



**VWOS aims to provide access to the cleanest water a community can sustainably use, in order to improve the overall health and economic state of the community.**

## Where is VWOS?

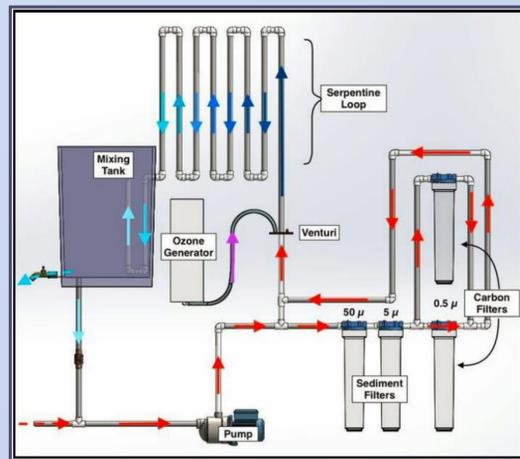
**Oaxaca, Mexico:** VWOS has partnered with Forward Edge International (FEI) to serve the Trigo y Miel Community Center. Trigo y Miel is run by Victor and Lety Velasco under a partnership with FEI. It aims to provide resources for children to thrive socially, physically, educationally, and spiritually.

In May 2016, an ozonation system was successfully installed at the community center, where it benefits approximately 120 children and their families. The system was partnered with a co-op plan to increase the sustainability and economic impact on the community.

Since 2009, VWOS has been installed in **Honduras, Nicaragua, and Mexico.**

The Village Water Ozonation Systems team is part of the Collaboratory at Messiah College. The Collaboratory is a program that partners the chance for students to have a real-world application of their personal discipline with Christian discipleship and social justice issues. The team was started in 2009 by Dan Barlow.

## Our System and Technology

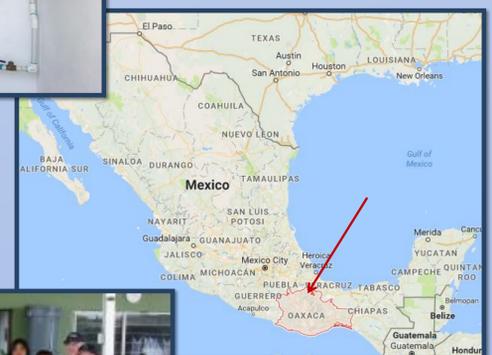
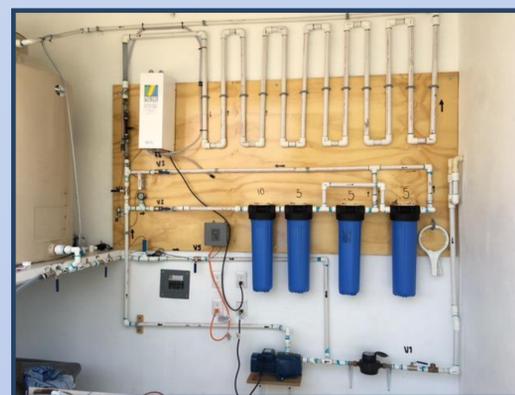


### The Conceptual System

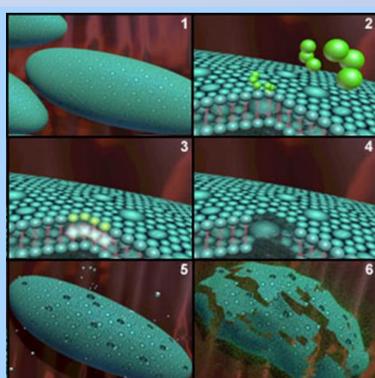
- Comprised of a filtration and ozonation cycles
- Filtration removes larger particles in the water
- Ozone is produced using UV light in a Prozone Ozone Generator
- Ozone is introduced through a Prozone venturi or Mazzei Injector
- Small bubbles of ozone are allowed contact time with the water in a serpentine loop
- Quality of the water is tested using Oxidation-Reduction Potential

### Tests and Findings

- Ozone residual skews the data – New testing procedures were created
- Hardness and Alkalinity can lead to long term build-up in the injectors, and impact the efficiency
- Micro-controllers offer an opportunity to monitor the ORP and automate the operation process



## Process of Ozone



1. Bacteria in water
2. Ozone contacts the bacteria
3. Oxidative burst
4. Creates holes in cell wall
5. Thousands of collisions destroys cell wall
6. Cell dies

## Community Development

Good stewardship implies sustainability and growth. Along with improved health, the communities with VWOS are also empowered with a co-op plan. The members of the co-op pay a small fee to have access to clean, potable water. Community centers use this fee to garner some profit and to save for future maintenance needs. At Trigo y Miel, the fees will cover the cost of hiring a technician to run the system, as well as some of their other program costs. These programs reach many families with the Gospel and earthly necessities.

**Lizzy Chang, Ted Sindabizera, Daniel Ma, Michelle Lockwood, McKenize Murray, Janae Hoffman, and Abigail Hing**

