

Mary John's Individual Contribution Page

Summer 2012 Contributions

Over the Summer of 2012 I was on the Floc Sed Optimization Team. We were working to optimize the flocculator and sedimentation tanks efficiency and costs by varying different components including flocculator length, upflow velocity, plate settler length, alum dose and water turbidity. Our research team had enough time over the summer to thoroughly evaluate the effects of flocculator length and alum dose on the efficiency of the entire water filtration system. Our experiments tested flocculator lengths of 20m, 15m and 2m and alum doses of 60mg/L, 35mg/L and 10mg/L. By the end of our experimentation we found high pC star with lower alum doses and shorter flocculator lengths that were similar to the pC star of longer flocculator lengths and higher alum doses. We concluded that both the flocculator length and the alum dose could be decreased and the water filtration system would still be equally effective.

Fall 2012 Semester Contributions

This fall I was enrolled in CEE 2550 and was working on the Floc Sed Optimization team again. This semester we introduced floc recycle into the flocculation and sedimentation system. By recycling flocs from the waste a floc blanket produces we hope to improve the efficiency of the flocculator and floc blanket in the sedimentation tank by capturing more flocs and requiring less alum to be dosed. We varied alum dose, water turbidity, upflow velocity and placement of floc recycle to maximize the performance of the floc blanket and water quality produced from our apparatus. Our results this semester were inconclusive. At each alum dose, a control experiment was run with no floc recycle, and compared to this control, sometimes introducing floc recycle into the system improved the quality of the effluent water, and sometimes it didn't. Our team believes that the placement of where flocs are being drawn and introduced into the system, and at what rate this happens is crucial for floc recycle to make the system more efficient and more work needs to be done to pinpoint this location and recycle rate in the coming semesters.

Fall 2014 Semester Contributions

This fall I am working on the Village Supply System team, within the household infrastructure sub team. The focus of our research is on household water storage and disposal for a village in India. The goal of the research is to design an optimal storage tank, tap and sink for households to use water safely. The design will reduce possibilities of water contamination and provide enough water for a household for one day and then some.

Spring 2015 Semester Contributions

For the Spring 2015 semester I am working with the "White Paper" team to produce technical documentation for the AguaClara technology. The purpose of the team is to create professional, consistent material that can be used to explain the AguaClara technology to other engineers, using photographs, diagrams and concise descriptions. By the end of the semester the team will have produced documentation that can be taken to any conference or seminar, sent anywhere to any engineer, that presents AguaClara as a professional organization.