

# **mkh62**

## **Monica Hill's Individual Contribution Page**

### **Spring 2011**

Operators in Honduras have expressed a preference in operating the earlier-style Linear Dose Controller (LDC) over the Non-Linear Dose Controller designed during the Fall of 2009. The LDC is an elegantly simple design that requires minimal input and oversight from the operator, however, the LDC loses its elegance as plant flow rate increases. A new style of dose controller that can operate at high plant flow rates has been designed.

This new dose controller uses a specialized ball valve as the metering device for the coagulant. Additionally, plant flow rate is measured through the High Flow Orifice Meter (HFOM). Together, these components make up the High Flow Dose Controller (HFDC) and provide AguaClara with the means to dramatically increase plant size.

### **Summer 2010 Contributions**

The Non-Linear Dose Controller (NLDC) continued to evolve during the Spring 2010 Semester (of which I was not involved). The NLDC design faced challenges that required further investigation and understanding: 1) errors induced by surface tension as fluid passed through the orifice 2) orifice manufacturing techniques create inconsistent entrance and exit regions. In-house manufacturing processes were evaluated to determine the ease and accuracy with which an orifice could be manufactured.

### **Fall 2009 Contributions**

During the Fall of 2009 I was part of the Non-Linear Chemical Dose Controller Team. We evaluated the feasibility of creating a dose controller which used an orifice to precisely meter control chemicals in our plants.

Specifically, I designed the testing structure for the dose controller. The structure was constructed using 80/20 "The Engineer's Erector Set." This gave the engineers in Honduras the flexibility to modify the structure as we worked toward developing a functional dose controller.

### **2008 Volunteer Contributions**

Prior to starting my MEng program, I volunteered for the AguaClara group. I worked with the "Pilot Plant" team where we developed a method that allowed for easier adjustment of the flocculator baffle spacing.