

**Section I:** The goal of our project was to improve the safety of water supplies in the Ngobe Bugle Comarca (reserve) in Panama by: 1) constructing a laboratory that can monitor the contamination level in drinking water, 2) carrying out primary testing in the communities surrounding the medical clinic in the communities surrounding the town of Soloy, 3) training local professionals to continue the monitoring, and 4) presenting our data on water contamination to the Ministry of Health and other governmental and non-governmental organizations in hopes of raising awareness about the lack of safe water in the area and gaining their assistance in reaching solutions.

Our team of three University of Alberta students was warmly welcomed into the Ministry of Health's living quarters at the Soloy clinic. The laboratory equipment and generator were set up in the health clinic, and within ten days we had met with eleven communities and performed the first analysis of their water sources. After analyzing the data, the primary results were presented to the Comarcas Ministry of Health, which is currently in charge of the water quality in the region. After discussions with the team, this governmental agency decided to continue monthly surveillance, to staff the laboratory with their own personnel in the future, and to continue buying supplies for the laboratory. The documentation and presentation of the results initiated a vigorous dialogue within the communities, the Ministry of Health and between the team and governmental and non-governmental sectors, in turn opening up doors to several new projects, which will improve the water quality on the Ngobe Bugle Comarca.

The Davis Projects for Peace grant enabled our team to establish the first water lab in Panama's Ngobe Bugle indigenous comarca and to set up an ongoing monthly surveillance program. The initiative has now been taken up by the Ministry of Health, which has pledged continued support and new projects effectively tripling the amount of the Davis grant. And, furthermore, the project has led to an improved relationship between the local indigenous community and Panamanian government officials. We are building on this success by continuing fundraising efforts and establishing a new student group at the University of Alberta.

**Section II:** Organization of the project began in 2006 when one of the team members working at the Soloy clinic became aware of the appalling number of gastrointestinal illnesses, particularly in children, from the contaminated water. This experience gave birth to Proyecto Naingro, a foundation funded latrine construction project in the Ngobe Bugle Comarca, Panama. Proyecto Naingro had initiated communication and engendered trust in working with both community members and the Ministry of Health in Soloy, and facilitated the current water quality project.

There are two means of getting water in the Soloy area: stagnant surface springs (most communities use these during the dryer months: December to July) or gravity fed aqueduct systems (due to deforestation, less and less common, however they are usually running during July to December). Speaking with water quality professionals at the University of Alberta helped to develop the idea of creating a laboratory that would quantify total and fecal coliforms as a marker for contamination in the water source. The IDEXX system was recommended by Missoula County Public Health in Montana as being the best testing system for the unique demands of a rural setting in a developing country. The laboratory was set up in an unoccupied secure space in a partially completed health centre building, which itself does not have running water eight months a year, and has only a few 12 volt DC solar powered lights as an electrical system. The laboratory equipment was powered with the team's 1200 watt gasoline generator. The Medical Director of the Clinic, Carlos Fanilla, was most supportive of the effort, making space available and providing both encouragement and credibility with the Ministry of Health. Two Ngobe community members, Nicolas Bejerano and Adan Bejerano, were key in the success of this project, providing vital liaison with the local community. Nicolas is the Ministry of Health sanitarian who works closely with communities to improve public health in addition to managing Proyecto Naingro. Adan is the founder of Medo, a local grassroots organization that brings professionals in from different areas of the world to work on projects in hopes of achieving sustainable development while preserving the culture.

Preliminary water quality testing was performed from river water, health center water and filtered water to work out protocols and test the equipment and personnel. The river water was contaminated, the Health Centre water (where the taps produce sticks, leaves and at times small worms) was also contaminated, and the water filters the team carried were shown to produce clean water. The lab is for all communities in the

Comarca Ngobe Bugle to use, but only eleven communities in the Soloy area were included in the initial testing. Nicolas and Adan chose these communities because they: 1) have more than 50 inhabitants, 2) have significant prevalence of gastrointestinal illnesses from suspected unclean water, 3) are within four hours walking from the health centre, 4) have exhibited past interest in pro-health projects. Community meetings were held to explain the project and garner community support. The total number of people that were represented at the meetings reached over 2600. In each community, the most common illnesses are gastrointestinal illnesses and many members realize that this is due to unsafe water. Another one of the big concerns for most communities is the lack of latrines. Although many governmentally funded and United Nations funded latrine projects seem to, according to community members, been commenced in the last 10 years, very few latrines have actually been built. The results from the water quality testing found that all, except one community, have unacceptable levels of the fecal bacterium, *E. coli*.

Immediately after completion of the first round of testing, data was brought to the Ministry of Health (MINSAs) (National and Comarcal divisions) and UNICEF. MINSAs agreed to meet with the team in both Panama City and on the Comarca. In early July, Dr. Guillermo Guerra, the head of Comarcal MINSAs met with the team and decided to take full responsibility of the maintenance and continual surveillance of the Ngobe Bugle water quality lab. During this meeting, there was in-depth discussion with Comarcal MINSAs about future projects relating to moving in the direction of community education for latrine use, hand washing, shoe use and reforestation projects to protect water sources, all of which MINSAs wanted to facilitate. Dr. Guerra also assured that every community has funding to have a gravity fed aqueduct system, however the engineering work is delayed. Another major project, which is estimated to have the most impact in the area, is continuous community health education and workshops, which will involve MINSAs and the communities in hopes to increase communication between these two groups.

The area itself is difficult to work in due to both physical and cultural aspects. There is a dirt road that runs from the Panamerican highway and ends in Soloy which trucks are able to pass while the road is maintained, however apart from this highway, all travel is done on foot or with pack animals. The Ngobe culture differs greatly from Latino (most MINSAs workers) and there seems to exist feelings of resentment between these two groups. However with this grant, we met simultaneously with both groups in hopes to increase communication between them, thus acting as a catalyst for peace in the Ngobe Bugle Comarca. Another challenge was the tendency for problems to fall between bureaucratic areas of responsibility in the Panamanian government. There were also administrative issues as the grant we received required conversion from US to Canadian to US dollars.

Team member Amanda has decided to dedicate her time until August 2009 to apply for a number of subsequent grants to continue the work that was started in 2008. The national MINSAs is interested in supporting slow sand filter projects especially in the areas that use stagnant surface sources. In the very near future, Amanda hopes to find funding in order to complete filter projects until aqueducts are available. Plans for these filters were given to Amanda; she has started the construction of preliminary filters at the health center and in a nearby community.

Team members Ross and Laura have created The International Student Project Service Association which aims to support and establish U of A students as volunteers to work in Soloy and to hold various fundraisers to commence our projects which will focus on sanitation, education, cultural awareness, and eco/ethnic-tourism, among others. We will continue to collaborate with Adan and MINSAs.

MINSAs has taken responsibility for the water quality laboratory, and the available supplies should be sufficient for the next 5.5 years. The impact of this lab far exceeds that of the considerable bacteriology work already accomplished since it has created dialogue on a national level including some national newspaper coverage (see annexed disk). The prevailing belief that in Panama there is not a village without clean water has been challenged. Future clean water projects, will be more easily funded, and will continue to build on the bedrock of objective scientific information that this laboratory has and will continue to provide, and the battle for safe water for the Ngobe Bugle people has a new and powerful weapon as a result of the generous Davis Peace Project Grant.



The grantees talking with Cerro Miel Community during a questionnaire session



In route to the Alto Bonito Community with Adan and 2 children on their way to school



A community meeting at the community Israel