

Challenges Spring 2012

Please review the challenges below and fill out the [Team Organization Survey](#).

Our challenges for the Spring of 2012 are designed to make it easier for new communities to adopt the AguaClara technologies. Our goals are to reduce costs, extend our designs to lower flow rates, improve our documentation, and create an AguaClara business to facilitate spread of the technologies.

We will have a renewed focus on optimizing all of our unit processes with the goal of reducing construction costs. Now that we have a zero electricity filtration system and an expectation that we will be bringing floc blankets online later this year, we have an opportunity to reduce the size of our flocculator and sedimentation tank. We intend to evaluate the feasibility of using floc recycle from the floc blanket to the flocculator as a way to increase collisions in the flocculator and thus allow us to significantly decrease the flocculator residence time.

We will be pushing the technology to an even smaller scale with a goal of meeting the needs for communities all the way down to 100 people. That will require developing new fabrication techniques for both flocculation (pipe flocculator with obstacles) and filtration (filter in a pipe).

We are exploring options for developing an AguaClara business to separate the implementation side from the R&D effort. Of course, the goal is to keep communication between implementation and R&D so that we can continue to improve the technologies based on feedback from the field.

We realize that we need a finance model that is as innovative as our technology. We will be exploring models for having communities pay back short term loans to reduce dependency on donor funds. Our effort to reduce costs is another part of this strategy.

Team Name	PDF	Lyx Zip	Advisor	Type of Research	Specialization	Resources	Location
Stacked Rapid Sand Filtration- Bench Scale	? Unknown Attachment	? Unknown Attachment	Mickey	Lab Research	4540	Process Controller	160 R
Stacked Rapid Sand Filtration- Pilot Scale	? Unknown Attachment	? Unknown Attachment	Mickey	Lab Research	4540	Process Controller	#2 R
Stacked Rapid Sand Filtration- Full Scale	? Unknown Attachment	? Unknown Attachment	Mickey	Lab Research	4540	Process Controller	Project lab
Demo Plant	? Unknown Attachment	? Unknown Attachment	Mickey	Design /Fabricate/Lab testing	4540/Systems	wet bench/shop	Project Lab
Ram Pump	? Unknown Attachment	? Unknown Attachment	Mickey	Design /Fabricate/Lab Research	3310/4540	Process Controller sump pump/water tanks	Project Lab Hydraulic Test Facility
Low Flow Flocculator	? Unknown Attachment	? Unknown Attachment	Karen	Design /Fabricate	4540	Process Controller sump pump/water tanks	Project Lab Hydraulic Test Facility
Floc Recycle Venturi	? Unknown Attachment	? Unknown Attachment	Karen	Fabricate/Test	3310	Process Controller sump pump/water tanks	Project Lab Hydraulic Test Facility
Foam Filtration	? Unknown Attachment	? Unknown Attachment	Mickey	Lab Research /Fabricate	4540	Process Controller	#2 L
Floc Sed Optimization	? Unknown Attachment	? Unknown Attachment	Karen	Lab Research	4540	Process Controller	#1 L end
Sedimentation Tank Hydraulics	? Unknown Attachment	? Unknown Attachment	Matt/Karen	Lab Research	4540	Process Controller	160 L
Chemical Dose Controller	? Unknown Attachment	? Unknown Attachment	Karen	Fabricate /Document	3310/4540	wet bench/shop	Project Lab
Stock Tank Mixing	? Unknown Attachment	? Unknown Attachment	Karen	Lab Research /Fabricate	3310	wet bench/shop	Project Lab
Turbidimeter	? Unknown Attachment	? Unknown Attachment	Karen	Fabricate /Document	Documentation /AutoCAD		#1 L end near sink

Admin team challenges	PDF	Lyx Zip							
Web Browser UI for ADT	? Unknown Attachment	? Unknown Attachment	Monroe	Programming	CS		Computer lab		1

Public Relations	? Unknown Attachment	? Unknown Attachment	Julia		creative writing, graphic design		Compu ter lab		3
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Design team challenges (Tori Klug)

The design team will need 5-8 students who are willing to specialize in creating the Mathcad code to design and draw the AguaClara facilities, design a new low flow facility, add code to optimize the number of sedimentation tanks and bays, and develop new top level code for web-based distribution of custom components. A process selection guide coded in Mathcad based on turbidity is also needed.

The [design team challenges are available in a separate google doc](#).

The source file for the tables is [Challenges Spring 2012.xlsx](#).