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Luna Oiwa's Individual Contribution Page

Personal/Team Goals

Personal goals:

As a new member of both AguaClara and the Ram Pump team, my goal this semester is to improve upon the existing ram pump design by following the guidelines set by the Ram Pump team of the previous semester. The overall goal is to design a 70 mL/s pump, but for now the priority is to design an efficient system to calculate flow rate to determine the relationship between pressure and flow rate.

Team goals:

1. Flow rate calculation system
2. Check valve weight, valve type, air chamber size
3. Compact form/secure components
4. Dual tubing in air chamber
5. Estimate of spring force necessary for specific plant parameters
6. Union collar design, modeled on AutoCad
7. Effect of Ram pump connected with distribution piping
8. Outlet for air to ensure steady water flow (make sure it’s never at zero velocity)

Fall 2016 Contributions

This semester, I have helped the Ram Pump Team secure components of the ram pump setup, develop a method to obtain a continuous performance curve of the flow rate of the pump, compare this improved flow-rate calculation system with the method used by the Spring 2016 team, calculate the energy-efficiency of the pump based on flow rates, and determine the effects of adding a distribution pipe to the ram pump system. The team's next goals are to model the current ram pump design on AutoCAD, determine the effects of adding a snifter valve to the air chamber, and to build two more ram pumps to be tested during the January 2017 trip to Honduras.