

# GPS Handheld Units Aid Student Project in Cambodia

By Allison Simmonds, MAsc.

From May to July 2008, I was fortunate enough to lead a group of seven university student volunteers on a drinking water project in the district of Kep, Cambodia. Unlike its larger Asian neighbours, Cambodia is not an economic powerhouse and is still struggling to recover from the genocide and civil war that afflicted the country from 1975 to 1993. Kep is a particularly poor and rural region on the southeast coast—about 150 km and a 5-hour bus ride from the capital of Phnom Penh—and is home to about 35,000 people, most of whom are subsistence farmers.

The volunteer group was working with the Centre for International Health, an initiative by the Faculty of Medicine at the University of Toronto, as well as Resource Development International (RDI), a non-governmental organization based near Phnom Penh. The volunteers were participating in a Cambodia-wide survey of drinking water quality being conducted by RDI. Earlier studies have shown that many of the country's water supplies are contaminated by naturally occurring arsenic that leaches into the groundwater from the surrounding rock, and at high enough concentrations can cause health problems ranging from serious skin lesions to cancer. The survey conducted by the students tested over 150 wells in Kep, and also precisely located the wells using GPS handheld units. The GPS data would allow the regions susceptible to arsenic contamination to be more accurately defined, and potentially guide future decisions about the placement and depth of new wells. Where arsenic concentrations are high, for example, new shallow wells or reservoirs could be installed since they




As curious children look on, Allison Simmonds filters water from their drinking water source - a pond - for later chemical analysis.

are much less likely to be contaminated by arsenic than deep wells.

The four GPS units used by the volunteers were provided by *Professor Georgia Fotopoulos in the Department of Civil Engineering at the University of Toronto, the Association of Ontario Land Surveyors and Gemini Positioning Systems Ltd.* These units may return to

sources of drinking water for families who are currently drinking from contaminated ponds and wells. Without GPS, completing such a project in a part of the world where there is virtually no census data, no addresses, and poor maps, would have been extremely difficult.

Being out in the field in Cambodia was an incredible experience. The people are some of the warmest that I have ever met—entire families would drop what they were doing to answer questions and watch the team take water samples. Knowing that poor water quality and sanitation kills thousands of Cambodians every year, and that the work will increase awareness of good sanitation habits and the availability of safe water, made the project a very rewarding experience. 



Allison records the location of an open well using a Garmin GPS unit in Phnom Leav village while translator Vuthy holds up a sign with the well number for later identification.

Cambodia in 2009, as there are plans to send another student volunteer group back to Kep to look for alternative

**Allison Simmonds** recently graduated with her Master's of Applied Science degree in Chemical Engineering from the University of Toronto. She now works with Terraprobe in Brampton, Ontario.