Design of Potable Water Supply Systems in Rural Honduras

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According to a 1993 USAID report, malnutrition and a lack of access to potable water and sanitary facilities are the main factors in Honduras' low life expectancy (66 years) and high infant mortality rate (59 in 1000 live births). For many communities easy access to potable water is seen as an essential building block to making other improvements in their village. Potable water supply systems allow community members to maintain a higher level of hygiene by making it easier to bathe, wash clothes, and prepare sanitary food and beverages. The water can also be used in pour flush latrines that are more sanitary than pit latrines and have fewer odor problems. A water supply system often improves education in a community as better teachers are more likely to accept positions and stay longer in communities with easy access to potable water.

The objective of this report is to provide the most important information required to design a gravity flow potable water supply system. Practical information is drawn from the author's three years of experience working as a Peace Corps volunteer in Honduras. Technical information, including design constraints and plans developed by the Honduran government institution, National Autonomous Service of Aqueducts and Sewer Systems (SANAA), have been translated and formatted to be easily referenced and reproduced in the field. Included, is an explanation regarding the use of an Excel spreadsheet program written by Peace Corps engineers to facilitate the design process. An example of one of the author's designs and proposals shows the different components of the Excel program's output. The actual program is available in English and Spanish on the Michigan Tech Masters International website: (http://www.cee.mtu.edu/peacecorps/resources.html). Helpful information is included on the topics of water quality analysis and Honduran laws concerning water projects.

The final section of the report discusses the need for appropriate technology that can be easily applied in developing countries. It also illustrates an alternative design for a break pressure tank that does not require the use of GI pipe or door valves.

This report is designed to help engineers who plan on working with gravity flow water systems to understand the most important components of the design process. The figures and Excel program output can be used to help convey design specifications and costs to community members, builders and funding agencies.