The Problem:

98% of freshwater in El Salvador is contaminated, largely from lack of sewage treatment facilities and acid drainage mining.

Understanding the water quality of freshwater sources, particularly the three largest lakes in El Salvador, is the first step for long-term solutions.

Water contamination deeply effects the 10,000 people living around the three largest lakes in El Salvador's eastern-most region, Lago de Coatepeque, Lago de Guija, and the Laguna de Metapan (see "The Lakes" for the unique story of each body of water).

These lakes provide vital sustenance to many people living in poverty. Many fishing communities live around the lakes and depend on them for drinking water and food.

In spite of this, little is known about the lakes' water quality because testing tends to be either expensive or unreliable. Private companies charge around $5,000 per test and local university testing tends to be slow and give unreliable results.

The Solution:

A group of students from UC Berkeley can create a plan for how to do long-term testing and come to El Salvador in May 2016 to teach local stakeholders (local NGO's and community government organizations) how to continue annual, long-term testing.

The group of Berkeley students (some with training and/or experience in fresh water testing, others with high levels of Spanish) will create a plan for conducting 16 samples of each lake (only 8 samples of Laguna de Metapan)- chemical analysis of 4 samples at depth, chemical analysis of 4 samples at surface layers, 4 samples of bacteria at depth, and 4 samples of bacteria at surface layers. These tests will test for oils, alkalinity, aluminum, zinc, copper, nickel, magnesium, arsenic, chlorates, sulfates, detergents, hydro-carbates, lead, chlorobacteria, fecal chloride., E. Coli, Salmonella, and other contaminants. This group of students will also decide which testing kit is best for a long term solution and raise money to buy the kits. The students will create workshops aimed at teaching people with little to no science education how to do the testing in Spanish.

This group of students will then come to El Salvador for 5-10 days (or longer) in May to July of 2016 to take samples of the three major bodies of water in El Salvador and train local NGO's and community governments (ADESCO's) how to conduct regular, high-quality water testing of their lakes to continue the annual testing for years to come. The NGO's and community governments will be able to inform community members about the quality of water to make more informed decisions regarding use of the lakes.

The Lakes:

Lago de Coatepeque

Lago de Coatepeque is the most stunning lake in all of El Salvador. Fundacion Coatepeque, a local NGO working to preserve the lake, has said that annual water quality testing is their biggest concern. This lake is in a volcanic caldera and supports 1,600 families living in poverty.

Lago de Guija

Lago de Guija is on the border between Guatemala and El Salvador. Controversial mining operations by Canadian Gold Corp Inc. in Cerro Blanco have put heavy metals into the lake which are transferred to the Laguna de Metapan through a naturally occurring aquifer. Reports in 2011 have shown that levels of lead and cadmium are outside of WHO standards.

Laguna de Metapan

Laguna de Metapan is contaminated by heavy metals from mining operations in Guija and raw sewage that is pumped into the lake from the city of Metapan. Communities are organizing with NGO's like GAIA, Radio Guija, and Seicom to get a municipal sewage treatment plant put in. A better understanding of water quality and contaminants would be very valuable to these people.


Metapán
Laguna de Metapan
Lago de Güija
Santa Rosa Guachipilín
San Antonio Pajonal
Masahuat
Santiago de la Frontera
Candelaria de la Frontera
Texistepeque
El Porvernir
Chalchuapa
San Sebastián Salitrillo
Coatepeque
El Congo
Lago de Coatepeque