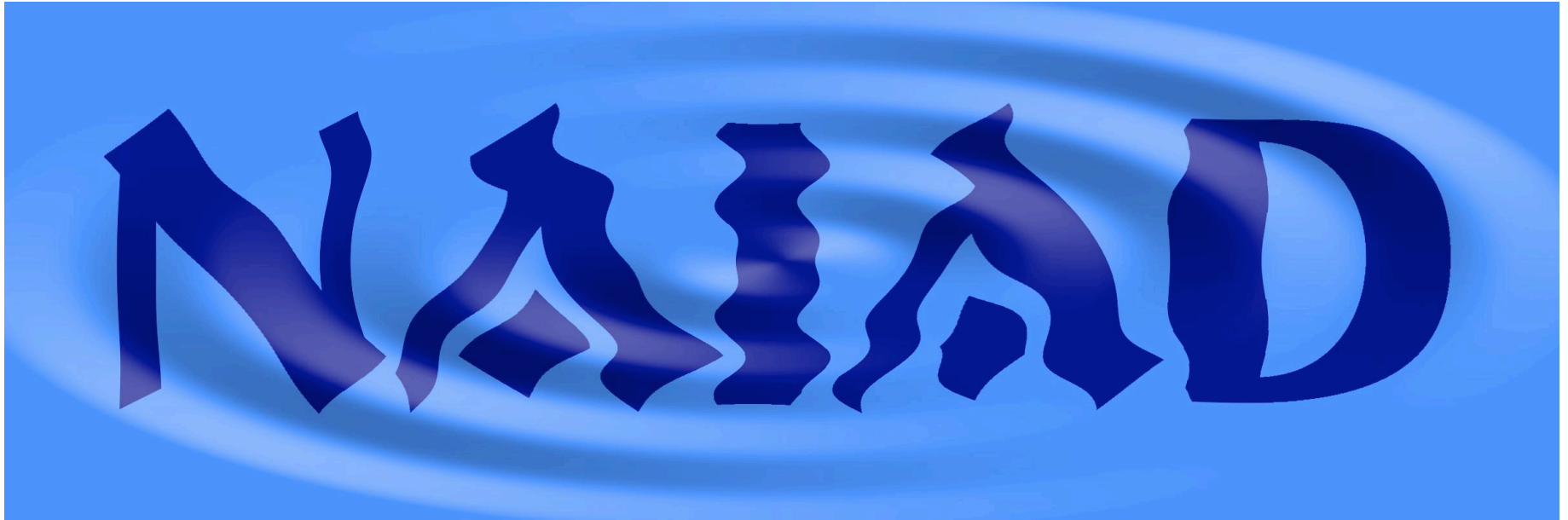


Green Team presents:



Community Water Purification System

Speakers: Collins Ward
Alison Wong
Will Lark

System Overview

- ◆ Bio Sand Filter
 - Particulates, turbidity
- ◆ UV Purifier
 - Bacteria, viruses
- ◆ Charcoal Filter
 - Organic compounds, metals



The Problem

- ◆ 40% of world population lacks access to safe, clean drinking water
- ◆ 3.5 million children die every year



Target Customer: Tibetan Children's Village



600 students and staff
Dharmasala, India

Current Situation: Centralized, gravity-fed water source contaminated with micro-organisms

Solution

◆ Communities of 500 to 750 people

- Requirements: Power source, temperate climate, centralized, gravity-fed water source

◆ Low cost

- First 5 years: \$0.01 per person per day

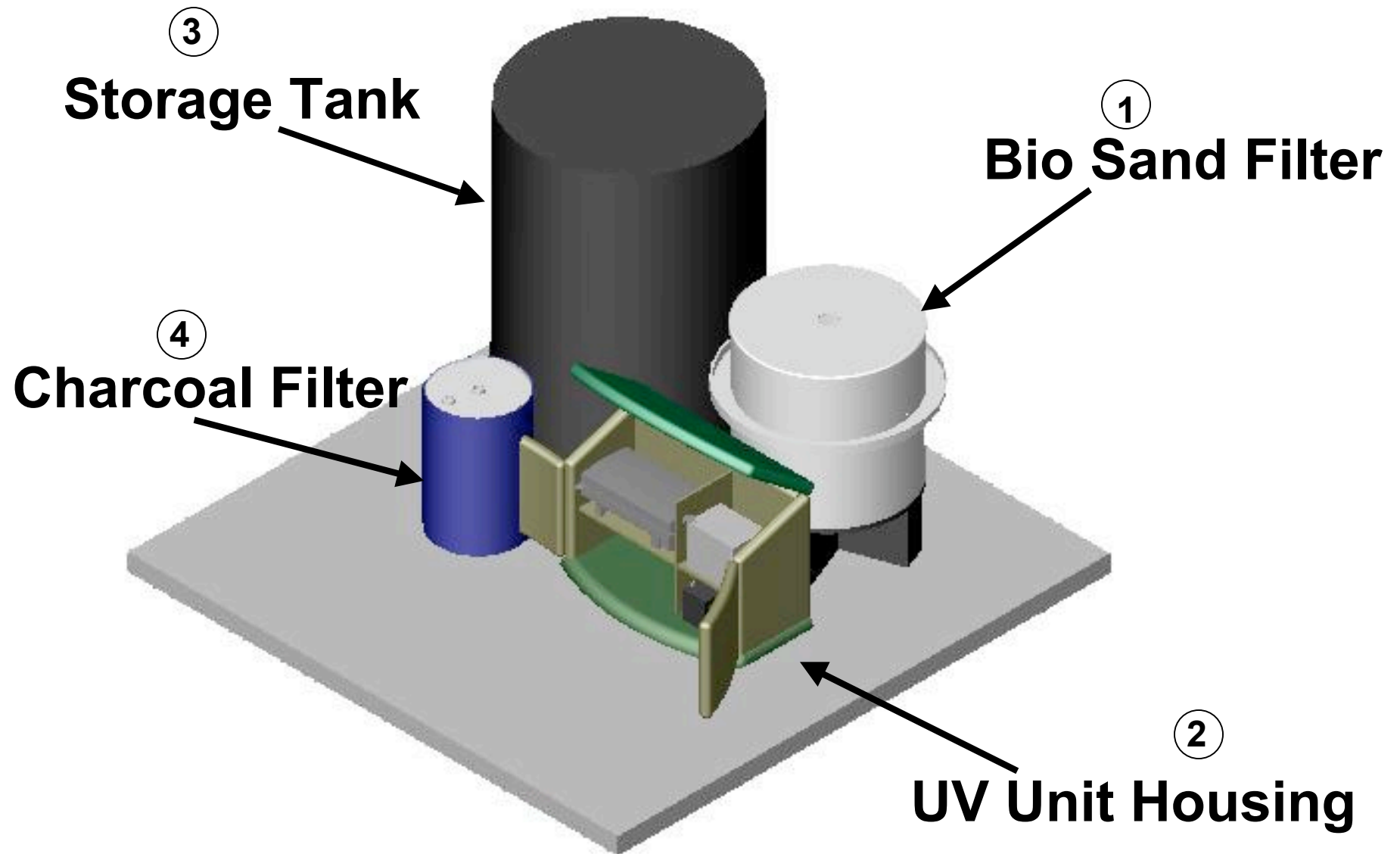
◆ Low maintenance

- Monthly check-ups, updates every 3 months and yearly

◆ Effective removal of microbes and bacteria

- Coliforms, enteric viruses, E. Coli, cholera, salmonella, giardia cysts, helminths, hepatitis, worms, Zn, Cu, Cd, Pb, Fe, Mn, As, etc.

Integration of Components



BioSand Filter



Sand and biological layers filter out particulates and remove turbidity

3 GPM flow rate

HDPE plastic

Local materials

3 Layers of Sifted Sand

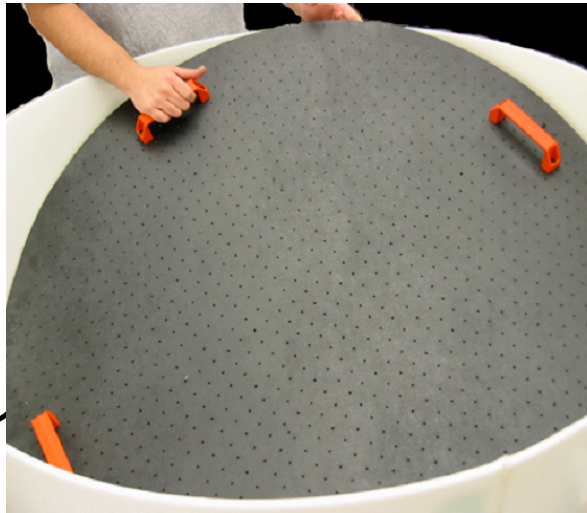


Fine Sand (Grain size .03" Diameter)

Course Sand (Grain Size .25" Diameter)

Gravel (Grain size .5" Diameter)

BioSand Maintenance



Once every 3 months

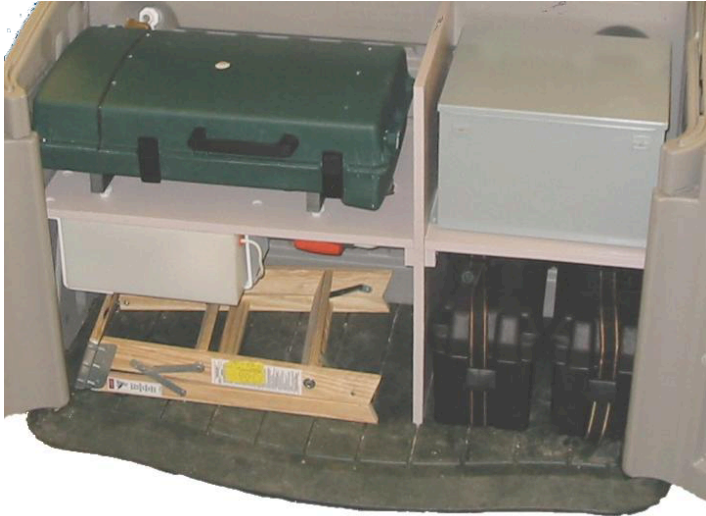
- Remove lid and diffuser
- Harrow sand with provided rake
- Open release valve

Ultra-Violet Light Unit



- Kills 99.99% of Pathogenic Bacteria and Viruses
- 50 Watts
- 4 GPM
- Modified Existing Device
 - Interior is accessible
 - Adjustable height
 - Added safety features
- Easy Maintenance
 - Clean reflector plate
 - Replace bulb annually

Pump and System Electronics



- 240 AC V input supply
- 12 V battery backup
- Inline Pump
 - 4.3 GPM
 - Four piston, diaphragm-sealed
 - Float switch in reservoir
 - Connects to storage tank
- Control Box
 - Manual switch
 - Safety fuses

Activated Charcoal Filter



- Removes odor and mineral pollutants
- Affordable
 - India is one of the world's largest exporters of activated charcoal
- Medium pore size
- Connects to existing storage tank

System Architecture

- Modularity
 - Flow rate
 - Pump
 - Charcoal
- Access / Maintenance
- Back-Up
 - Bacterial removal
 - Power

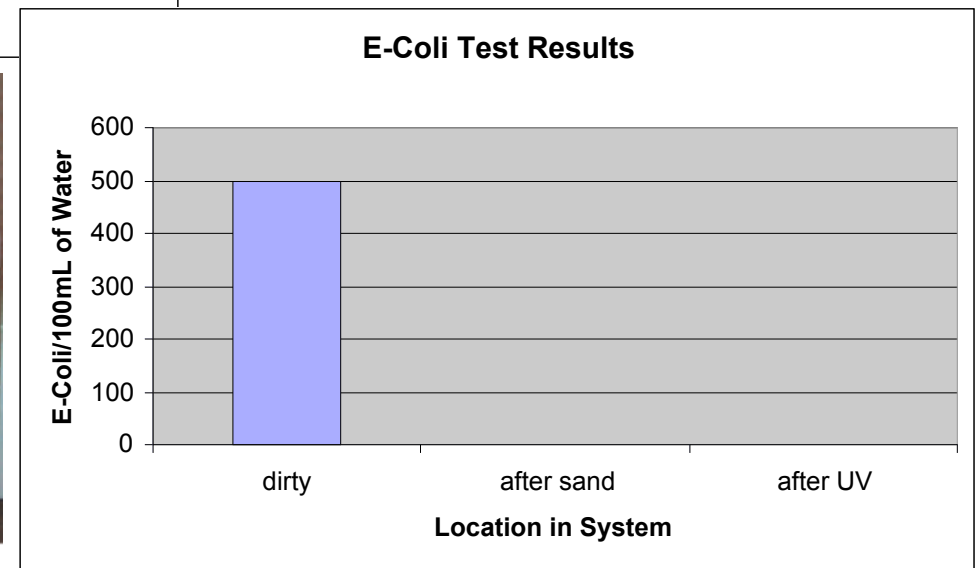
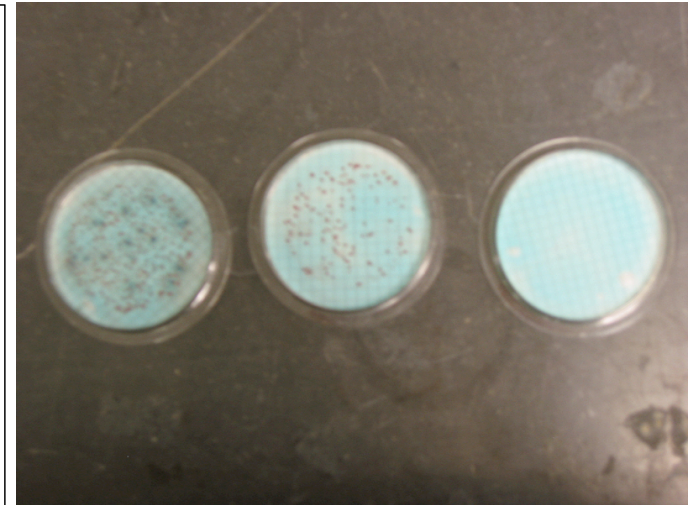
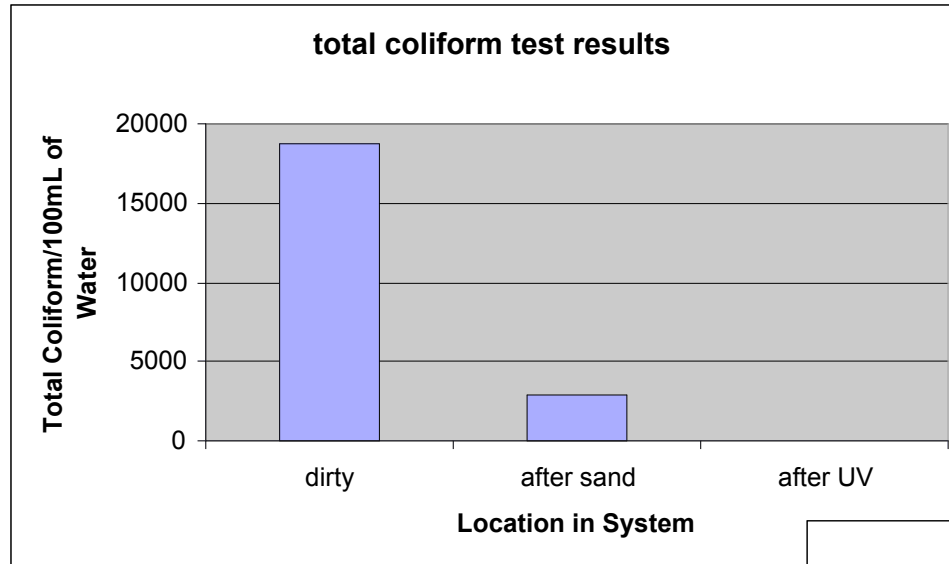
Benchmarking

Options	Practicality	Robustness	Size	Scalable	Affordable	Versatile	Effectiveness
Boiling	2	0	0	-2	2	1	1
Ceramic Filters	1	1	-1	-2	-1	1	2
Tube Wells	1	0	-2	0	-2	0	-2
Chlorine Additives	-1	0	0	2	-1	2	1
Ozonation	-2	-2	-2	2	-2	1	2
Deionization	-2	-2	-2	2	-2	1	2
Distillation	-2	-2	-2	2	-2	1	2
Reverse Osmosis	-2	-2	-2	2	-2	1	2
Solar Distillation	-2	-1	-2	-2	-2	1	1
Chemical Treatment	-1	-1	-2	2	-2	1	1
NAIAD	2	1	1	2	-1	2	2

- Our Product
 - Scalable: 500 – 1500 population community
 - Affordable: Larger Economies of Scale
 - Versatile: Treat a variety of water types
 - Robust: Sturdy under weather conditions

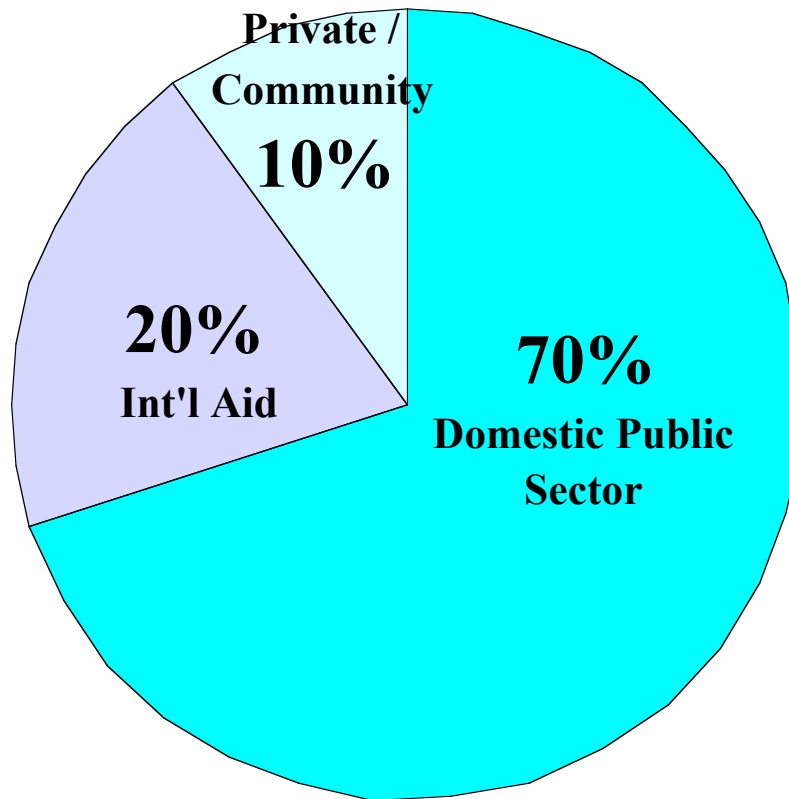
2 – excellent
 1 – good
 -1 – fair
 -2 – bad
 0 – not applicable

Water Test Results



Market

- \$27 – 30 billion (US dollars) spent annually on water and sector in developing countries



Business Model

- Produce in the U.S.A and market it to Donors
 - World Bank, Danida, USAID, Water Aid
- Startup capital: \$55,000
- Break Even Point: 2.5 years
- IRR: 10%

Questions...

