The University of Vermont (UVM) Student Chapter of Engineers Without Borders (EWB) is working closely with the town of Jardines in Honduras in developing appropriate water filtration technology for their town’s water system. Interest was initiated in the Jardines Water Project after the completion of a UVM associated slow sand filter project in the adjacent town of Jaitique, Honduras in 2005. Currently, UVM students are diligently working on the design of a roughing filter and a slow sand filter (see the project timeline below). It is estimated that the project will cost approximately $25,000, in other words, UVM-EWB has a lot of fundraising to do.

Dr. Daniel Baker (Daniel.Baker@uvm.edu), Professor in Community Development and Applied Economics (CDAE) at UVM approached UVM-EWB with the Jardines Water Project in 2008. Dr. Baker has been working in the Department of Comayagua, Honduras for the past 11 years with Partners of the Americas, and has established strong community partners. The president of the Vermont Professional Chapter of EWB, Peter DeGraff, P.E., is a committed advisor for this project and has proven to be an excellent teacher. Additionally, Scott Hamshaw, a UVM Alumni that designed the Jaitique slow sand filter, is also a dedicated mentor. UVM-EWB recognizes that development is an intricate process, which requires consideration of factors beyond the design of the infrastructure. Fortunately, UVM-EWB has been given the unique opportunity to actively learn firsthand from the Jaitique Slow Sand Filter Project. The following highlighted lessons will be kept in mind throughout the Jardines Water Project.

Lesson 1: Professional Engineers are Involved
Peter’s presence gave the student engineers confidence in their work. His experience allows him to be mindful of details that students may not recognize. The student engineers happily welcome his probing questions that make them think critically.

Lesson 2: Transparency Leads to Trust
The success of the water system relies on the community’s support. Many people are removed from the technology which can lead to misconceptions and distrust. Using the time to get to know the community and gaining their trust is the opportunity to get to know you builds imperative trust. Additionally, when the community understands the project, they are more likely to take initiative in the betterment of their water system, like Jardines has done by building a roof and a fence around the sediment basin in the above picture.

Lesson 3: Long-Term Relationships are Healthy
Five years after the construction of the Jaitique filter, it is still in operation with repairs to the inlet plumbing. A high point in the piping became entrained with air causing the filter to back up. Fortunately, the partners were still in communication which prevented this 'hiccup' from turning into a failed project. Periodic check ups on projects are a must.

Lesson 4: Go Above and Beyond
Think beyond the design of the pavement infrastructure. Does the community have all the tools they need to maintain the infrastructure? How will the community be able to finance the operational and maintenance costs of the filter?

Lesson 5: Invaluable for the Future
EWB continues to make progress, the location of the filter should be decided in the near future. EWB has a lot of fundraising to do. EWB is supporting the UVM Child benefit concert “UVM Day for Agua” (giveitupforagua.wordpress.com). Of course, any donations are welcomed and appreciated (100% is a lifetime). Thank you for your interest in the Jardines Water Project!

Water quality is of serious concern in this region of Honduras, the macroinvertebrates in the water are the least of their problems. Water-related illnesses is rampant and parents are constantly worried about the livelihood of their children. UVM-EWB is focused on working with the community of Jardines to improve water quality by reducing the bacteria and sediment loading. After considering the options (e.g. raw water catchment or point-of-use treatment), it was decided that a slow sand filter would best address this problem based on the current infrastructure and the town’s dynamics. Jardines has three raw water sources and two sediment basins, ones of which was constructed in May 2009 by members of UVM-EWB in preparation for the slow sand filter.

In May of 2010, UVM students laid up their hiking boots in Honduras and collected topographical information for the entire water system using a survey grade GPS. In collaboration with CDAE students at UVM, Household Water Use Surveys were conducted in Jardines, which provided data on the town’s water demand. Students also met with the Junta de Agua (water board) to present project information and to collect treasury data.

In Vermont this fall, UVM-EWB has been organizing the data to determine sizing specifications and doing research on slow sand filter designs. Determining the location of slow sand filter has been challenging due to the hydrology of the three sources. The goal is to determine the amount of water available to the town and number of people who have access to it. As UVM-EWB continues to make progress, the location of the filter should be decided in the near future.