



# Foam Filtration

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# Why Foam?

- Less water wasted
- Less space needed
- Less expensive

This would be most beneficial for:

- Medium sized villages
- Emergency situations
- Temporary situations



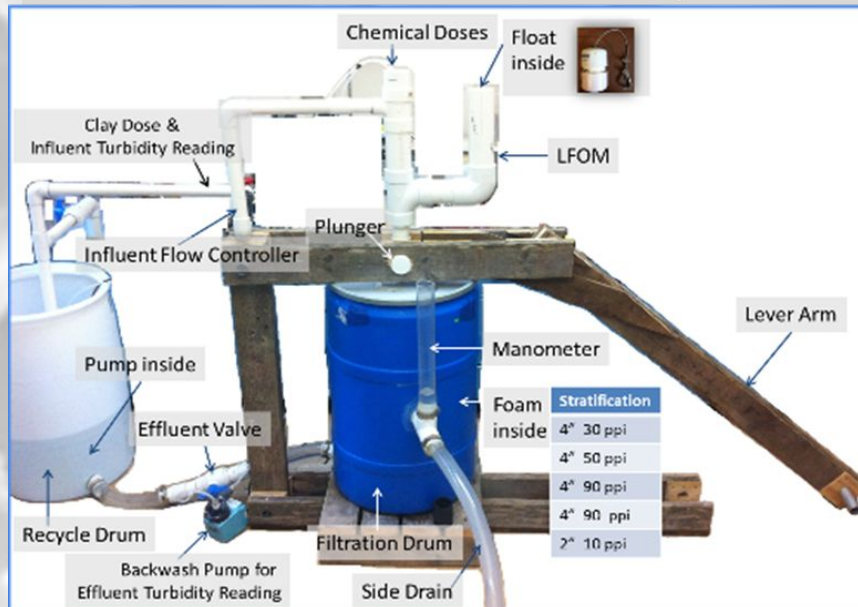
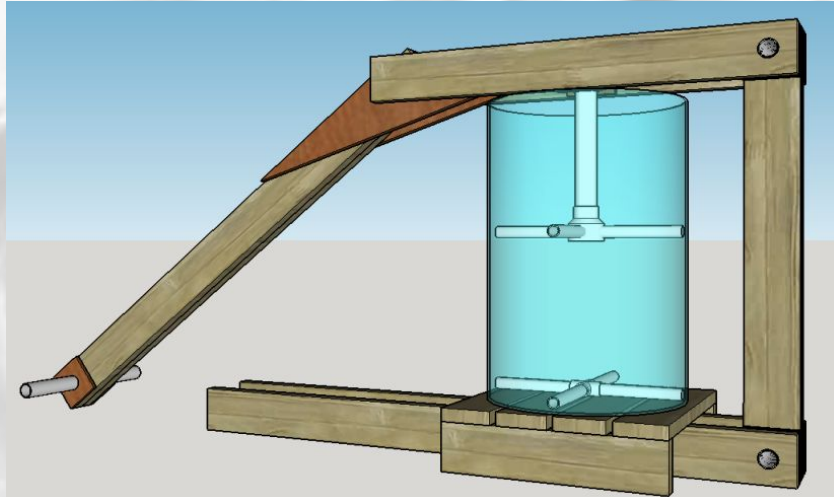


# Is Foam Safe?

- Ether- and ester-based reticulated polyurethane foam
- Conducted an initial leaching test using mass spectrometer, ester-based foam → LEACHES
- Follow-up on hold



## Large Filter



How does it work?

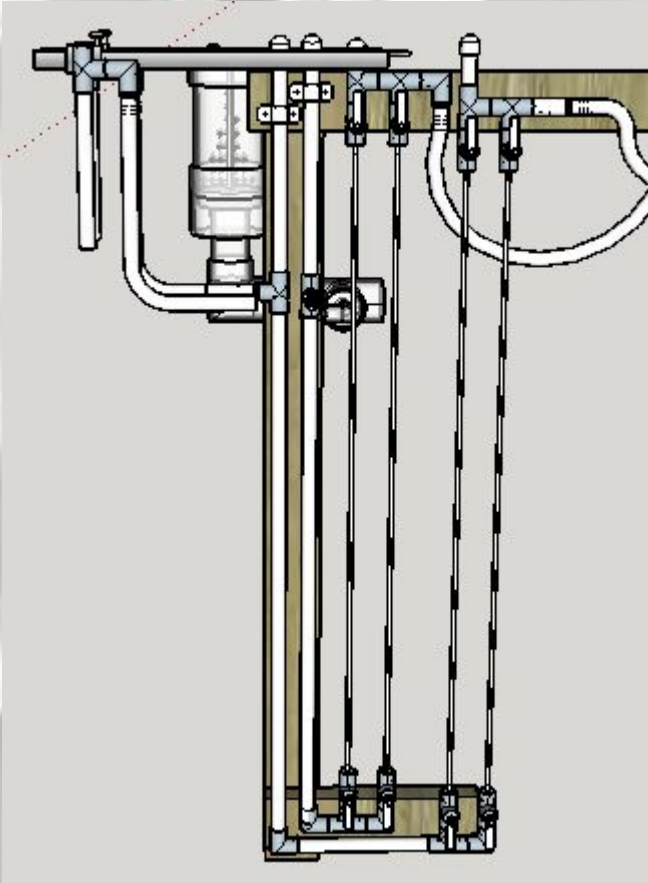
Demonstrated Capability:

- Treats up to 1000 NTU down to <2 NTU  $\Rightarrow$   $pC^* = 2.7$
- Backwash cleans 70%
- 1L/S

Issues:

- Heavy lever arm
- Current foam lifter broke

# Proposed CDC System

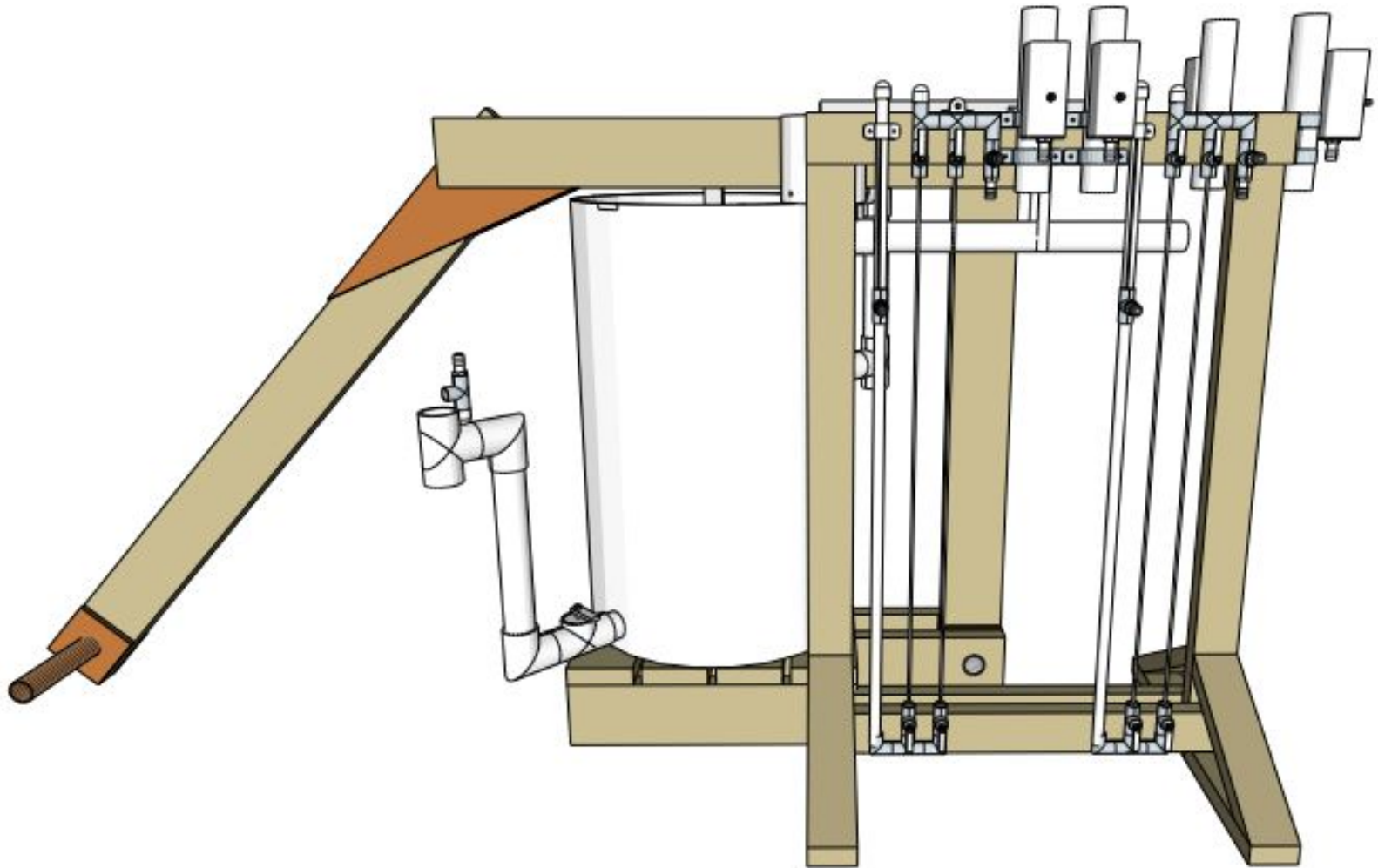


- Smaller, Compact, Robust
- Place float into LFOM to eliminate need for entrance tank
- Run Major Headloss Elements (MHE) vertically to reduce overall size

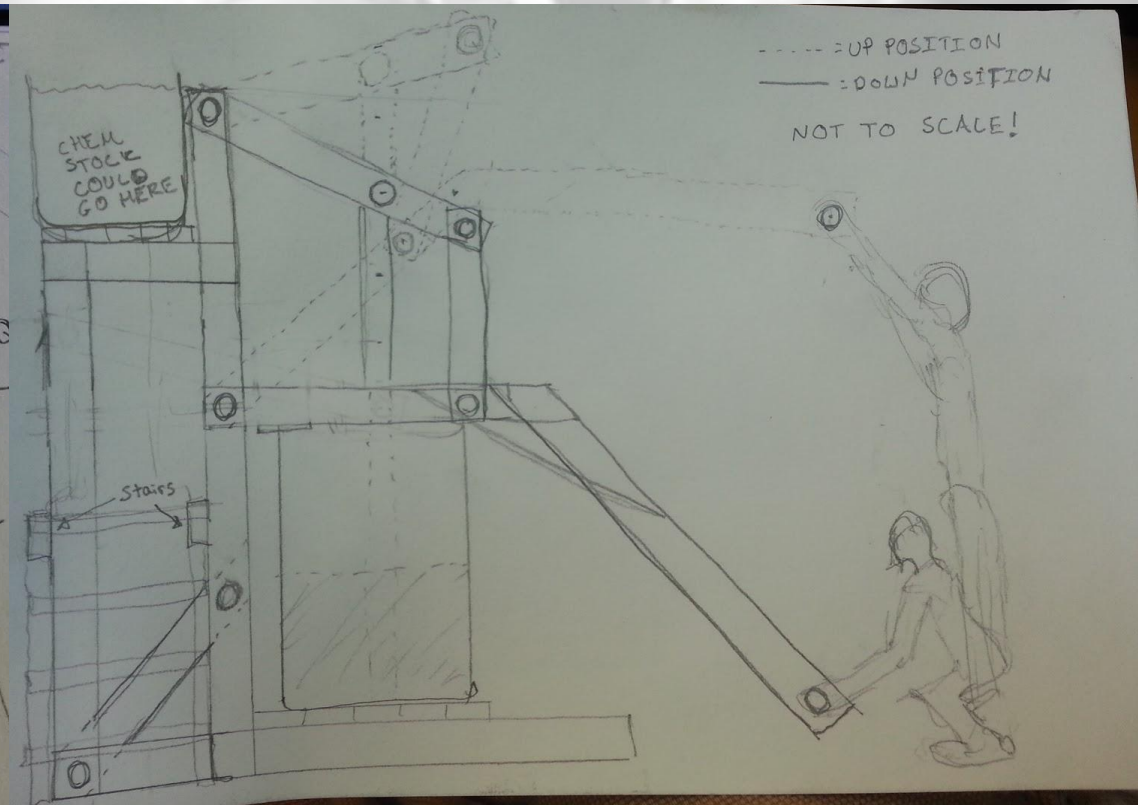
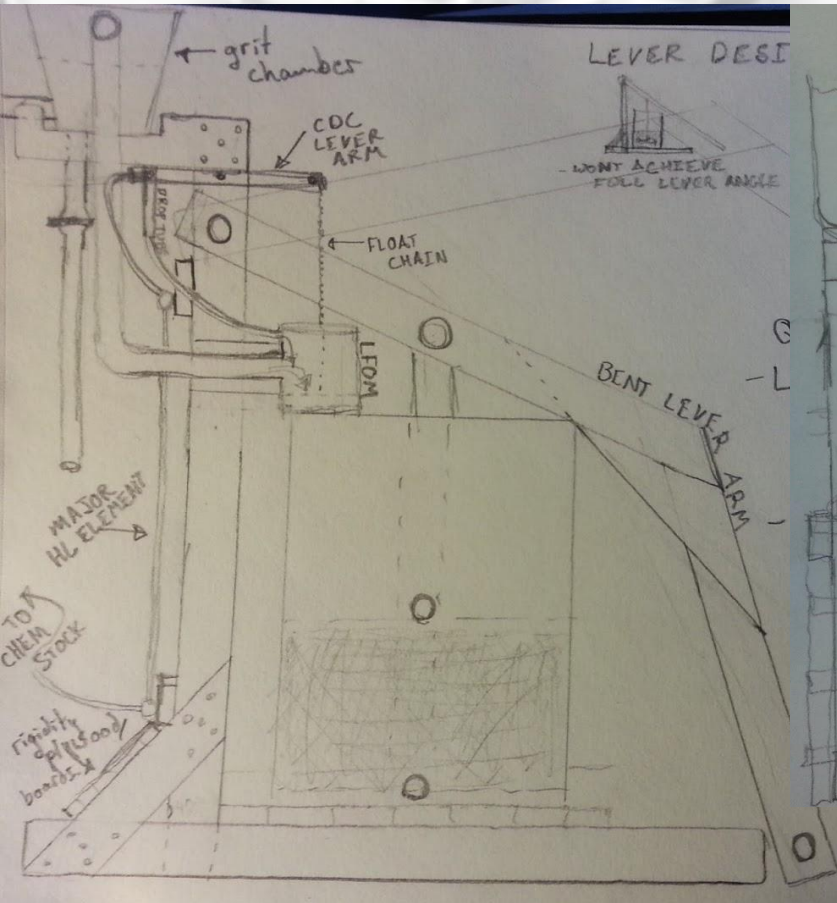




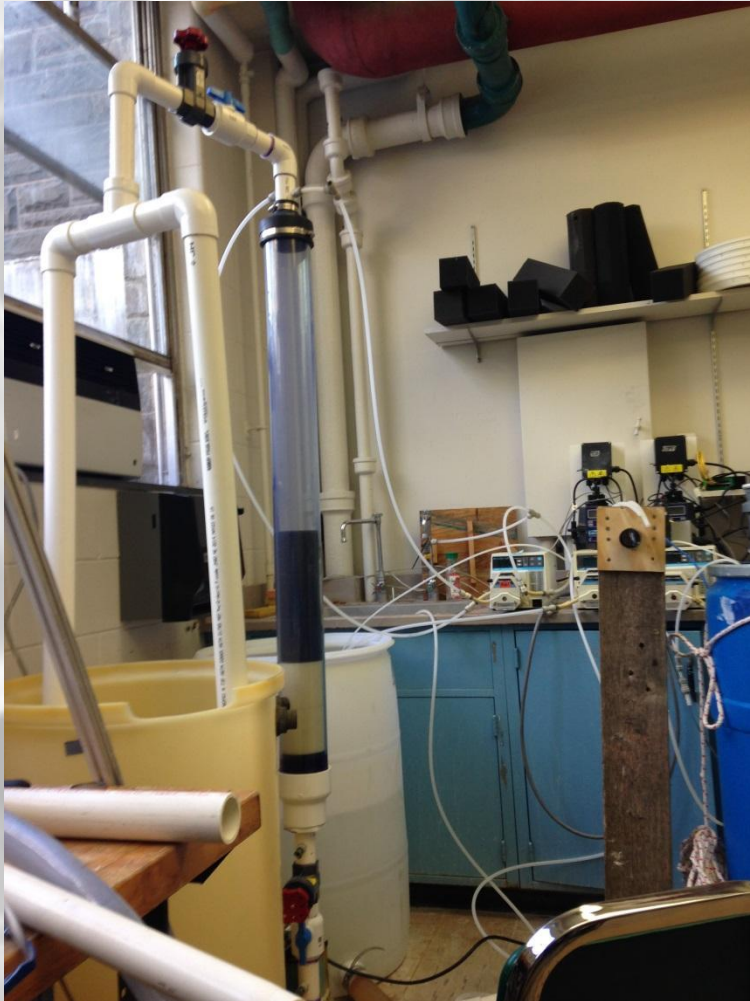
# Proposed CDC System



# Rigid Vertical Lever Arm?



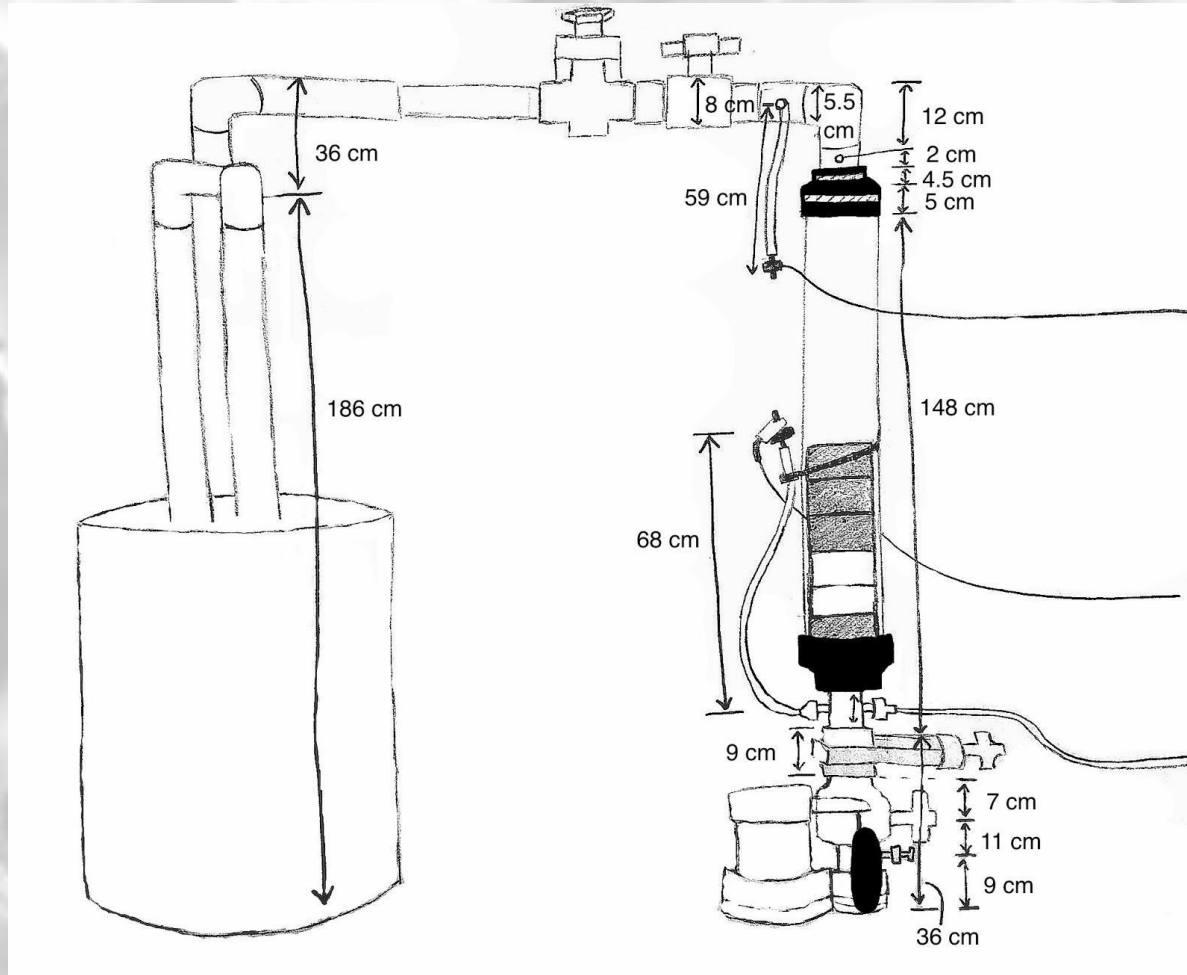
# Small Filter: Why?



- Objective: collect data on efficiency of backwash system
- Function: replicates large scale filter
- Benefits: easy to operate



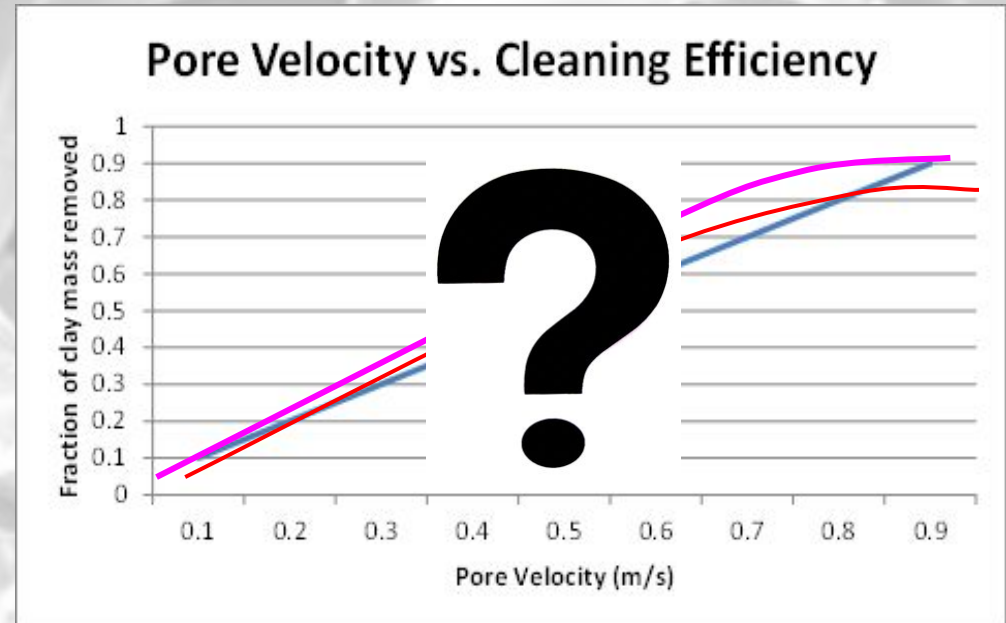
# Small Filter: How?



➤ 1.5 L/s  
backwash  
simulates lever  
arm

# Pore Velocity vs. Cleaning Efficiency

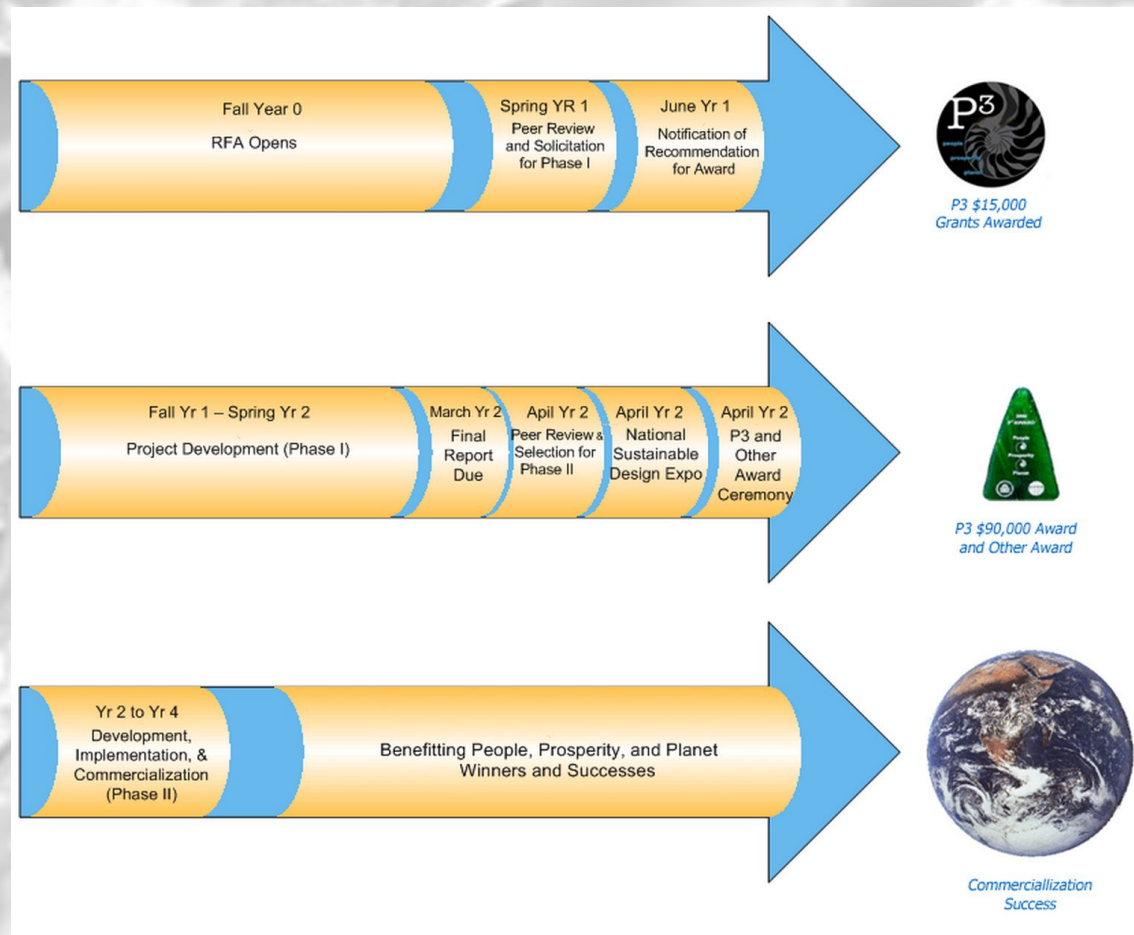
- Objective: Empirical relationship between backwash pore velocity and filter cleaning efficiency
- Each pore velocity will remove a certain mass percentage of the clay





# EPA P3 Award Phase 2

## We're going to D.C. to win



- Finishing construction of and testing 2 foam filters in El Carpintero
- Presenting the technology to the Swiss Cooperation





# What's Next

- Continue researching what could be leaching from foam
- Run tests and collect data on the small filter
- Fabricate & implement LFOM & CDC designs on large filter
- EPA Phase 2 Project Proposal

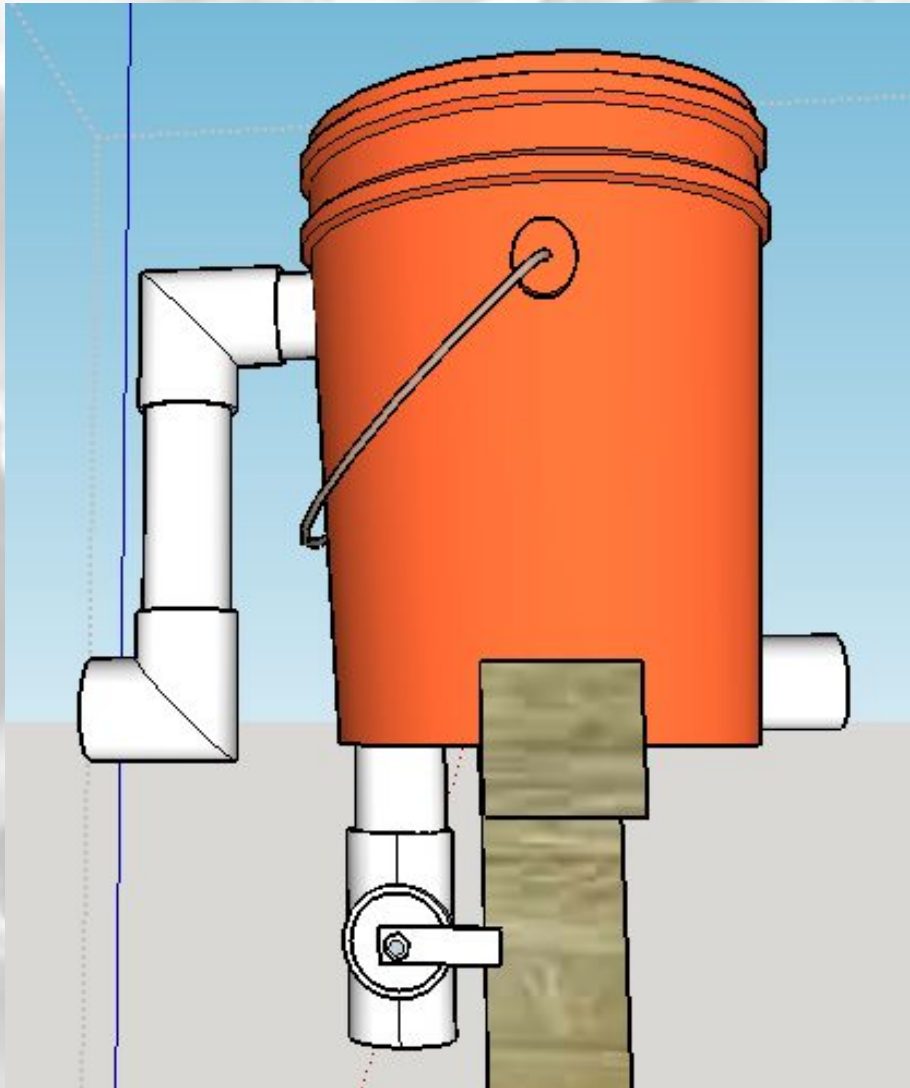


# Questions???





# Grit Chamber and Entrance Tank?



Both determined not necessary:

- Too much money
- Break the rules!!
- Top layer of Foam acts as Grit Chamber