

COMMUNITY ENGAGEMENT AND APPLIED RESEARCH: CREATING SUSTAINABLE SOLUTIONS FOR IMPROVED WATER QUALITY AND AGRICULTURAL DEVELOPMENT IN KAPEEKA, UGANDA

BACKGROUND

COVE: Children's Outreach and Vocational Education (COVE) Alliance is a non-profit organization that works to provide social services such as food, shelter, and education to children in the community of Kapeeka, Uganda in order to provide further opportunities for the community's youth to exit the poverty cycle.

LINC: The Learning in Community (LINC) program offers the ENG: 315 course, in which students provide meaningful service through conception, development, and implementation of projects in collaboration with non-profits and community partners to address community needs both locally and internationally

RSO: The COVE Alliance Illinois chapter is a registered student organization that serves as a catalyst for spreading awareness, providing support and raising funds for COVE.

PREVIOUS WORK

Fall 2012 | Problem Identification: water-borne illnesses

Spring 2013 | Creation of biosand filter (BSF) implementation plan

Summer 2013 | Implementation of filters and agricultural site assessment

Fall 2013 | Extension of research on agricultural site

Spring 2014 | Creation of agricultural cultivation plan

WATER QUALITY

BSF PHYSICAL ASSESSMENT GUIDE

Benchmarked case studies to create a quantitative assessment for the performance and physical state of BSFs

Created scales that will be used to maximize internal validity and allow us to aggregate the data from individual filters to rate the overall success of the project

Filters will be scored from 0-2 for the following seven categories: exterior, interior, reservoir, filter cloth, tap and lid conditions as well as sand level and flow rate

Target for Success: filters that score 9+/16 will be of good or excellent condition, scores below 9 will be assessed for maintenance

WATER TESTING

Outlined the process for measuring water quality factors including, pathogen load (E. coli testing), turbidity (Secchi Disk testing) and mineral/metal content

Will utilize coliform tests to accurately count the number of coliform colonies, comparing between different water sites

Sites to be tested include the borehole (source), BSF input (influent), BSF output (effluent) and stored water

Target for Success: comparison to WHO Microbial Risk Categories, i.e. less than 100 CFU/100 mL

KAP EVALUATION

Technique used to measure changes in knowledge, attitudes and practices

Evaluations will allow us to gauge the effectiveness of the educational component from our previous trip

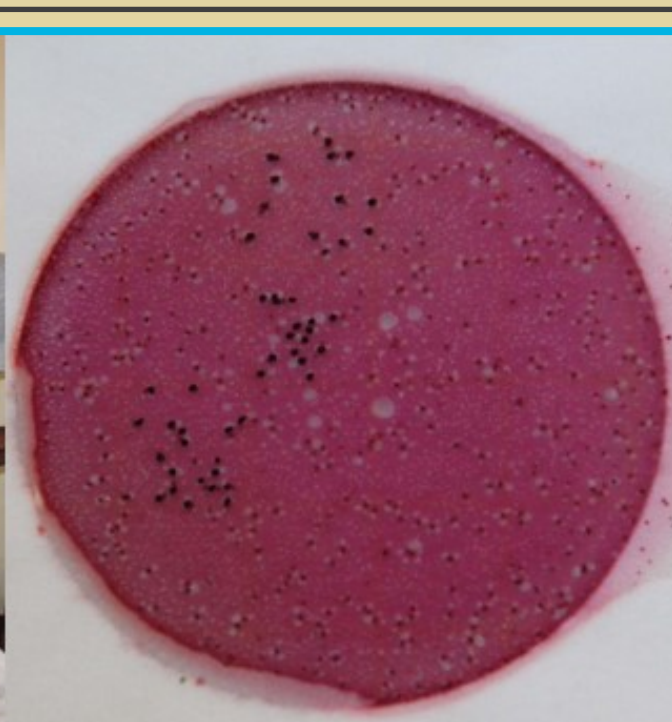
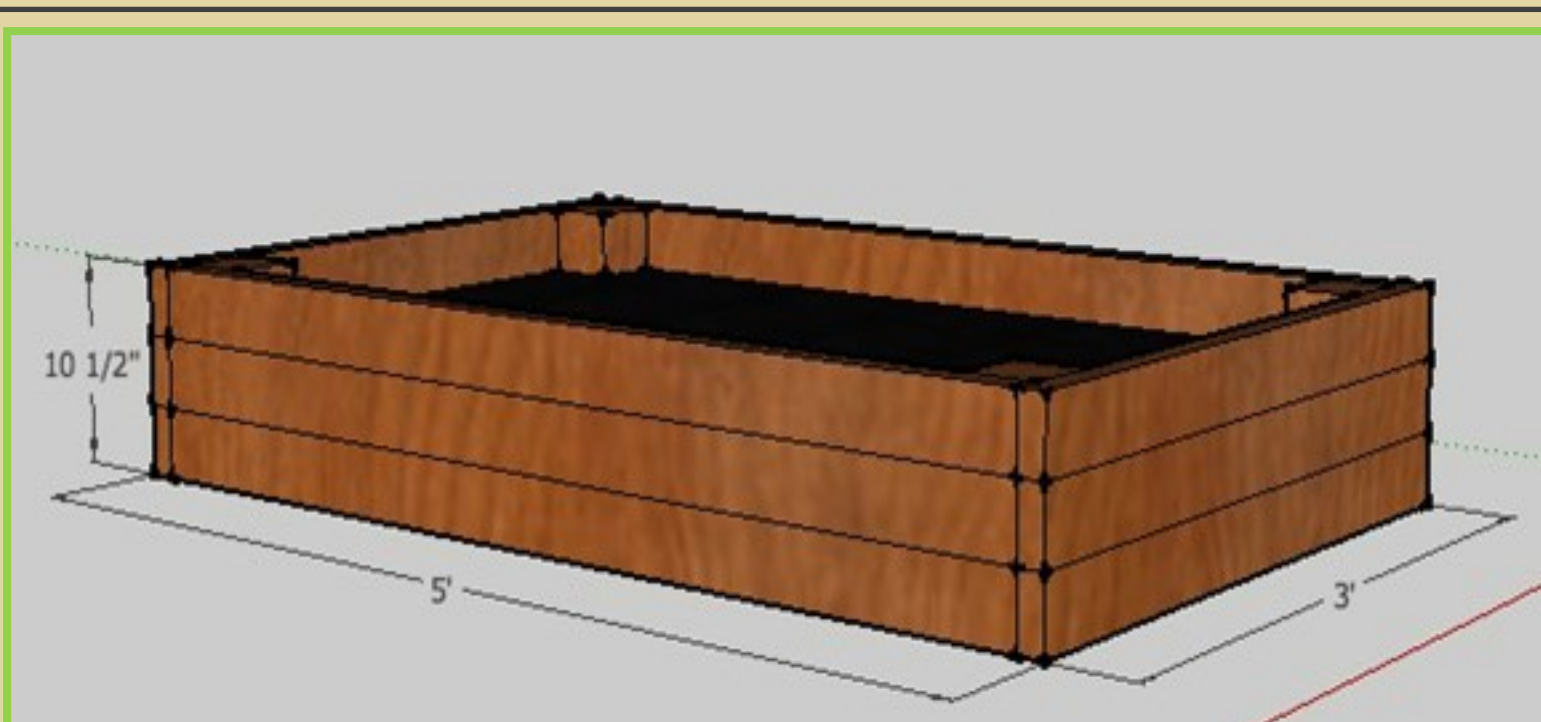
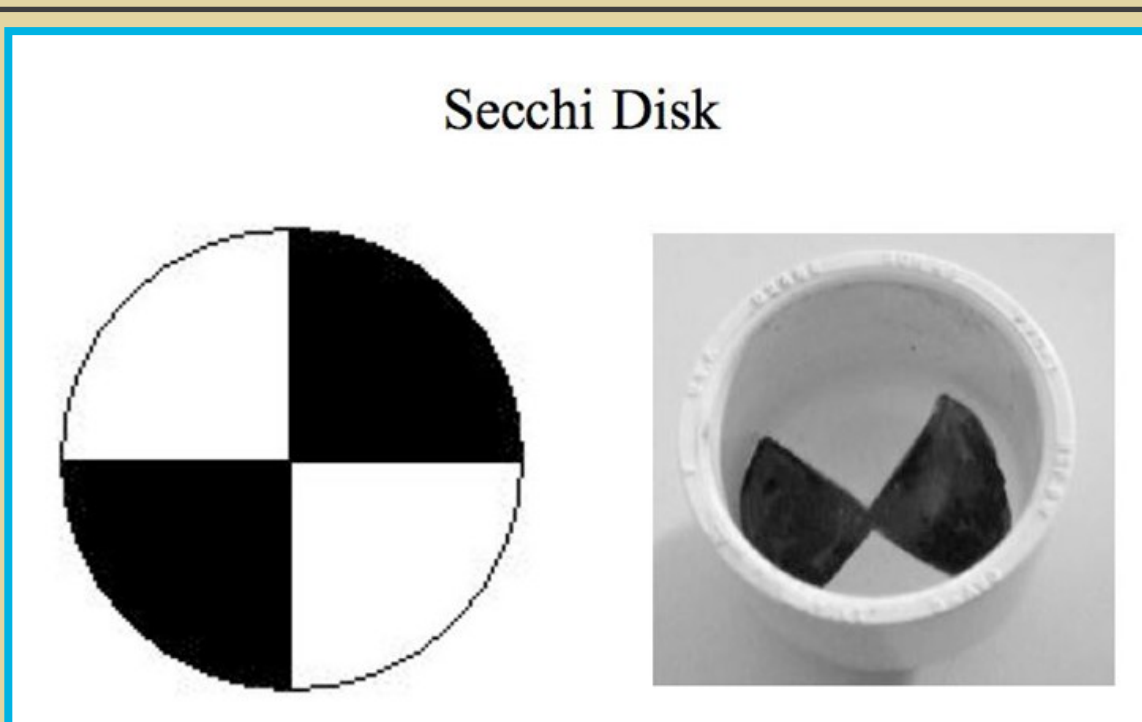
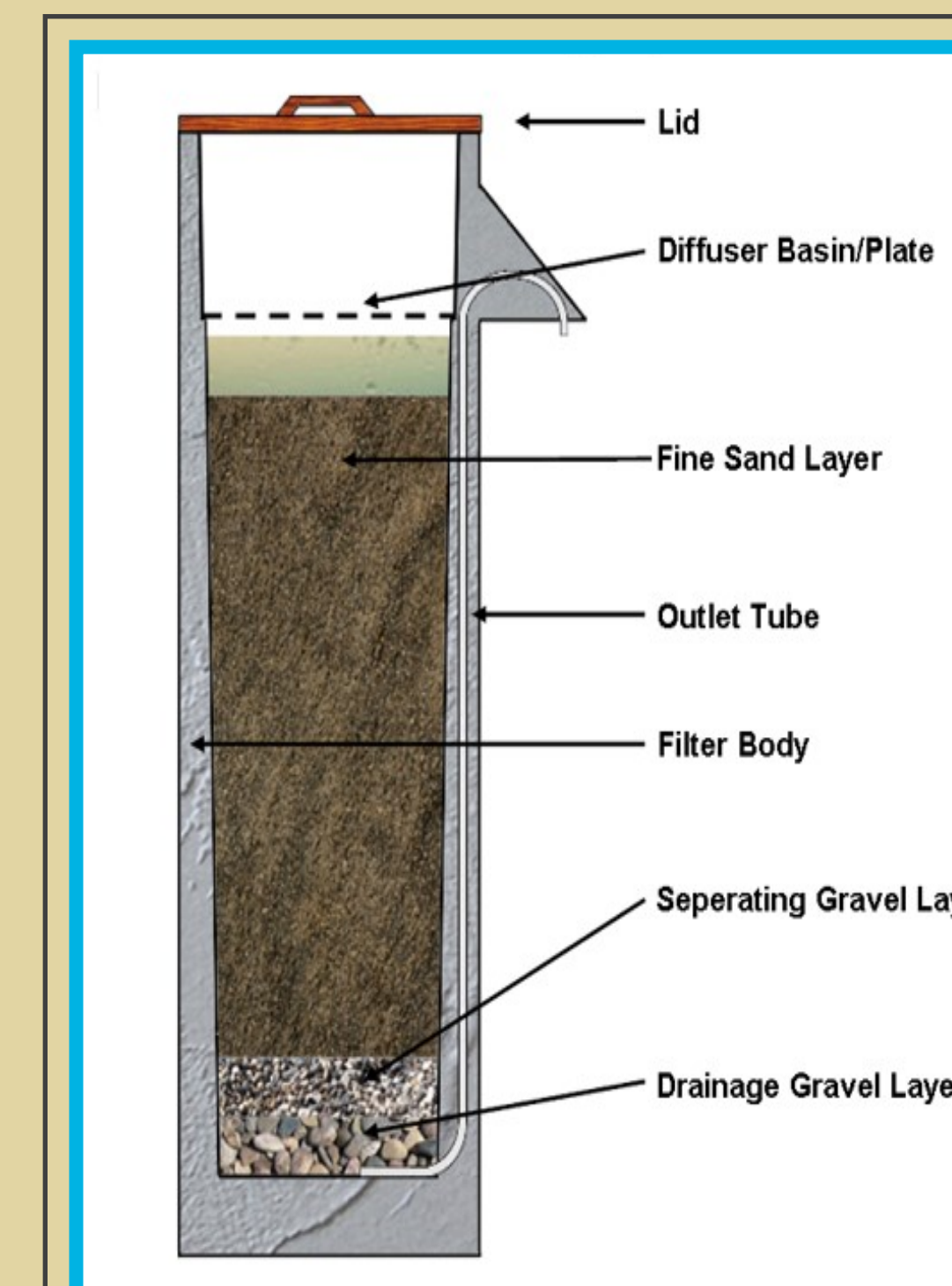
Target for Success: correlation to the learning objectives and recommended practices from our workshops

MOST SIGNIFICANT CHANGE

Technique used to measure the impact and outcomes of the BSF implementation during summer 2013

Stakeholders collect stories that are systematically analyzed to identify the most influential impact the students and staff have experienced prior to implementation of the BSF

Target for Success: this approach does not scaffold responses therefore there are no predetermined outcomes



AGRICULTURE

SOIL QUALITY

Identified methods to assess soil composition in the field with minimal technology

Will measure salinity, moisture, pH, slacking, organic mineral content, and soil structure

Results will be used to determine which crops will be best to plant, given environmental conditions

ELEVATED CROP BOXPLOTS

Conducted research on how to improve crop development in the specific environmental conditions

Results suggested we implement boxplots, which are raised soil beds that are filled with mineral rich topsoil that gathered from the plot

Can be constructed with brush on the land, filled with nearby topsoil to prevent soil erosion, nutrient depletion and competitive inhibition

TREE BORDER

Researched methods to create a tree border for COVE's 50-acre plot

Consultations with experts generated recommendations for which tree species will work best in the environmental conditions

Living tree fence will be used to mark ownership and prevent encroachment

Fruit bearing trees will be used to generate income and food

Border will be developed using these recommendations, with two rows of trees that are adequately between each other and the crops

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