

Small Scale Plant Model

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Detailed Task List Spring 2013

Target Audience

Finish by February 6

- Decide on target audience after detailed analysis of potential audiences
 - Who might see the plant?
 - What would each audience want to learn from the plant?
 - How would their understanding benefit AguaClara?
 - * e.g. financial support, recruitment, publicity
 - These benefits will act as the ultimate goal for the use of the model plant
- Decide how many models we need

Communication Goals

Finish by February 13

- Once we've decided on a target audience, we can further specify what we want the model to communicate
- Which plant flow capacity should we model?
- Identify important features the plant will highlight, such as:
 - Confusing features
 - Small parts we feel require more understanding that don't need to be removable from the plant
 - * Larger-scale segment
 - * Sedimentation tank manifolds with diffuser
 - * LFSRSF manifolds
 - Path of water flow

- * Through flocculator, SRSF, etc.
- Geometries of sed tank, entrance tank
- Revolutionary features (technology developed/modified by AguaClara)
 - * SRSF/LFSRSF
 - * dose controller
 - * emphasize gravity-powered features, lack of electricity
- Model parts completely separate from plant (perhaps larger than the scale of the plant for understanding)
 - * Turbidimeter
 - * Turbid water/clean water vials

Dimensional and Material Analysis

Finish by February 27

- Perform material analysis based on cost, weight and durability
- Explore use of 3D printing
 - For the whole plant?
 - Just parts that are difficult to hand-make?
- Include estimates for total cost of plant based on different materials/combinations of materials
- Perform dimensional analysis of plant component sizes with data obtained from AutoCad and PDF documents
- Decide on scaling factor
 - How large should the model be?
 - Ensure weight is within airplane carry-on limits
- Decide what materials we will use for:
 - Mock-up
 - Final

Assembly Specifics

Finish by March 13

- How to best highlight the features identified above as most important
- Identify which components should be removable vs. permanent
 - Decide overall structure of the plant
 - * Architectural structure
- Transparent vs. Opaque
 - Explore use of hinges, transparent slides
- How will we label certain features?
 - Color coding
 - Use of lights or magnets to demonstrate flow path
 - Ideas for SRSF:
 - * Color-code inlet/outlet pipes for reg. flow SRSF
 - * Use LFSRSF to explain basic principles of SRSF:
 - Hinged in center so that you can see flow of water through sand
 - One side = during filtration
 - One side = during backwash
 - Slide of sand vs. filling whole thing with sand

Finalize Construction Plan

Finish by March 29

- Optimize plant size and identify bottlenecks
- Finalize budget estimations
- Purchase materials for mock-up

Mock-Up Construction

Finish by April 10

- Complete mock-up
- Perform durability tests on entire plant or components (where appropriate)

Mid-Project Assessment

Finish by April 15

- Reevaluate:
 - Materials to use for final project
 - Budget

Final Construction and Evaluation

Finish by May 8

- Complete final model
- Perform durability tests on components and entire plant