

## Project Goal:

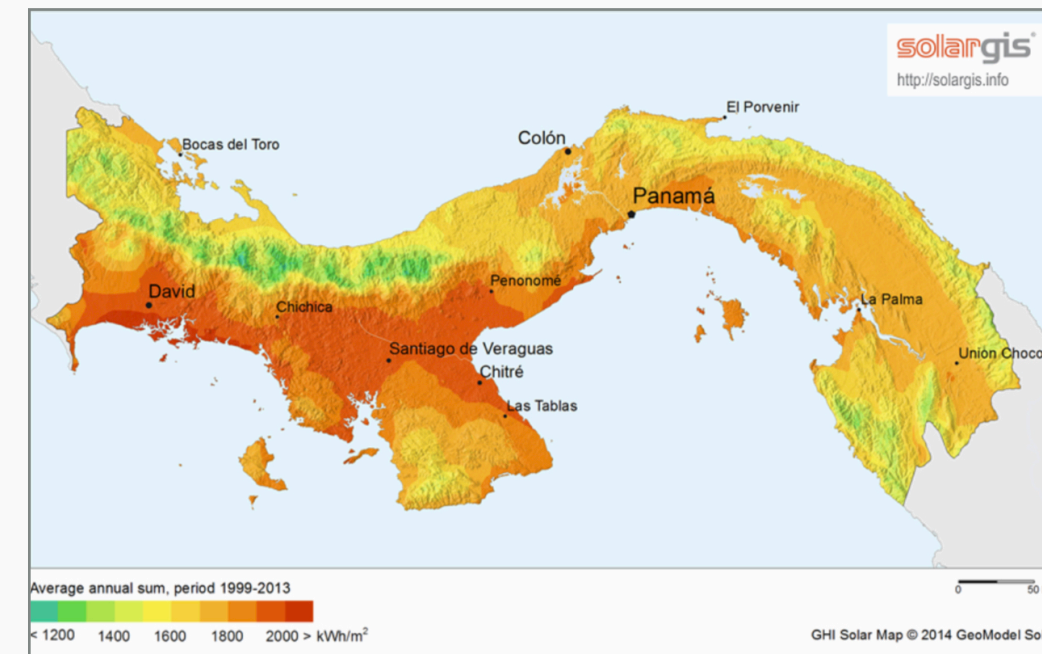
To design a sustainable Rainwater Harvesting (RWH) System for Batipa Field Institute (BFI), while also proposing a eco-friendly, cost-efficient design for local adoption.

## What is Batipa Field Institute?

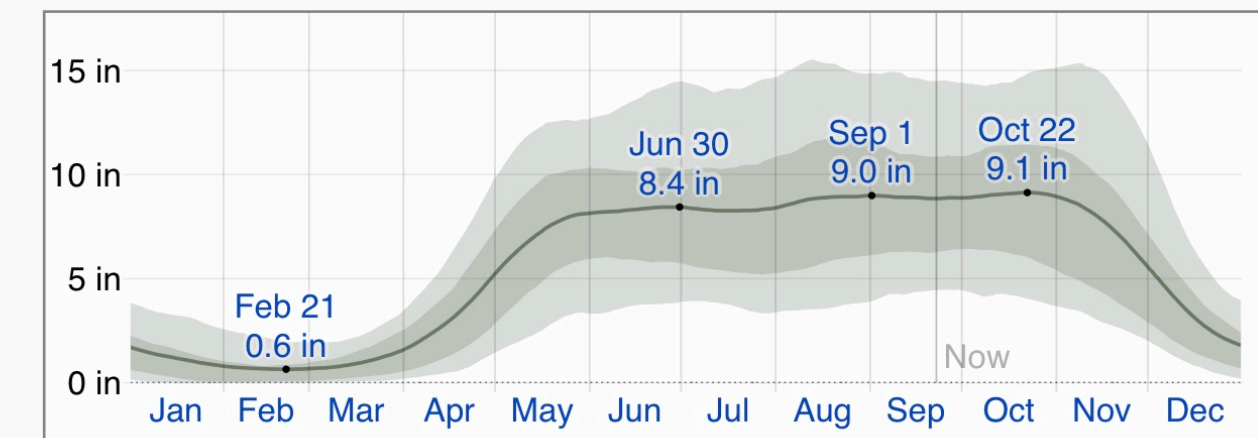
An organization that combines science and education for the conservation and sustainable management of natural resources, promoting academic tourism, research, training and entrepreneurship on a private reserve in Western Panama.

## Climate Characteristics of David

Located on the Gulf of Chiriqui, BFI is in a prime region for rainfall; taking a total of 2405.5mm in 2018 (ETESA) along with plenty of solar irradiation for power needs.



Solar Irradiation of Panama



Yearly Rainfall of David, Chiriqui

## Basic Rainwater Harvesting Model

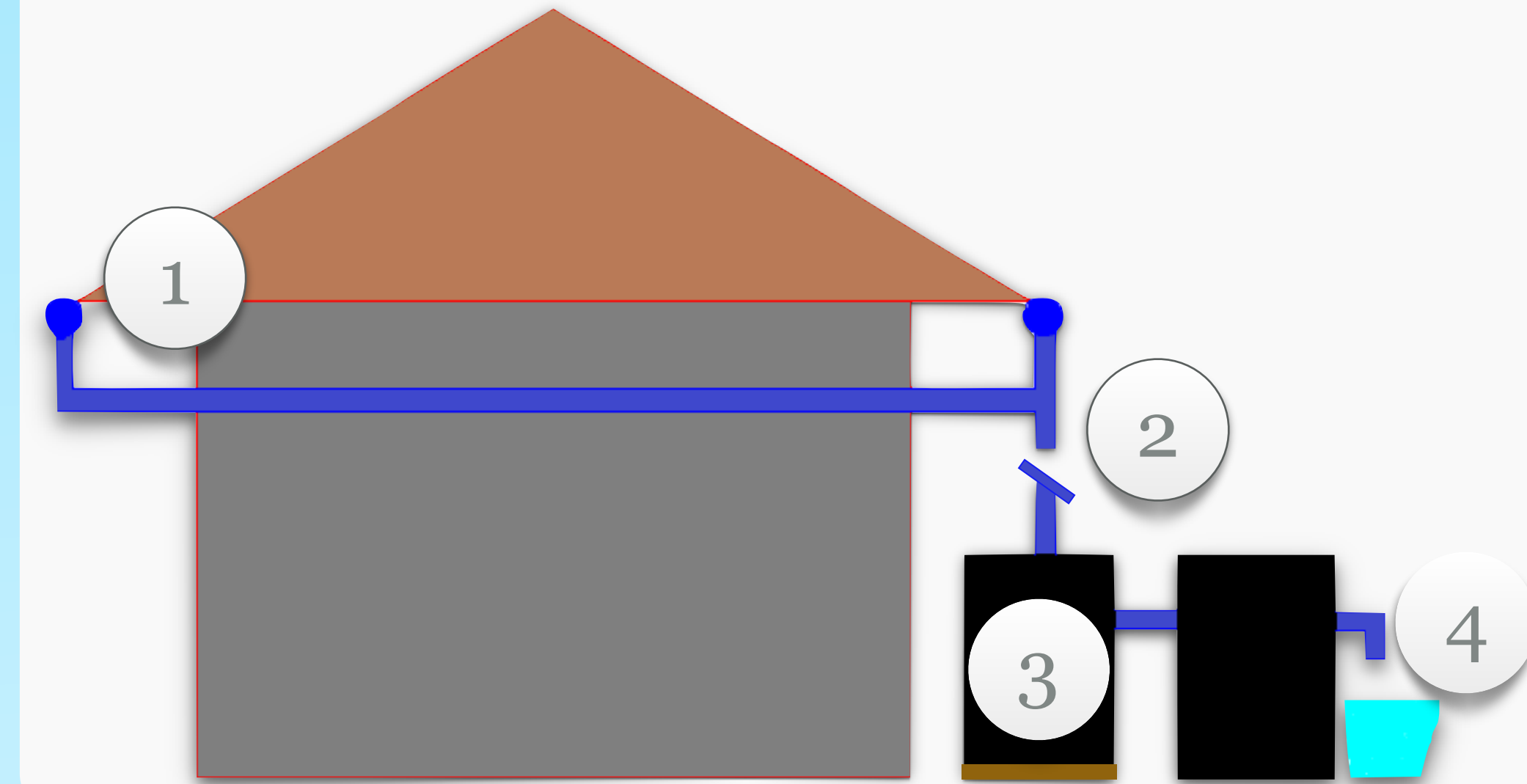


Table 2: Specifications for Basic RWH Model

**1. Catchment & Conveyance**  
PVC Piping and Gutters

An inexpensive yet effective way to collect water for small to medium scale buildings

**2. Primary Filtration**  
Tilted Mesh

Filters out large particles, such as leaves, from the water source. In addition to its low cost, there is little maintenance needed

**3. Storage & Second Filtration**  
Rain Barrells

An affordable and practical option for water storage

**4. Water Treatment**  
Colloidal Silver Filter (CSF)

CSF is a silver-lined clay pot. As water travels through this porous material, pathogens in the water adhere to the walls, and thus filtering it out

Table 1: Design expectations for RWH system

	Daily Use	Max Short-Term Use
People	10 people per day	100 people over 3 days
Water	5-10 m <sup>3</sup> per day	100-300 m <sup>3</sup> over 3 days

## Water Strategy for BFI

We propose that *well water* will be used as the *primary source* of consumption, with rain water as backup. Having multiple water sources creates a sustainable and environmentally conscious system for Batipa.

### 4. Water Treatment

UV Filter  
Most effective on-demand filter at the larger scale

### 5. Power

Photovoltaic Cells  
Renewable energy source for filtration and distribution

### Principal Source

Water Well  
Year-round supply with expected flow of >20L/minute. The septic system will slowly return water back to the aquifer, thus completing the natural cycle

### 1. Primary Filtration

Tilted Mesh & First Flush  
Captures debris, pollutants, or chemicals accumulated on top of the roof

### 3. Distribution

DC Pump  
High responsiveness, natively compatible with solar power

### 2. Storage

Plastic Cistern  
Most popular method of water deposit

## ACKNOWLEDGEMENTS

This project was able to be completed with the help of our sponsor, Oteima University, and the individuals that helped us along the way. Our team would like to thank, Prof. Edmundo Gonzalez, Dr. Francisco Ugel, and Mr. Luis Rios Espinosa.