

# Applying Engineering Skills in Third World Countries

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**Transportation and Highway Engineering  
(T.H.E) Conference**

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**Hands Helping Haiti Water Project**  
**Dlo pwop se lavi — bwe dlo pwop**

# Agenda

- Getting Engaged
- Engineers Without Borders
- Haiti School Building Project
- Haiti Water Project
- What Can You Do



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# Getting Engaged

How does one go from doing engineering locally in Illinois to locally in a 3<sup>rd</sup> World Country?

- Long Term Process
- Connection
- Assessment
- Engage Community
- Implementation
- Follow-Up





ENGINEERS WITHOUT BORDERS  
USA



- **Vision**

A world in which all communities have the capacity to meet their basic human needs.

- **Mission**

Support community-driven development programs worldwide through the design and implementation of sustainable engineering projects, while fostering responsible leadership.



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ENGINEERS WITHOUT BORDERS  
USA

- Each EWB-USA chapter makes at least a five-year commitment to a partnering community. With the community's input, the chapter designs and implements low-cost, small-scale, replicable and sustainable engineering solutions to problems identified by the community.
- EWB-USA members train local community members and local NGO's to successfully monitor and maintain the projects.



ENGINEERS WITHOUT BORDERS  
USA



[www.ewb-usa.org](http://www.ewb-usa.org)

- 7 - Illinois Student Chapters
- 3 - Illinois Professional Chapters



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# Hands Helping Haiti

- Medical Clinics
- School
- Water Program



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# School Building Project

- Groundbreaking in 2009.
- Currently have 9 classrooms.
- HHH builds the classrooms and subsidizes tuition.
- School is ran by community.



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# Hands Helping Haiti Water Project



Our mission is to help our sisters and brothers in Haiti obtain safe drinking water to help break the cycle of poverty.



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# UN Millennium Declaration

*“We will spare no effort to free our fellow men, women and children from the abject and dehumanizing conditions of extreme poverty, to which more than a billion of them are currently subjected. We are committed to making the right to development a reality for everyone and to freeing the entire human race from want.”*

(UN A/Res/55/2, 2000.)



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# The Current Situation Need

- 1.1 Billion without safe drinking water
- 2.6 Billion without proper sanitation



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# Millennium Development Goals

Ensure environmental sustainability



By 2015, reduce by half the proportion of people without sustainable access to safe drinking.



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*“Unless we meet the millennium water and sanitation targets, no other development targets can be met.”*

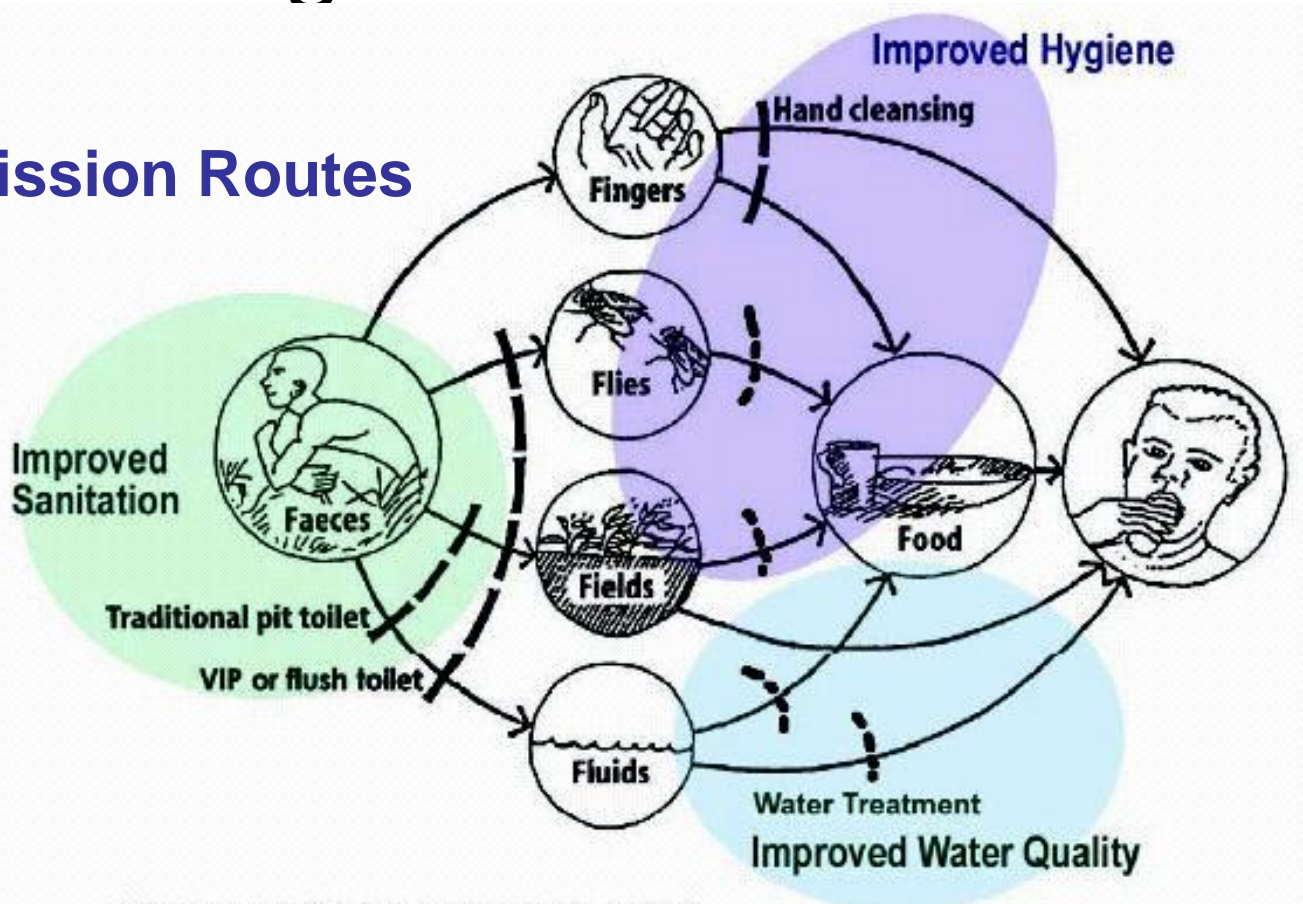
*- Michael Camdessus, Former Managing Director, International Monetary Fund*



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# Engineering Fundamentals

## Transmission Routes



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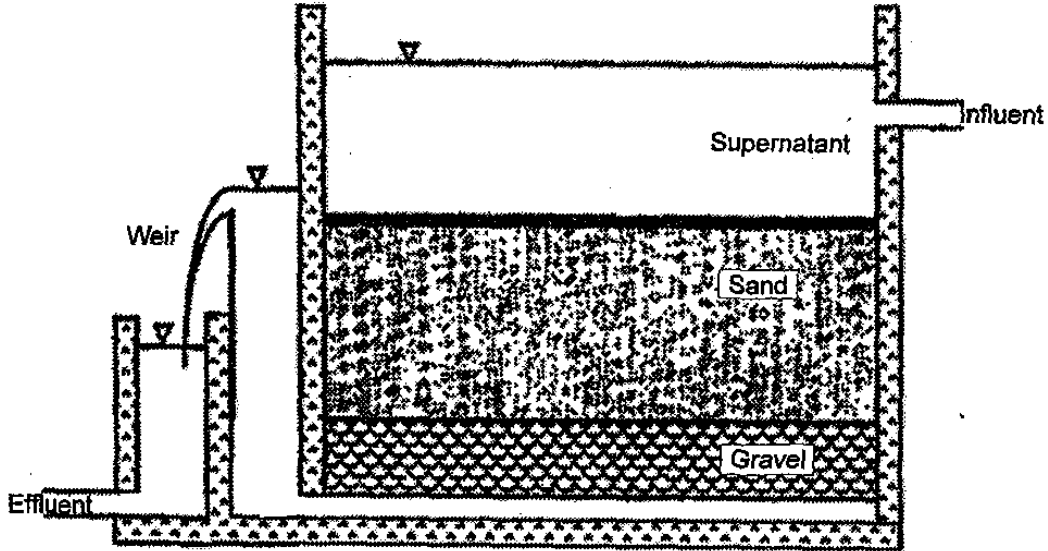
# Biosand Filters



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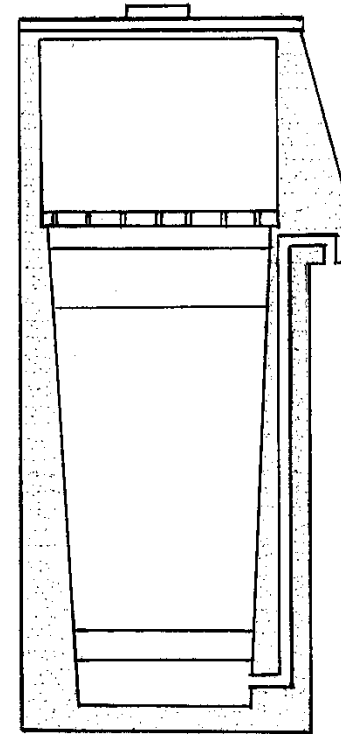
# Conventional Slow Sand Filter

- Continuous flow
- Large volumes

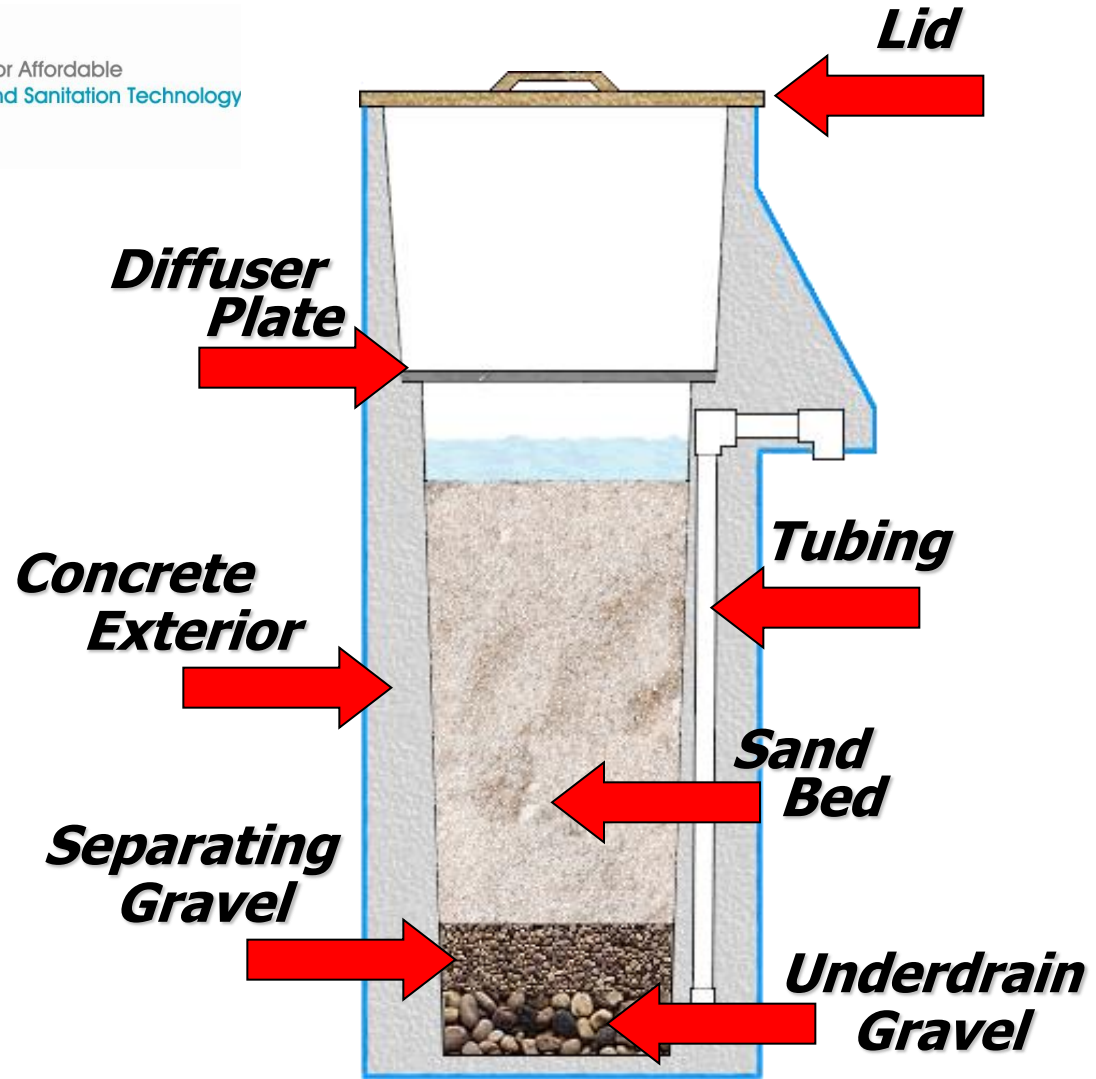


# Biosand Filter

- Intermittent flow
- Small size



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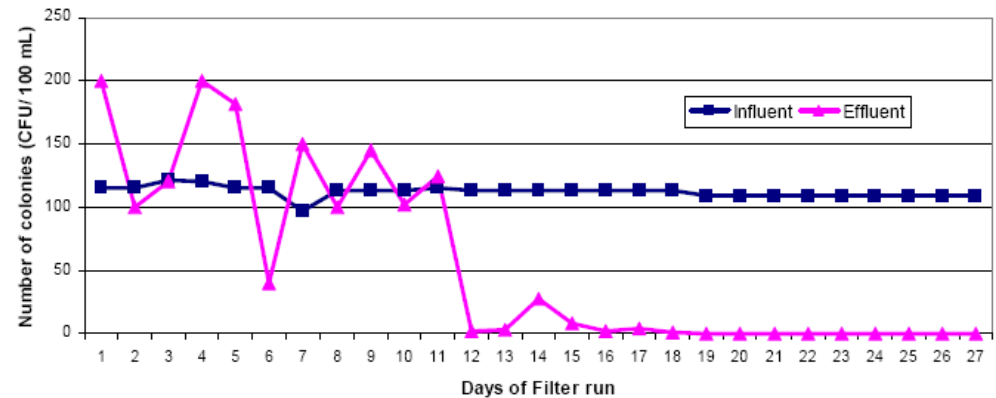


*Dlo pwop se lavi – bwe dlo pwop*  
*Clean water is life – drink clean water*

# Establishing the Biolayer



Comparison of Concentration of Total Coliforms for Influent Source Water and Effluent from Biosand Filter over 4 Weeks



Source: Sharma, D. Masters Thesis Kathmandu University (2005)



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*Safe drinking water is not available in Haiti for most children and families—causing illnesses, diseases, malnutrition and death.*



# Background Data

## The Medical Experience

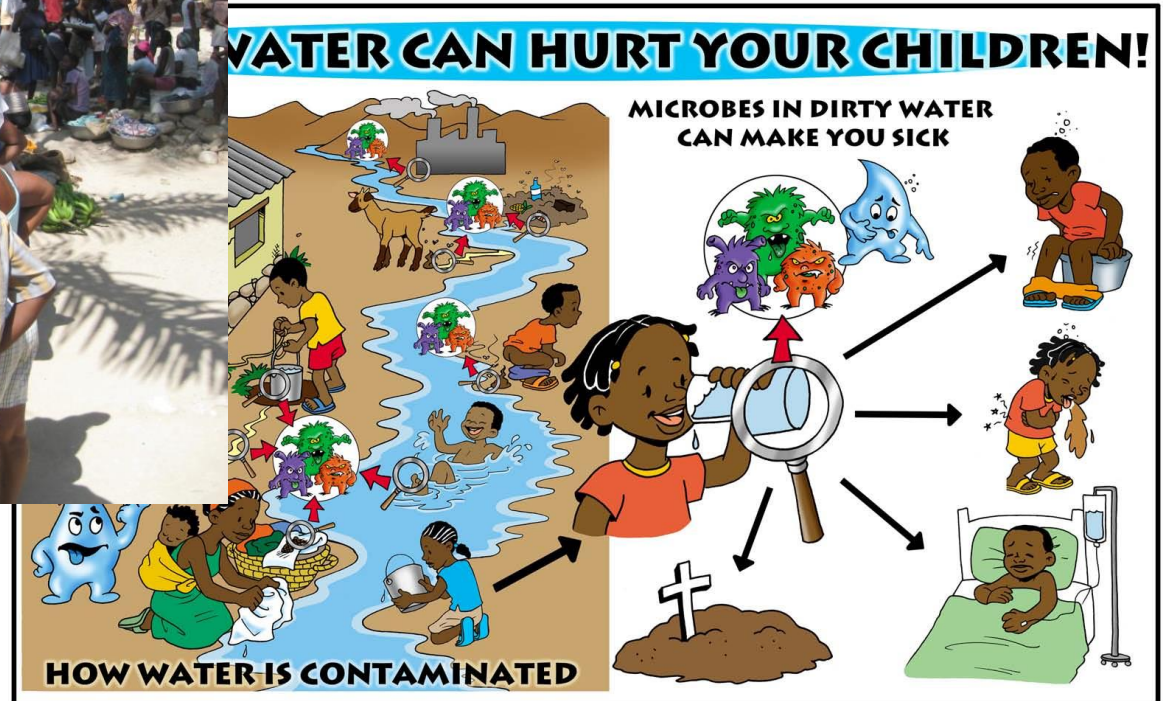


2010 Earthquake  
2008 Hurricane



2009 Pocket Survey

# Strategy 1 – Water and Sanitation Awareness



*Dlo pwop se lavi – bwe dlo pwop*  
*Clean water is life – drink clean water*

# Strategy 2 – Household Filters

- Local Materials
- Self Help
- Low Cost
- Sustainable



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# Strategy 3 - Filter Production

- Sieve sand and gravel from local river.
- Portland and wood lids available locally.



# Production



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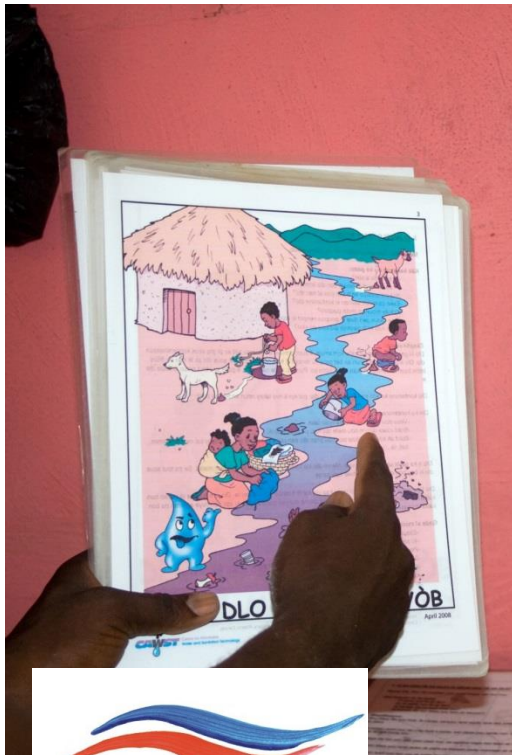
# Installation



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# Strategy 4 – Water and Sanitation Education

- Individual during filter installation.
- Adult education at Schools.
- Training at Clinics
- Regular Visits from Health Promoter





# Project Status

- 1,200 Filters Installed, Over 10,000 People Now Have Access to Clean Water.
- Networking and raising awareness on water and sanitation issues;
- Working village by village to spread hygiene knowledge;
- Building biosand filters with local Haitian materials (99%);
- Installing at least 30 filters per month in homes;
- Providing education during installation and follow-up service;
- Providing long term monitoring and troubleshooting; and
- Providing a successful Haitian business which is sustainable, and technically and financially accountable.



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# 2015 Goals:

- Install 450 filters.
- Complete Construction of our New Production Facility.
- Obtain a Truck for Materials and Deliveries.
- Maintain Fundraising for \$2,000 per Month Operation



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# What Can You Do?

Visit –

[www.haitiwaterproject.org](http://www.haitiwaterproject.org)

[www.ewb-usa.org](http://www.ewb-usa.org)

email –

[psloan@marshallcountyillinois.com](mailto:psloan@marshallcountyillinois.com)



Thank you for  
Clean Water!



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