SWIFT

Scalable Water Inflatable Filtration Technology

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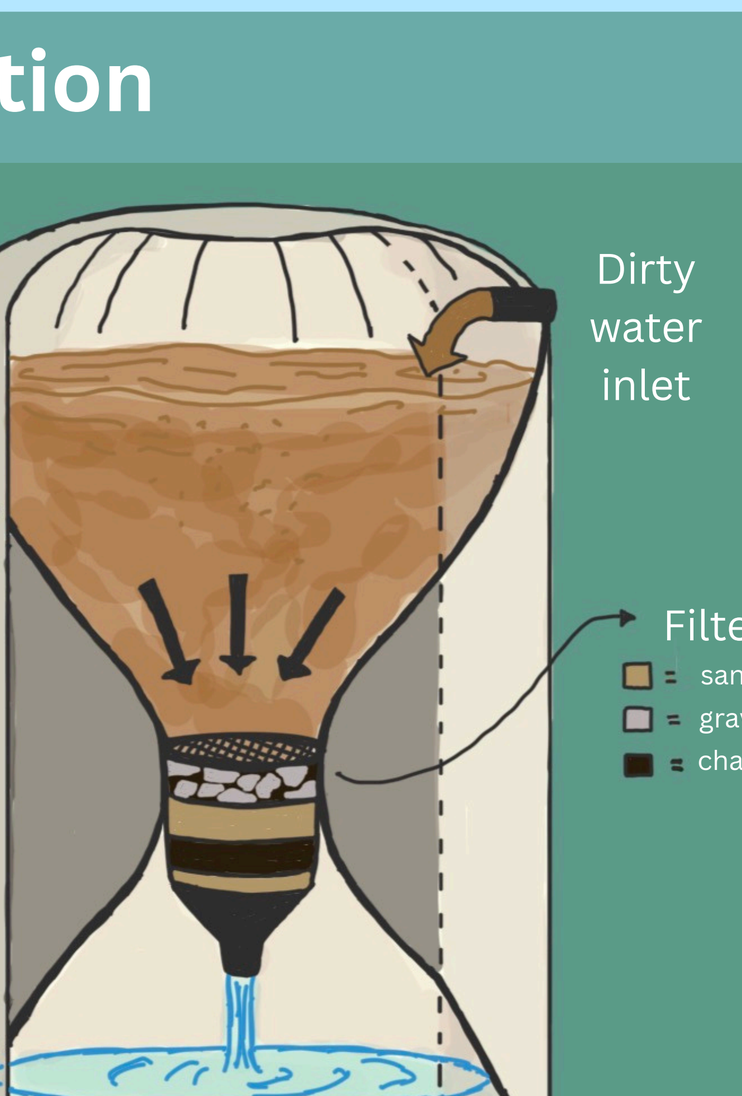
How might we help the Tataskweyak Cree Nation (TCN) in Manitoba, Canada, access clean water when facing chemical and bacterial contamination?

The Problem

- Long-term drinking water advisory from 2017-present.
- Existing treatment plant leaves bacteria & heavy metals.
- Contaminated water causes a range of health issues.



Key Insights

- Many communities have access to unusable water.
- Operation of existing treatment plants becomes a burden on the people.

The Experiment

Build Model

Biochar, Sand, and Gravel
Coffee Filter, Fabric

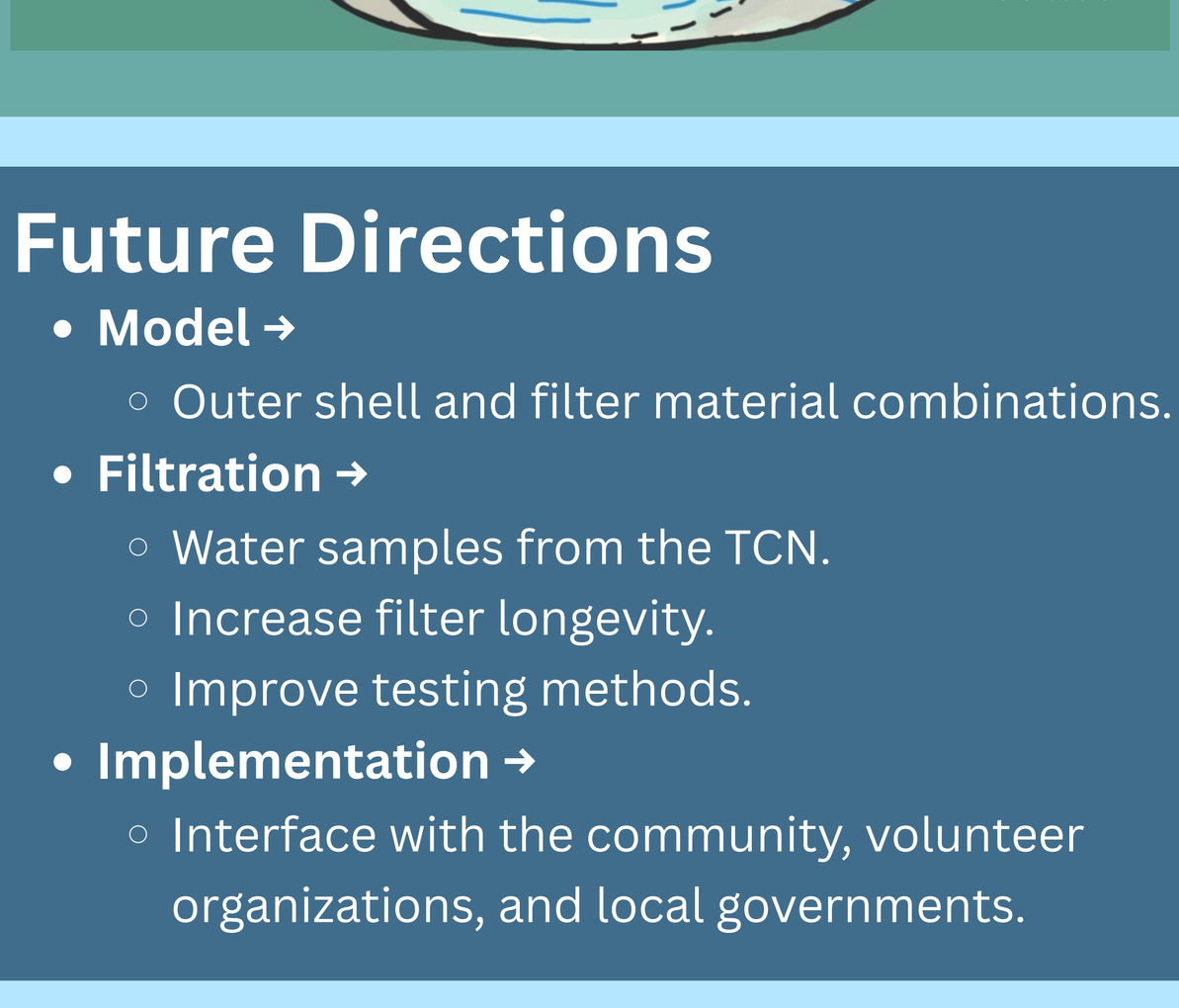
Test Device

Input: Contaminated Water
Output: PPM monitor, Test strips

Demonstrate Casing

Create: Paper-mâché
Outcome: Spray with water, Hardens

Our Solution



The Results

Parameter	Initial (ppm)	Final (ppm)	Percent Decreased
Sulfates	1200	50	**95.83%**
Hardness	425	0	**100.00%**
Hydrogen Sulfide	1	0	**100.00%**
Iron & Copper	0.3	0	**100.00%**

- Filtered out all visible particulates.
- Fast flow rate at ⅛ gallons per minute.

Future Directions

- **Model →**
  - Outer shell and filter material combinations.
- **Filtration →**
  - Water samples from the TCN.
  - Increase filter longevity.
  - Improve testing methods.
- **Implementation →**
  - Interface with the community, volunteer organizations, and local governments.