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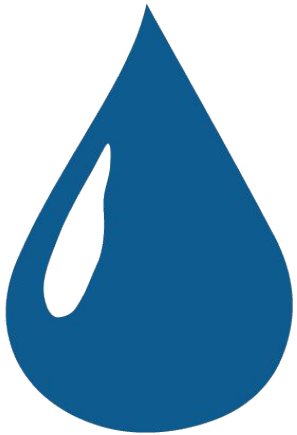


EStaRS Filter

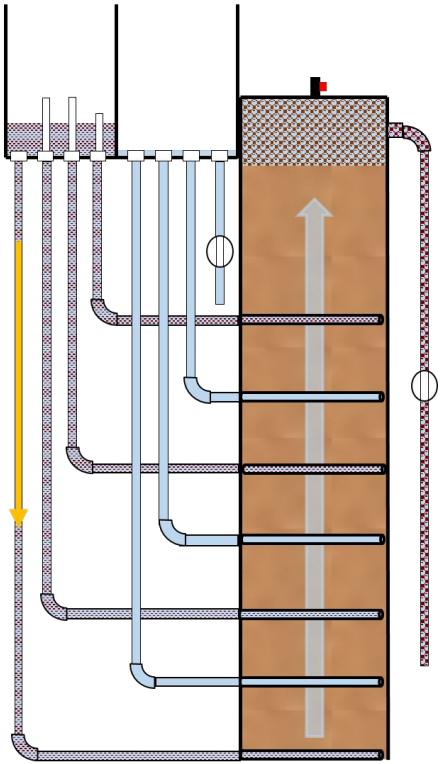
Manometer research & head loss modeling for greater efficiency and ease of use in Honduras & India
(Additional Information at the AguaClara wiki and Google Drive)

EStaRS is an alternative to OStaRS for lower flow rates.

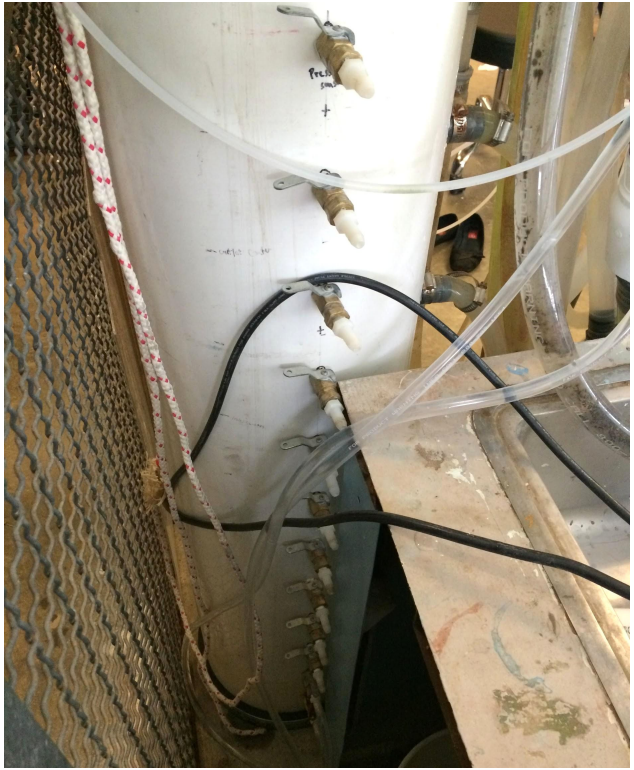
- OStaRS not cost effective for flow rates < 6 L/s
- EStaRS originally designed to provide 0.8 L/s
- Can be used independently (India) or with a full treatment train (Honduras)

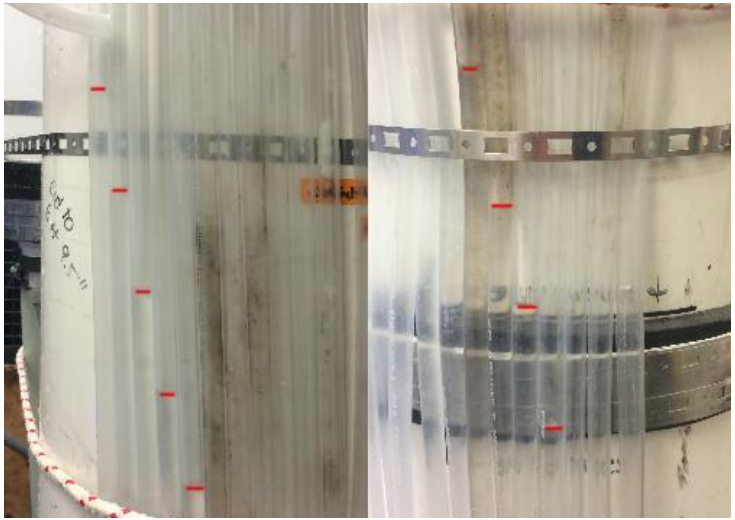
Operators do not know if backwash is successful.

- Fluidization is necessary to clean the sand bed
- Fluidization is not visible through closed, opaque filter column

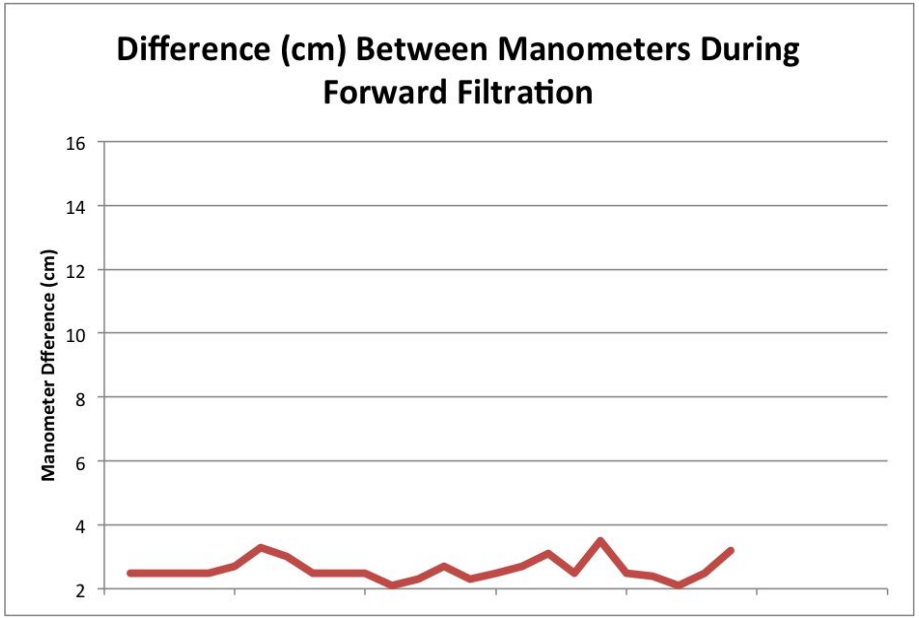


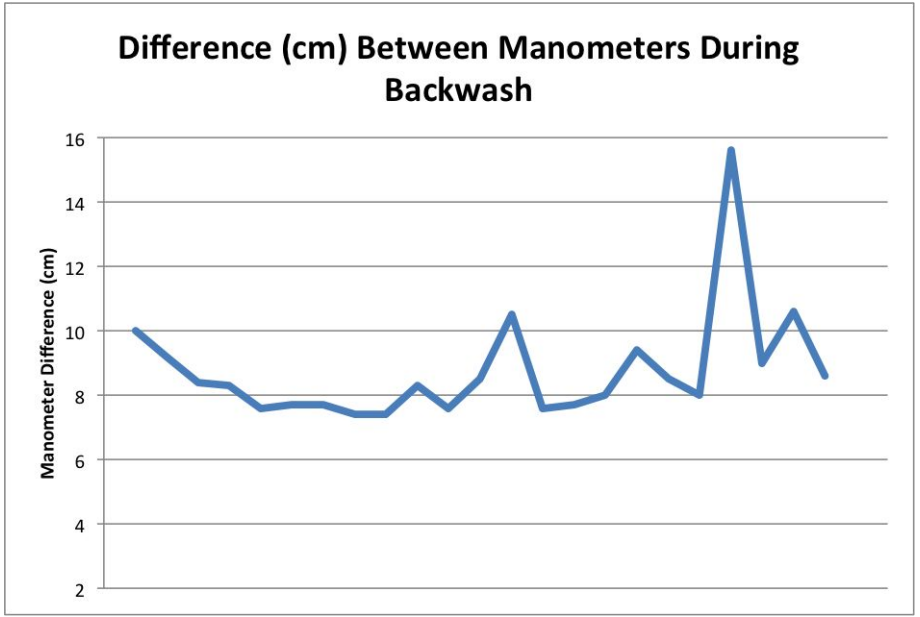
Manometers provide insight into fluidization.





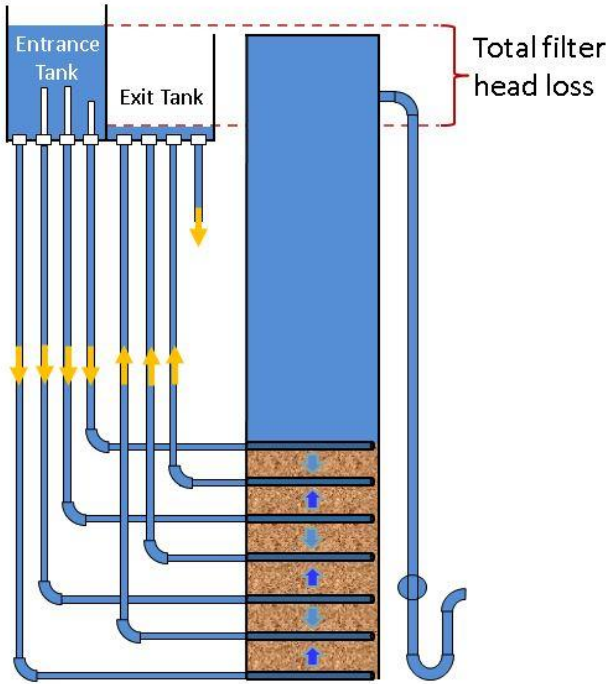
Simple manometer system was unreliable.





Operators want to improve backwash timing.

- Entrance tank water level indicated head loss
- Head loss also measured by ProCoDa



Clogged bed tests were run with clay and coagulant

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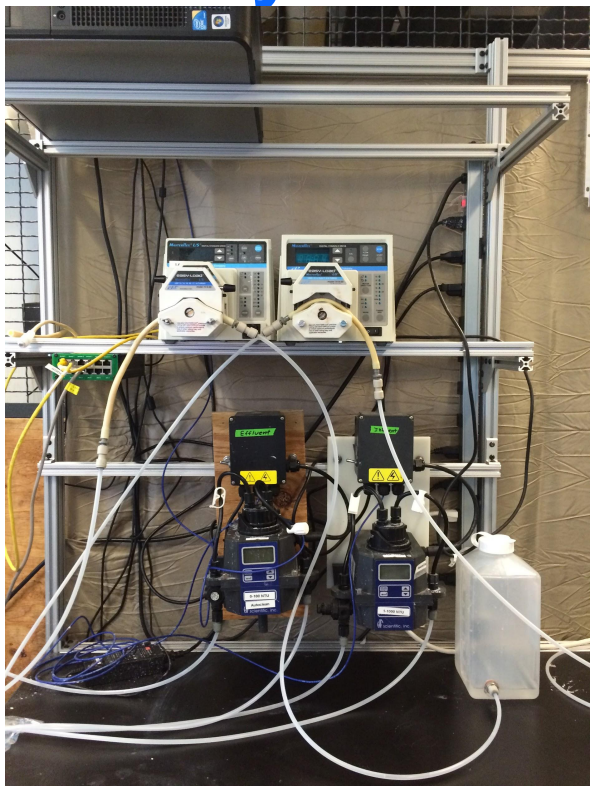
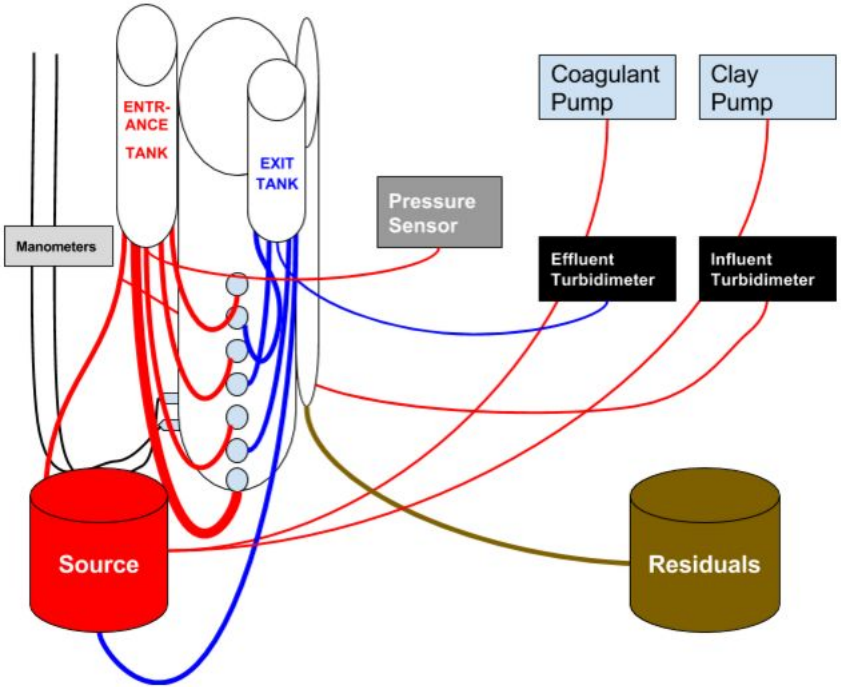
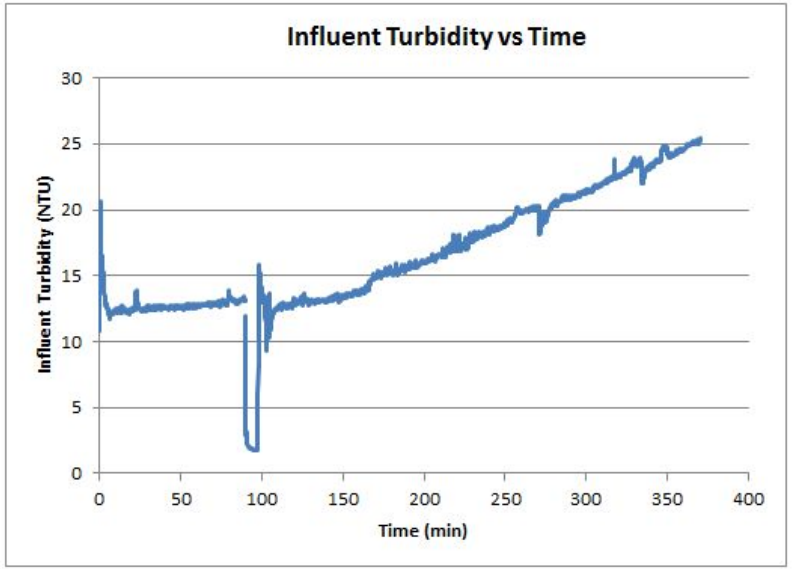
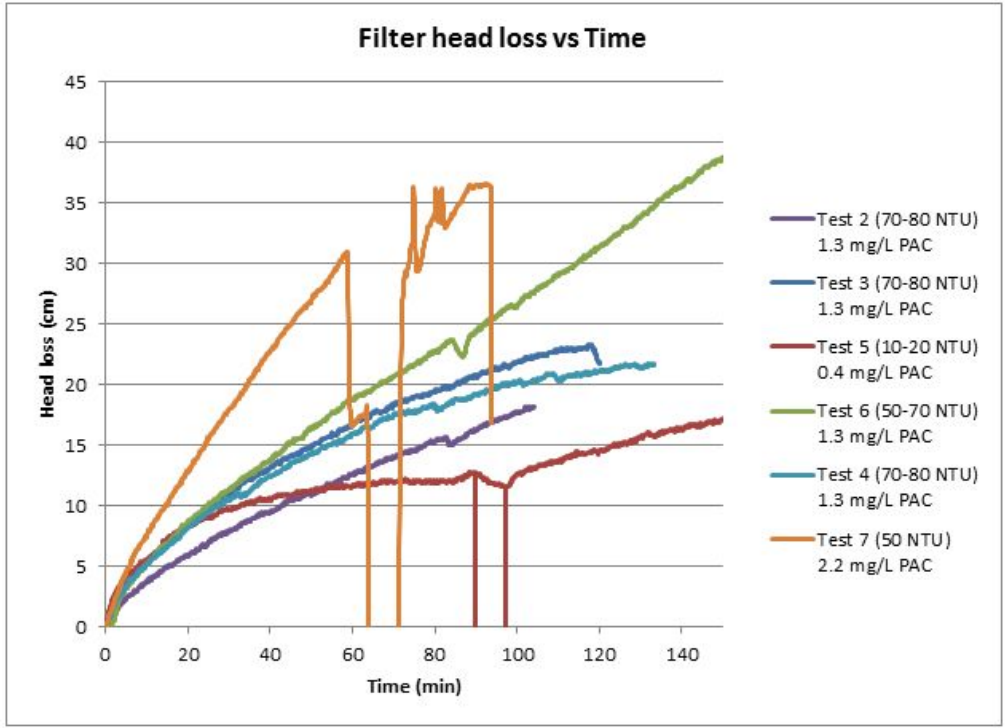




Influent turbidity and head loss limitations were challenges.

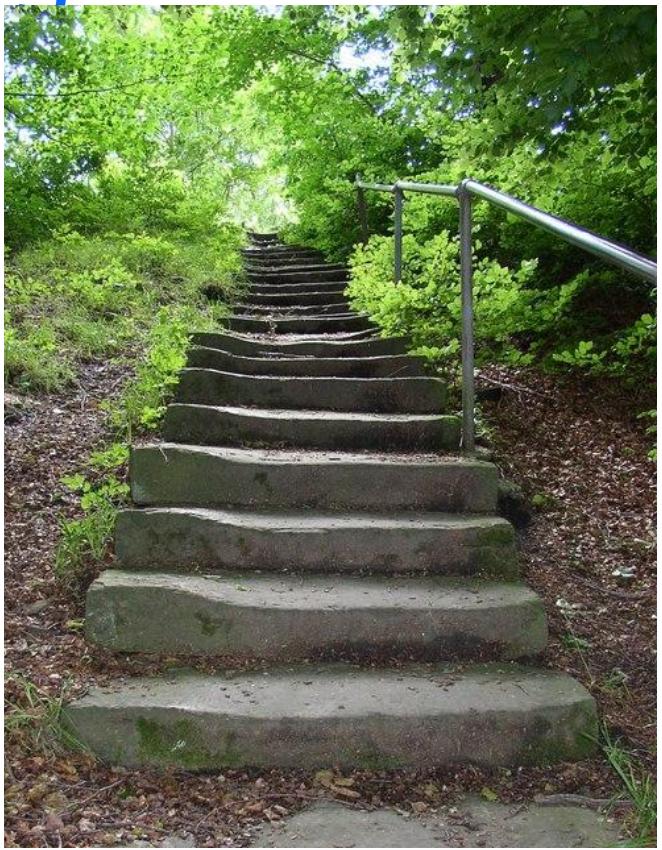


Increasing coagulant dosage increases head loss.



Future works for incoming teams.

- Solidify a way to indicate bed fluidization during backwash.
- Manometer usage to indicate clogged inlets.



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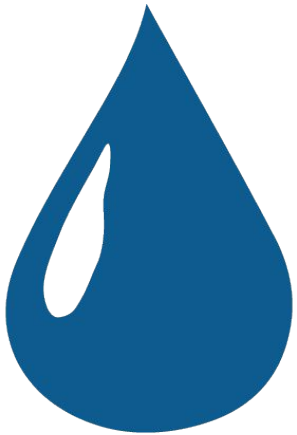
Questions and Recommendations



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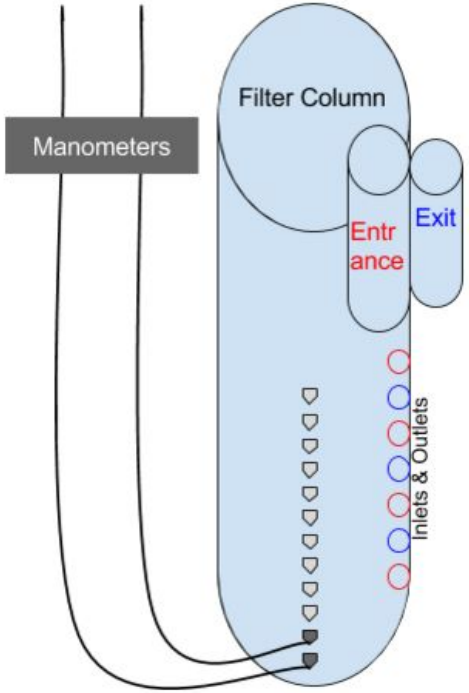
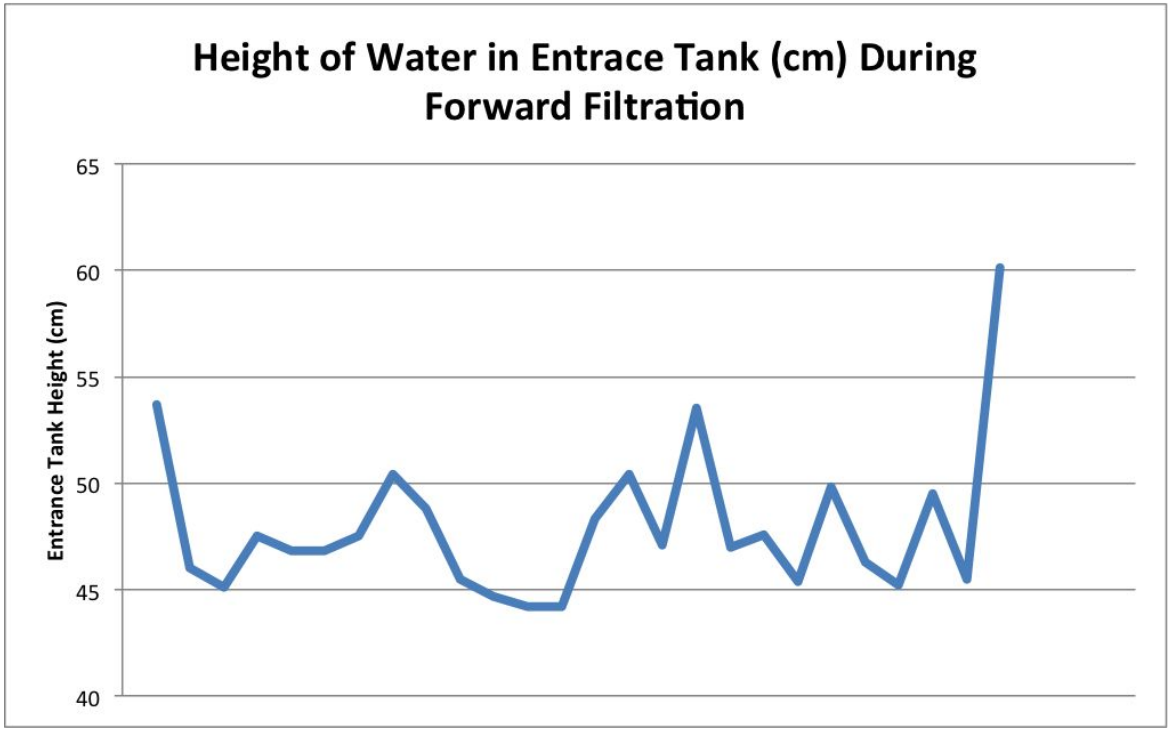
Appendix Slides

Manometer Apparatus



Water height in entrance tank is not constant.



Increasing coagulant dosage shows clear spike in effluent turbidity.