

Clean Water and Sanitation in Lukodi, Uganda Summer 2009



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Prepared for ChildVoice International



Images from www.america.gov; <http://thewaterproject.org/images/water-malawi-1.jpg>;
<http://www.realestatefuturist.com/images/cw1.jpg>

I. Mission Statement

Access to clean water and treatment of existing water sources is a global issue. Without treatment, water sources can be host to pathogens and waterborne diseases that threaten human health and safety. The town of Lukodi, Uganda has faced enough in its past and present that access to clean water and threats from water related issues should not be additional stressors on this community. My objectives would be to educate the community on the importance of sanitation, gather feedback on culturally acceptable wastewater treatment options, monitor water quality, and construct freshwater and rainwater slow sand filters.

II. Background and Need

Lukodi is a community presently serving as a refuge for returning child soldiers. The ChildVoice International campus in Lukodi, Uganda serves as a refuge and rehabilitation centre for young women and children to acclimate and acquire skills that will help them integrate back into society. Waterborne diseases from drinking water stem from many places and threaten human health. These illnesses frequently cause gastrointestinal irritation and can be very dangerous to young children. Lukodi has been threatened and impacted by the Lords Resistance Army (LRA). They are already dealing with enough threat from the LRA that disease, poor sanitation, and improper disposal of waste items should not pose additional threats.

There are proposals in place for more adequate wastewater treatment, but without the community understanding these measures and accepting them, they will not work. Thus, for a community such as the ChildVoice community, composed predominantly of women, it is

integral for someone familiar to propose these ideas to them (preferably a female). To familiarize this community to the wastewater treatment proposals, it is imperative to have someone who is recognized and trusted within the community, introduce, and gain acceptance for the proposals.

Countries around the world are threatened by disease and infection from poor water quality and lack of sanitary techniques. The community in Lukodi could benefit from sanitation education, drinking water, rainwater, and wastewater treatment. Although the need for wastewater treatment is apparent in order to reduce pathogens, a system cannot be constructed until accepted and understood by the community.

III. Community Project Overview

Due to the potential difficulty of discussing wastewater and waste products in this community, I propose to establish myself within the ChildVoice community then introduce the different wastewater systems. This will help with the success of a wastewater treatment plan because it will be an all-inclusive decision. This incorporation of the community majority in deciding a wastewater treatment plan will enable the success of the system through general understanding of the way it works, making it a sustainable implementation.

The slow sand filters for freshwater will be constructed at the University of New Hampshire (UNH) then brought over to Lukodi. There they will be assembled with help of community members so the system is understood. All of the design plans will be made available for future reference. I will conduct water quality tests over the duration I am in Lukodi. I will test for fecal coliforms and assess water quality before and after filtration.

My formal education is in anthropology (BA) and environmental studies (BA) at the University of California Santa Cruz. Presently I am completing a master's degree in natural resources which includes many environmental engineering courses. Although I am not a formal engineer by training, I feel I have a decent background in this field and support to help the success of this project. There are potential in-country (Gulu) civil engineers in the water sector who may assist with this project.

This clean water project will be designed around community participation and education. This will empower the community by enabling them to understand each system, educate each other, and troubleshoot problems. Ideally I would like to teach individuals about the various systems and methods and have them teach each other and the rest of the community. This will make the project sustainable and culturally acceptable. The knowledge is theirs to have and grow with, ensuring that it is not a project imposed by an outsider.

There will be an acclimation period prior to introducing the wastewater systems. In the interim, while trying to envelop myself in the community, I can work on the other projects like the filtration system. I can also help with general needs and interests such as HIV support and counseling, teaching, planning activities for the communities, helping sort rice, partake in daily tasks, sanitation education, and generally just be there for people.

Initially I would meet individually with everyone so people feel more comfortable discussing these systems. I will use surveys and personal notes to gather general consensus. After these meetings I may hold a co-hosted meeting where we discuss the most favorable system and see where to go from there.

IV. Objectives and Overview

Desired objectives are

- (1) Educate community on sanitation and water quality
 - a. Educate few individuals so they understand the importance of treating water
 - b. These individuals can teach others in community
 - c. Cultural sensitivity to topics and means of education
 - d. How to build, maintain, clean, run systems
- (2) Establish a culturally acceptable wastewater treatment plan
 - a. Individually discuss wastewater treatment options (proposed by a UNH-based wastewater taskforce for Lukodi)
 - b. Decide on most understood/culturally favorable project for future construction
- (3) Construct two slow sand filters
 - a. Filter freshwater for drinking
 - i. Located at rainwater catchment basin
 - ii. Located outside kitchen
 - b. Reduce waterborne diseases
 - c. Water quality tests to assess efficacy
- (4) Water quality
 - a. Continual borehole water quality monitoring
 - i. Test for fecal coliform specifically
 - b. Test water after sand filtration
 - c. Possibly shock boreholes to eliminate growing microbes
 - i. Test water after shock treatment

Detailed documentation of each part of the project, its materials and methods, and overall process will be provided to ChildVoice at the end of the internship. This will enable the project to be continued and expanded upon after I leave if unaccomplished.

Treating waste and drinking water will reduce the incidence of infection, but sanitation education is also important in making this initiative sustainable. USAID promotes enhancing sanitary practices as a major means to reducing illness and disease. I can promote hygienic practices to work on the social dimensions of reducing the threat of bacterial contamination.

Along the way, I would like to create a mini documentary/promotional video. This video is malleable and will most likely morph along the way, but essentially, it will follow my project or my experience there. It can be a video used in volunteer recruitment and education or to give an example of the progression of a project; its trials, errors, and successes along the way.

V. Personal Importance

I have always had a passion for helping people and being of assistance. One of my major role models is my father, a civil engineer, who has helped many small towns around the world (e.g., in Brazil, Russia) with clean water initiatives. I have always had a desire to help communities learn about potable water, but never had the background. Although I am not an engineer by training, I do have experience with education on water and wastewater.

This internship helps me reach that goal and dream of working on clean water issues with people who don't have access to it. It gives me the flexibility to learn and help others learn by doing. I can work on the science behind the problem as well as the social dimensions of the issue.

Making this project collaborative with ChildVoice and community members should enable more success in the long-run because all of the implementations will be bottom up.

VI. Materials*

(1) Slow sand filter

- a. .5ft PVC tubes
- b. Kulubel sand
- c. Wheelbarrow or mechanism to transport heavy objects/soil
- d. Sieve screen
 - i. 0.25 for Kulubel sand
 - ii. 1.25 for Entebe sand
- e. Perforated PVC pipe
- f. Valves
- g. Receptive barrel for clean water

(2) Water quality testing kits to gage efficacy

- a. Approximately 40 kits
- b. Black light

(3) Wastewater treatment options

- a. More survey materials to garner a consensus decision
 - i. Photos for language barriers

*Designs for each are still in progress so the materials are a working list. Costs are presently unknown. Many of the expenses are being covered by individuals on the water task force.

I expect to take approximately 2-3 weeks to gain acceptance and familiarity in the community. The next 7-8 weeks I can spend introducing the wastewater treatment proposals (e.g., composting latrines, sand filtration) and receiving majority acceptance/approval for one project. Those acclimation weeks can also be spent working on constructing the slow sand filters, water quality monitoring, and doing other tasks needed in the community.