

# Ram Pump Detailed Task List Spring 2013

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## Modify and improve ram pump from last semester

Weeks 3-4 (2/4-2/15)

- Install a pressure relief valve which can be adjusted to produce the required back-pressure.
- Add a flow rate measurement device. One way to measure flow rate is to install an automated bucket test, as described in section 7.2 of the Fall 2012 Ram Pump Team's final report.
- Improve existing check valve.
  - Allow check valve to run continuously.
  - Determine simple ways to add weight to the check valve, so that cycle time can be easily varied.
  - Explore the possibility of purchasing other commercial check valves, possibly from commercial ram pumps.

## Test various parameters of the ram pump

Weeks 5-14 (2/18-5/3)

- We will vary the following parameters and evaluate the effects on ram pump delivery flow rate, efficiency, simplicity, and cost. Ultimately, we want to optimize ram pump performance and deliver water to an equivalent height of 7.15 meters.
  - Wasting valve cycle time
  - Drive pipe length
  - Delivery head

## **Continue research and literature review**

Weeks 3-8 (2/4-3/15)

- Evaluate the possibility of purchasing a commercial ram pump. Review current models, prices, and capacities.
- Evaluate the possibility of building an in-line ram pump.

## **Compile research**

Weeks 8-12 (3/15-5/3)

- Compile a list of design guidelines.
- Create a comprehensive ram pump design Mathcad sheet.