Protecting First Nations Groundwater Resources
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\section*{Research Purpose and Objectives}
First Nations are facing many complex water management challenges. Western water management frameworks are often in conflict with First Nations’ traditional & local relationships with water. This collaborative project brings together University of Guelph engineers and First Nation partners in a groundwater-focused study to identify alternate drinking water sources as part of the development of community-led, culturally appropriate source water protection and management frameworks.

\section*{Research Approach}
\begin{itemize}
  \item The community-based project lead established a SWPP Working Committee, engaging stakeholders
  \item Three existing, unused wells were chosen to be retrofitted into multilevel monitoring systems
  \item Researchers conducted several geophysical borehole tests to design multilevels
  \item Multilevel monitoring wells were designed and installed
\end{itemize}

\section*{Results}
\begin{itemize}
  \item Geophysical tests in the wells were used to identify important information about the rock formations and groundwater flow pathways
  \item Monitoring the groundwater in these multilevel systems will provide detailed information about water quality and quantity, and groundwater and potential contaminant flow patterns
  \item These data will be used to inform the process of establishing culturally appropriate SWPPs that balance technical and traditional/local knowledge
\end{itemize}

\section*{Research Implications and Summary}
\begin{itemize}
  \item Part of the First Nations water problem is the need for water management processes that are owned and driven by First Nations, and are both technically sound and culturally appropriate. Relationship building, autonomy, and culturally appropriate technical methods are critical to these processes.
  \item This project explores how inexpensive but effective technical methods, like well retrofitting, can be incorporated into community-owned long-term decision-making for source water protection.
\end{itemize}

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