Hand-pumped well in San Nicolas, Nicaragua

Project Agua

Creating a sustainable water system in Nicaragua

Currently, the six hundred or so inhabitants of San Nicolas, Nicaragua get all of their water from two hand-pumped wells. This forces them to spend a significant amount of time gathering water each day.

When students in Michigan Tech's Aqua Terra Tech Enterprise team first heard of the need, they thought they could potentially help.

A few months later, five students traveled to San Nicolas for research and investigation and came home with this ultimate goal: deliver potable water to each of the eighty homes in the community—enough water to provide each person with twenty gallons per day.

"The most challenging part of Project Agua is the distance," says environmental engineering student Luke Moilanen. "This is not a site we can easily visit, so simple site information such as ground elevation or number of homes can be difficult to determine. It is up to us to find creative ways to gain the information we need to move forward."

The team initially started out with a focus on wind power for the system, but their research suggested it didn't meet all of the needs. "We shifted our focus to solar power, found a suitable system, and were able to move forward with the project."

The team is now investigating whether it is more feasible to pump water directly to the homes or to pump water to a storage tank and then operate a gravity-fed distribution system. Other considerations to ensure the project's longevity include an analysis of expected population growth as well as an analysis of the aquifer to determine if it can sustain the demands of a growing village.

Future plans include determining the best way to create a pumping schedule so the tank never empties or overfills, establishing the quality of the water and determining if treatment is necessary, and creating some sort of maintenance schedule so the system does not fall into disrepair.

The project will be presented to the community's water council this summer, says Moilanen. "The main thing we hope to accomplish is to create a functional, sustainable water system that can adapt to growth in San Nicolas."