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Water Group

Hollow Fiber Membrane Filtration System

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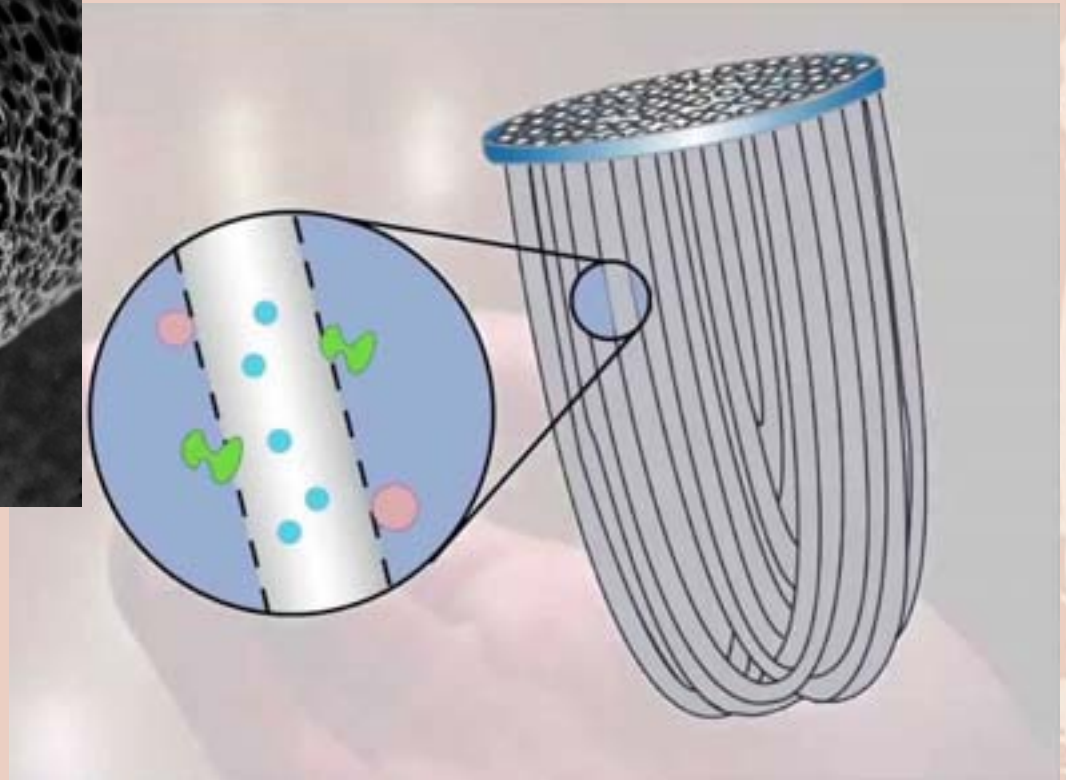
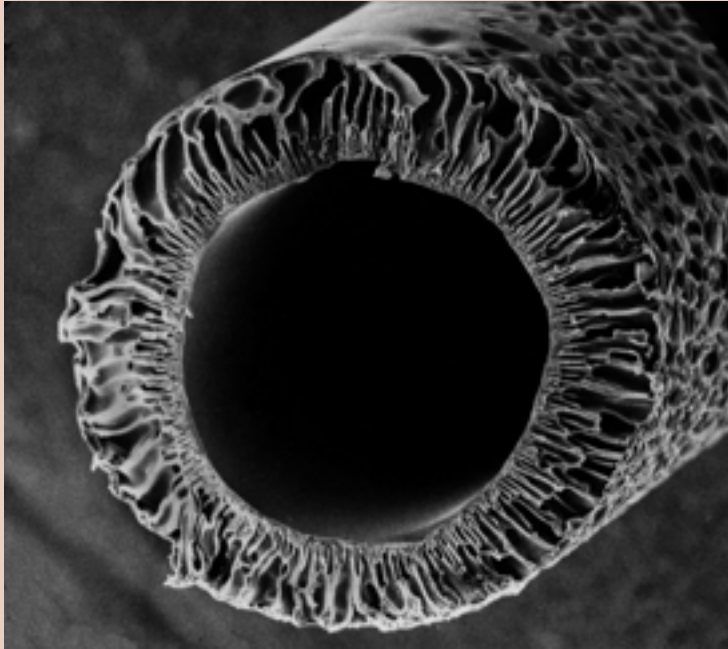
Water Group - Hollow Fiber Membrane



80% of all sickness and disease worldwide is related to **contaminated water**, according to the World Health Organization.



HFM Filter Technology





Sawyer's HFM Filter System



**Sawyer's 10" filter with
backwashing system**



Sawyer's bucket filter



Previous Designs



10 inch
HFM Filter



HFM Bucket Filter



Demonstration System





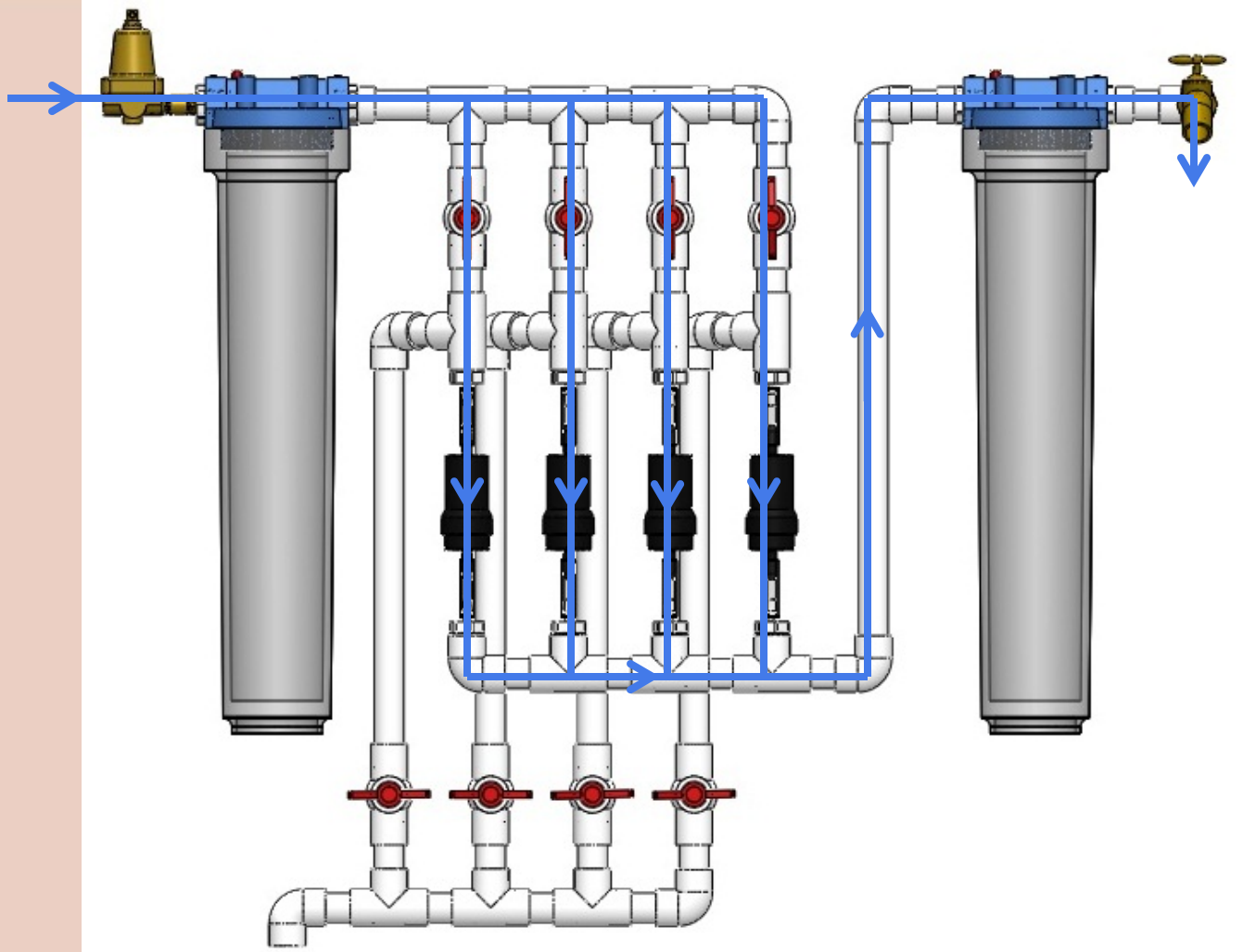
Current Design



- Reduces cost by eliminating the backwashing tanks
- Simplifies backwashing procedure

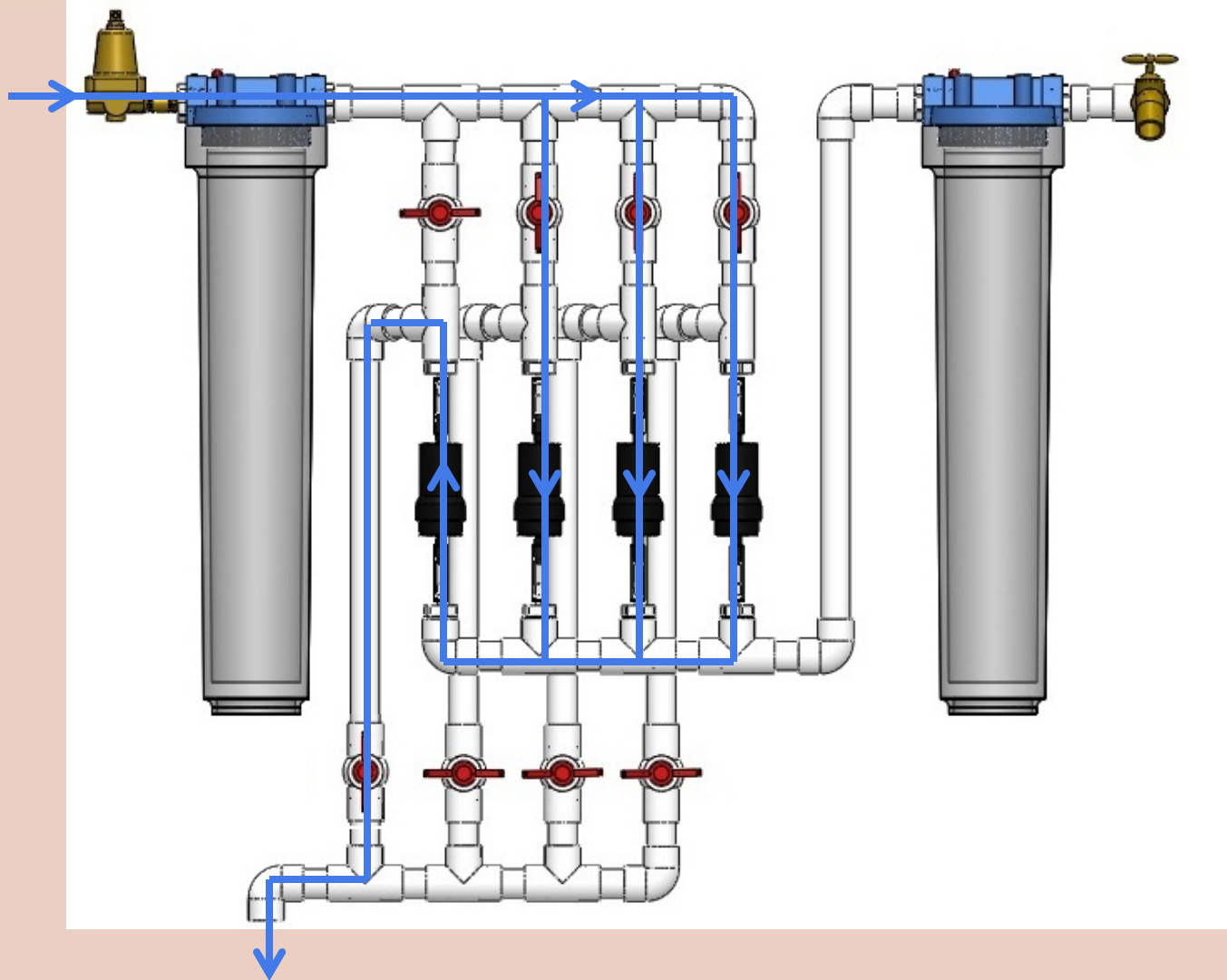


Normal Operation





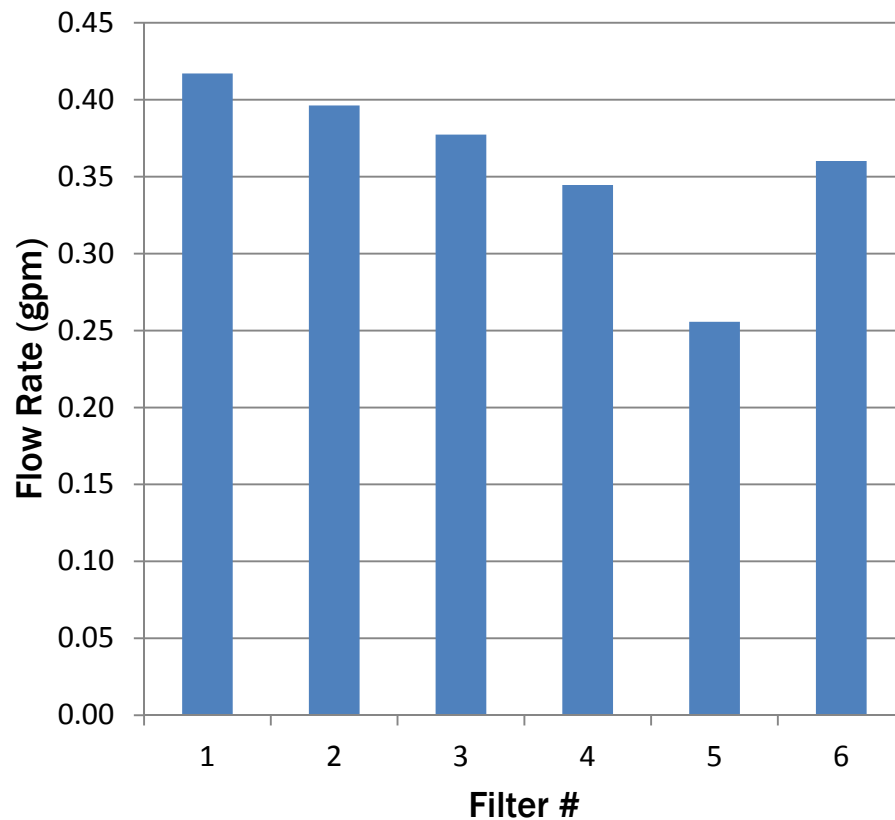
Backwashing Procedure





Individual Filter Test

Flow rate through individual filters

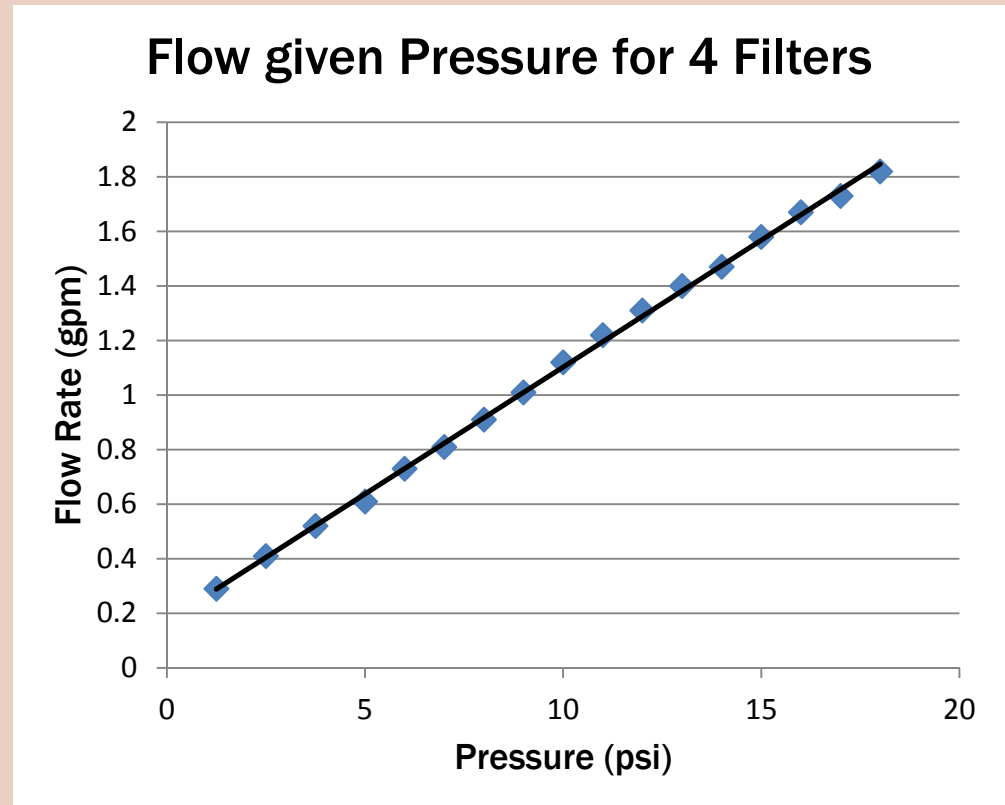


- Constant head
- Different individual filters
- Determined flow rate



Effect of Head on Flow

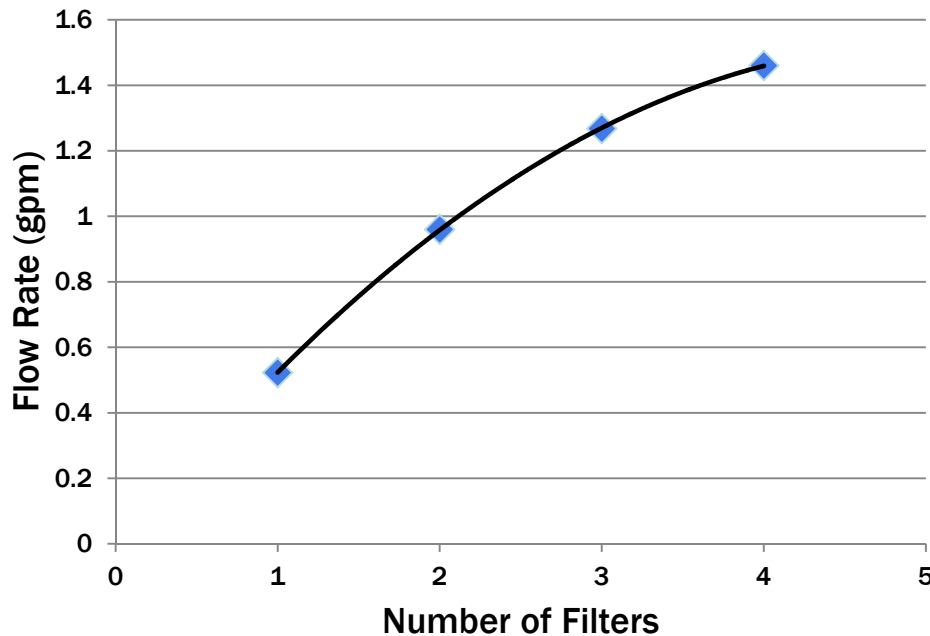
- Same unique filters
- Different head
- Determined flow rate





Effect of Quantity on Flow

Flowrate given Number of Filters



- Constant head
- Different number of filters
- Determined flow rate
- Averaged combinations of different filters



Broken Fiber Test

Results:

Sample Amount (mL)	uncut Trial 1	uncut Trial 2	cut Trial 1	cut Trial 2
0.1				
1	0	0	filter not cover well	3
10	0	0	704	472
100	3	0	TNTC	Very high
Bacteria/L	3.00E+01	0.00E+00	7.04E+04	4.72E+04

Summary:

Under normal conditions the filter meets the EPA's standards, but with one broken fiber it no longer effectively removes pathogens.






Documentation

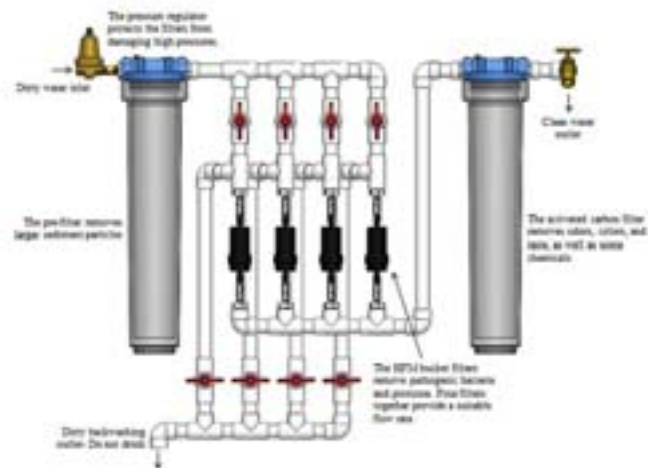
Hollow Fiber Membrane Water Filtration System

Assembly and Operation Manual

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	Bushing	x15	6
Inlet: 3/8 INPT Outlet: 3/4 INPT			
	90° Elbow	x10	11
Nominal Size: 1/2 in Inlet: Socket Outlet: Socket			
	Brass Faucet	x1	1
Nominal Size: 1/2 in Inlet: INPT			





Future Work



- Provide support for systems in Burkina Faso
- Explore the possibility of installing a system in Leon, Nicaragua



Acknowledgements

Additional Team Members

- Jon Hepner
- Rebecca Ports

Advisors

- Dr. David Vader
- Ariela Vader

Partners

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- Sri Medha Technologies, India



Questions?