, the majority being installed in and around the Arkell Spring Grounds. A Baro-Diver\*, designed to measure barometric pressure, was deployed in the center of the monitoring network allowing for the successful compensation of all Diver dataloggers within a twenty kilometer radius. A Mini-Diver\* was deployed to collect long-term linear measurements, and a Micro-Diver\* was installed in wells that measured less than one inch in diameter. Finally, a CTD-Diver\* and Cera-Diver\* were deployed in areas where downhole concentrations posed a possible risk to compromising the stainless steel housing of non-ceramic dataloggers (i.e. salinity, acidity etc.). In addition to the more robust housing, the CTD-Diver also logged temperature, pressure and electrical conductivity.

The Arkell Spring Grounds supplies up to 60 percent of the water for the City of Guelph and encompasses an area of approximately 280 hectares. Groundwater monitoring in this area has typically been completed through manual readings; however the fragile nature of the area has led to increased environmental monitoring requirements for mandatory compliance reporting, as well as qualitative and quantitative forecasting models.

