

Document 527

PROGRAM CLOSEOUT REPORT

CHAPTER: **Oregon State University**

COUNTRY: **El Salvador**

COMMUNITY: **Las Mercedes – El Naranjito**

PREPARED BY

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ENGINEERS WITHOUT BORDERS-USA

www.ewb-usa.org

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2.0 Travel History

Dates of Travel	Assessment or Implementation	Description of Trip
March 2006	Assessment Trip	Three students and one professional initiated contact between the community and EWB-OSU to become acquainted with the geography, health and culture of the community.
September 2006	Assessment Trip	Four students and one professional surveyed the area and conducted water quality tests.
March 2007	Assessment Trip	Four students and a professional distributed Potters for Peace filters and conducted water quality tests.
December 2007	Implementation Trip	Eight students and two professional mentors constructed a rainwater catchment system on the El Naranjito school and collected extensive data on the health of community members and locations of people and homes.
March 2008	Assessment Trip	Three students and one professional collected technical feasibility data and obtained landowner permission to develop sources for gravity-fed water delivery systems.
June 2008	Implementation Trip	Five students and one professional traveled to the community of Las Mercedes to construct a gravity-fed water purification system and obtain additional field information for the next project.
December 2008	Implementation Trip	Six students and one professional traveled to the community of Cerro Caballo to construct 3 rainwater catchment systems.
March 2009	Assessment Trip	Two professionals traveled to the community of La Cumbre to obtain hill-slope data for a gravity fed system and to check on the previously completed projects.
December 2009	Implementation Trip	Three students and two professionals travelled to Lower Las Mercedes (La Cumbre), El Salvador and constructed a gravity fed infiltration gallery system.
March 2011	Final monitoring Trip	Four students and three professionals travelled to Las Mercedes, El Naranjito, and surrounding areas of El Salvador to assess previously completed projects in the communities, and to collect data to analyze for potential correlated effects.

3.0 Final Program Budget

3.1 Program Budget

Program City/Region and Country => Las Mercedes-El Naranjito, El Salvador
EWB-USA Chapter => Oregon State University
Year => 2011
Trips Planned 1
Planned Month for Trip March
Type of Trip (1) M

Trip type: A= Assessment; I= Implementation; M= Monitoring & Evaluation

<i>Direct Costs</i>	Project Budget	Total Budget	Actual Expenses	Variance
Travel				
Airfare		\$3200	\$3204	\$4
Gas	None	\$0	\$0	\$0
Rental Vehicle	None	\$0	\$0	\$0
Taxis/Drivers	Bus, truck, and taxi	\$109.8	\$242.5	\$132.7
Misc.	None	\$0	\$0	\$0
Sub-Total		\$3309.8	\$3446.5	\$136.7
Travel Logistics				
Exit Fees/ Visas	3 U.S Citizen	\$30	\$30	\$0
Inoculations	Not part of the chapter budget	\$0	\$0	\$0
Insurance	4 travelers	\$205.24	\$205.24	\$0
Licenses & Fees	None	\$0	\$0	\$0
Medical Exams	Not part of the chapter budget	\$0	\$0	\$0
Passport Issuance	None	\$0	\$0	\$0
Misc.	None	\$0	\$0	\$0
Sub-Total		\$235.24	\$235.24	\$0
Food & Lodging				
Lodging	\$5 per week per person and hostel stay	\$120	\$160	\$40
Food & Beverage (Non-alcoholic)	\$1 per person per meal in community, grocery and	\$341	\$242.5	-\$98.5

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	others				
Misc.	None		\$0	\$0	\$0
Sub-Total			\$461	\$402.5	-\$58.5
Labor					
In-Country logistical support	None		\$0	\$0	\$0
Local Skilled labor	None		\$0	\$0	\$0
Misc.	None		\$0	\$0	\$0
Sub-Total		\$0	\$0	\$0	\$0
EWB-USA					
Program QA/QC(1)		\$0	\$0	\$0	\$0
Sub-Total		\$0	\$0	\$0	\$0
Project Materials & Equipment (details needed)					
Galvanized pipe	None		\$0	\$486	\$486
PVC elbow	None		\$0	\$1.25	\$1.25
Concrete	None		\$0	\$16	\$16
Galvanized elbow	None		\$0	\$27.50	\$27.50
Other	None		\$0	\$46.54	\$46.54
Sub-Total		\$0	\$0	\$577.29	\$577.29
Misc. (details needed)					
Report Preparation	None		\$0	\$0	\$0
Advertising & Marketing	None		\$0	\$0	\$0
Postage & Delivery	None		\$0	\$26.99	\$26.99
Misc.	None		\$0	\$0	\$0
Sub-Total		\$0	\$0	\$26.99	\$26.99
TOTAL		\$0	\$4006.04	\$4688.52	\$682.48

EWB-USA National office use:

Indirect Costs					
EWB-USA					
Program Infrastructure(1)		\$0	\$0	\$0	\$0
Sub-Total		\$0	\$0	\$0	\$0
TOTAL		\$0	\$0	\$0	\$0

Note (1): These rows are calculated automatically based on type of trip.

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Non-Budget Items:

Additional Contributions to Project Costs				
Community				
Labor	None	\$0	None	\$0
Materials	None	\$0	None	\$0
Logistics	None	\$0	None	\$0
Cash	None	\$0	None	\$0
Other	None	\$0	None	\$0
Sub-Total	None	\$0	None	\$0
EWB-USA Professional Service In-Kind				
Professional Service Hours	454	---	454	---
<i>Hours converted to \$\$</i> (1)	\$0	\$0	\$0	\$0
Sub-Total	\$0	\$0	\$0	\$0
GRAND TOTAL (Project cost)			\$0	\$0

Funds Raised for Project by Source	Actual Raised to Date		Actual Raised Total	
Source and Amount (Expand as Needed)				
Engineering Societies	None	\$0	None	\$0
Corporations	2/4/2011	\$500	2/4/2011	\$500
University	None	\$0	None	\$0
Rotary	None	\$0	None	\$0
Grants - Government	None	\$0	None	\$0
Grants - Foundation/Trusts	None	\$0	None	\$0
Grants - EWB-USA program	12/20/2010	\$2000	12/20/2010	\$2000
Other Nonprofits	None	\$0	None	\$0
Individuals	None	\$0	None	\$0
Special Events	2/11/2011	\$4000	2/11/2011	\$4000
Misc.	None	\$0	None	\$0
		\$0		\$0
Total		\$6500	\$0	\$6500

Program Closeout Report Part 2 – Technical Information

1.0 Program Background

EWB-OSU began working with the communities of Las Mercedes and El Naranjito, El Salvador, in 2006. The initial connection between EWB-OSU and the community was facilitated through Eric Anderson, the first Peace Corps volunteer who lived in the community. During the initial phase of the project, a water board was formed after the first assessment trip. Four officers were elected as President, Vice-President, Treasurer and Secretary. Other members, including two women, were selected as public liaisons. The water board was responsible for making sure the systems EWB-OSU helped to implement were maintained in addition to monitoring the health of the community, distributing Potters for Peace filters as needed, and acting as the point of contact in the community. Contact was made with a Salvadoran Rotary club in the fall of 2009. The travelers met with Rotary chapter members to discuss the project in San Salvador. Three members of the Rotary chapter were invited to the community to verify our construction process and meet the community.

In six years of partnership with the community, EWB-OSU made four assessment trips, four implementation trips, and one final monitoring trip to address water quality and accessibility issues in the community. Due to the diversity and dispersed nature of sub-communities in the area, EWB-OSU phased the overall development approach into several implementation trips, in order to ensure that the most appropriate solution was applied to each unique situation.

2.0 Community Ownership

2.1 Written Correspondence from Community Acknowledging Program Closeout

During the final monitoring trip in March 2011, EWB-OSU travelers held a meeting with the direct beneficiaries of the systems EWB-OSU implemented during the life of the project. At this meeting, a Memorandum of Understanding (MOU) written by EWB-OSU students was read aloud. The attendees each had a chance to verbally express their thoughts and comments about the history of EWB-OSU's Las Mercedes and El Naranjito projects. Afterwards, each signed the document to demonstrate their understanding of what had been said. The content of the MOU is as follows and the PDF version of the actual document is attached as Appendix:

To the members of the communities of El Naranjito and Las Mercedes,

This Engineers Without Borders OSU trip is the last one we will make to your community. The objective of this trip is to evaluate the water distribution and filtration systems which were implemented in previous trips, and to gain knowledge about the differences in your lives thanks to these systems.

We are very thankful for the opportunities we have had during the last five years in working with all of you. We hope that the systems will serve you well. From this point onward, the maintenance of these systems will be exclusively your responsibility, as our chapter of Engineers Without Borders will not return to this community for future project work.

However, if you have any questions about the systems or other aspects of our work since the beginning of our projects in your communities, we would be happy to address any of your questions. You may send any question to the president of Engineers Without Borders OSU via e-mail, at president@ewb-osu.org.

Thank you very much for your collaboration during our projects in your communities.

2.2 Transfer of Technical Skills/Information

Potters for Peace, El Naranjito and Las Mercedes, March 2007

Surveying the beneficiaries of the initial Potters for Peace distribution was one of the main objectives of the final monitoring trip. In 2007, EWB-OSU distributed about 30 ceramic water filters from Potters for Peace, a US-based nonprofit organization, and left an additional 30 filters with the Las Mercedes/El Naranjito water board. The community agreed to collect money for the bi-annual filter replacement recommended by the manufacturer of the filter. An additional transfer of basic maintenance techniques were made at the time of initial distribution.

After four years of usage, many interviewed families reported that their filters were broken by animals (chickens, dogs and cats), children in their homes, or during transit. Flow rates among the filters that were being used at the time of the final monitoring trip had slowed significantly.

Rainwater catchment in El Naranjito School, December 2007

Two problems with the El Naranjito School system were identified during the final monitoring trip. First, the water in the tank was not being used for drinking as intended, and second, the left and right first flush system drain caps were respectively too difficult and too easy to remove. Instead of being used as drinking water, the water was used for washing dishes and cleaning the school. When asked why this was the case, the principle of the school said that the water was not clean enough to drink. EWB-OSU never planned on developing a method of water disinfection at the time of implementation. Rather, it was assumed that the first-flush system would be adequate to ensure proper water quality. Despite the fact that the system is not being used as intended, it is still saving time formerly used to haul water for washing.

The school head attended the meeting mentioned in section 2.1 and acknowledged the full transfer of responsibility of maintaining the rainwater catchment system at the El Naranjito School from EWB-OSU.



Figure 2.2.1 Rainwater catchment tank at the El Naranjito School

Infiltration gallery, Las Mercedes, December 2008

The gravity fed infiltration gallery system in Las Mercedes was partially damaged at the time of visit in March 2011 (see figure 2.2.3). Although the spring water was reaching the intended households, the infiltration gallery had been excavated by community members as they had experienced excessive amounts of sand clogging the pipe line. The cause of the excessive amount of sediment flowing through the system was not identified definitively, although EWB-OSU travelers suspect vandalism as a possible explanation.

During conversations with community members, EWB-OSU learned that some community members thought the sand covering the perforated pipes were contaminating the system. However, the system was designed and constructed to keep sand from entering the pipe system. During the installation of the system, water from the source flowed freely through the pipe system and sand was not observed in the water collected at the beneficiaries' households. In addition, when the filtration system was tested by large tropical storms after the infiltration portion of the system was built and the pipeline was still being installed, the water flowing from the pipelines was clear during and after the storm events. EWB-OSU made efforts to explain this idea to the community members.

There were two other problems with the initial spring system. First, the original developer of the spring system was not able to turn the water off at their place of use due to the high pressure head in the system. Thus, the faucet remained open at all times taking water from the

infiltration gallery. Second, the last tropical storm caused a large bolder to dislodge and fall into the pipeline trench. Since then, large volume of spring water started flowing out of the area where the boulder used to be. This event contributed to the lowering of water level in the infiltration gallery. The original developer of the first spring system has now built a new spring box and moved their system to this new source for water. This has solved the first problem of having water constantly flowing from the infiltration gallery.

The beneficiaries of the system attended the community meeting mentioned in section 2.1, and acknowledged the full transfer of the responsibilities required to maintain this system.



Figure 2.2.2 Water storage tank connected to the infiltration gallery in Las Mercedes



Figure 2.2.3 Excavated infiltration gallery in Las Mercedes



Figure 2.2.4 Infiltration gallery during the installation in December 2008

Rainwater Catchment Systems, Cerro Caballo, December 2008

At the time of visit, Don Hugo and Don Manuel were not at their households. Don Manuel had moved to a different part of the community hence his system was not in use. EWB-OSU was only able to visit with Don Jesus. Don Jesus used the water stored in his tank for farming purposes. The gutters of the system had been temporarily removed by Don Jesus to prevent vandalism and dust accumulation on the surface of the gutter. During the visit, he pointed out several inconvenient design flaws in the system, such as the width of the collection point which is too small to fit the 20L water jug that is commonly used in the community. However, no further improvements were done because the flaws were minor, the system was not heavily used, and there was no initiation from the beneficiary.

Don Miguel attended the community meeting mentioned in section 2.1 as the representative of the two other beneficiaries of rainwater catchment systems in Cerro Caballo and acknowledged the full transfer of system maintenance.



Figure 2.2.4 Don Hugo's rainwater catchment system



Figure 2.2.5 Don Jesus' rainwater catchment system

Infiltration gallery, La Cumbre, December 2009

At the time of the final monitoring trip the storage tank connected to La Cumbre gravity fed infiltration gallery had dried up since the beginning of March. This was partly due to the dry season, but also due to leakage along the edges of the infiltration gallery's downhill retention wall. After inspecting the system and determining the source of the leakage, materials were purchased by EWB-OSU for repair. The purchased materials were left with the community water board. The plan for repairing the system was explained to Don Maximino who is the community leader and direct beneficiary of the system.

The elevation of the storage tank relative to the diversion point was also identified as a problem. Due to the small elevation head presence between the water source and the collection point, during the rainy season, water level in the infiltration gallery does not increase enough to fill the storage tank. In addition, the wash stations were not being used, because all of the people who live below the storage tank have pipelines running from the tank to their homes. Thus, they do their laundry at home rather than carrying it to the tank.



Figure 2.2.5 Inside the infiltration gallery in La Cumbre



Figure 2.2.6 Water storage tank connected to the infiltration gallery

2.3 Transfer of Non-Technical Information

In March 2011, a health survey was conducted by EWB-OSU. The data from this survey was compared with survey data from December 2007.

	December 2007	March 2011
Total households surveyed	48	55
Total persons in households surveyed	180	295
Households reporting access to water within a three minute walk	0	29
Households in which women/children collect water	64.6%	29.1%
Households performing water treatment	52.1%	72.7%
Households reporting diarrhea in children under 5 in past 2 weeks	31.3%	7.3%
Households reporting daily use of water filters	22 (100%)	87.5%
Households using CWF for drinking water	22 (100%)	87.5%

In December 2007, zero out of 48 households reported that they had access to water within three minutes from their house. In contrast, by March 2011, that number had jumped to 29 out of 55 households. Similarly, there was significantly less reporting of diarrhea in children under five in March 2011 than in December 2007. During the survey, a large number of mothers reported that they now spend less time hauling water to their house from a spring source and spend more time with their children.

2.4 Financial Mechanisms

The water board was formed after the initial assessment trip made by EWB-OSU. The community water board was intended to ensure the longevity, proper use, and saving of money to facilitate long term maintenance and repair costs of the implemented facilities. To support their start up fund, EWB-OSU purchased 30 extra Potters for Peace filters in March 2007 and left them with the water board. The intention of this donation was to provide replacement filters for those that would require them after their two-year lifespans for a price of \$5 per unit. This would allow the water board to have the funds to maintain other facilities implemented. It should be noted that \$5.00 is a week's wage for many of the families in the area. Thus, it is financially hard for a family to purchase another filter after a dog or child breaks the first filter. The cost to replace the filters also increased significantly over the years, which also contributed as one of the reasons why the community had hard time replacing the filters every two years.

The quality of life survey revealed that significant numbers of families had purchased their filter from the water board, the funds of which were to be pooled for maintenance of the communal water systems implemented by EWB-OSU. However, the water board responsible for collecting money to purchase the filters has experienced internal political difficulties. As a result, the head of the water board was replaced, and the water board's goals have changed from its initial intentions. Hence, the regulation of this plan was not enforced in the ways

EWB-OSU had foreseen. The distribution of the filters and use of the revenue was, however, used efficiently as needed by the community members, albeit not to the exact expectations of EWB-OSU.

3.0 Reason for Closing Program

EWB-OSU now intends to close the El Salvador project. Through the work of EWB-OSU and other NGOs over the last five years, a majority of people in the communities of Las Mercedes and El Naranjito have improved access to water. It is the opinion of the EWB-OSU team that the communities have the technical understanding and desire to maintain the systems implemented by EWB-OSU, as demonstrated by their modification of and maintenance practices for the rainwater catchment systems and their improvement to and duplication of the gravity fed pipelines.

For example, with the help of the third Peace Corps Volunteer in the community (Jefferson Francisco), a neighboring community (Cerro Segovia) implemented their own water distribution systems based on the community's water distribution systems with their own sweat equity and some capital contribution from a charity organization. In El Naranjito, community members installed a community water collection point with a storage tank connected to a water source roughly 5 kilometers away. Based on the community members' willingness to organize and implement their own water distribution systems, EWB-OSU is confident that they will continue to improve their own water accessibility condition even after the program is closed.

4.0 Description of Implemented Projects

Project	Project Start Date	Final Day of Implementation	Date of Last Monitoring trip
Potters of Peace filter distribution, El Nalanjito and Las Mercedes	March 25, 2007	March 25, 2007	March 16-28, 2011
Rainwater catchment system at El Naranjito School, El Naranjito	December, 2007	December, 2007	March 16-28, 2011
Infiltration gallery Las Mercedes	June 19, 2008	July 5, 2008	March 16-28, 2011
Rainwater catchments, Cerro Caballo	December, 2008	December, 2008	March 16-28, 2011
Infiltration gallery, La Cumbre	December, 2009	December, 2009	March 16-28, 2011

5.0 Monitoring

5.1 Project monitoring methods

The goals of the final monitoring trip fell into two distinct categories: technical surveying and quality of life surveying. EWB-OSU travelers conducted surveys on the four systems installed over the five years of the project, measured the performance of Potters for Peace brand ceramic water filters after four years of usage, and gauged the difference EWB-OSU water projects had made in the quality of lives of the beneficiaries of the installed systems. The questions and criteria used in the surveys are provided below.

Technical Survey

For the gravity fed water systems:

- Check the integrity of the infiltration galleries, pipelines and tanks.
- Measure the flow and compare to the design target values of 0.1 L/s for the Las Mercedes and 0.2 L/s for the Lower Las Mercedes (La Cumbre) system.
- Take photos to compare to previous trip photos to log changes.
- Check basic water quality parameters.

For the rainwater catchment systems:

- Check the integrity of the gutters, pipes and tanks.
- Check sediment build up in first flush systems.

For the in-home filters:

- Perform water quality tests.

Household Survey

Water System Questions

- Have you encountered problems with the systems? Do they work well?
- Is maintenance being done on the systems? Who does the maintenance?
- How much time do you spend getting clean water? How is that different from before the projects? If you spend less time getting water, have you been able to accomplish/do anything with that free time?
- With the gravity fed systems, have you noticed any changes in flow?
- With the rain water catchment systems, what dates are you able to use them/when do they run out of water?
- Has there been any vandalism on the systems?

General Health Questions

- What is the age and gender distribution of your family members?
- Where do you obtain your drinking water?

- Do you obtain your water from the same source year-round?
- Who in your family is responsible for collecting drinking water?
- Do you treat your water before drinking it? If so, which method do you use?
- In the past two weeks has/have your child(ren) (under the age of 5 years) had diarrhea?

Water Filter Questions

- Do you currently have a ceramic water filter (CWF)?
- When did you receive your CWF and from whom?
- Do you use your CWF daily?
- How long has it been since you used the CWF?
- Why do you no longer have/use the CWF?
- Can we see your CWF? (Note condition and cleanliness of CWF)
- What do you use the filtered water for?
- How long have you had the CWF?
- Have you noticed any changes in the quality of the filtered water?
- How often do you clean the CWF?
- Who is responsible for cleaning the CWF?
- How many times per day do you fill the CWF?

5.2 Project status table

Project Type	Project Discipline(s)	Date of Completion (m/d/y)	Functionality (enter one range per project)			Periodic Maintenance (yes or no)	Demonstration of Knowledge Transfer (yes or no)
			0-50%	50-75%	75-100%		
Water filter distribution	"Potters for Peace" brand ceramic water filter	April/2/2007	0-50%			Yes (Weekly washing done by the individual users of the filter)	Yes (at the time of distribution as well as assessment done in March 2011)
Implementation	Rainwater catchment at El Naranjito School	December/23/2007	75-100%			Yes (The system is being used by the school year around and maintained)	Yes (at the time of installation and additional inspection was done in March 2011)
Implementation	Rainwater catchment in Cerro Caballo	December/25/2008	75-100%			Yes (Some systems that are in use are being monitored by the owner and some are abandoned since the owners moved away)	Yes (at the time of installation and additional inspection was done in March 2011)
Implementation	Gravity fed infiltration gallery, Las Mercedes (upper)	June/23/2008	75-100%			Yes (a household is constantly using the system, but the infiltration gallery is having problems)	Yes (at the time of installation and similar systems were implemented in Cerro Segovia and El Naranjito)
Implementation	Gravity fed infiltration gallery, Las Mercedes (lower, also called La Cumbre)	December/23/2009	50-75%			Yes (Although parts of the system was suffering from vandalism at the time of monitoring)	Yes (The community members were left with the materials to repair the system)

6.0 Partnering Organization/NGO and Community Contact Information

Contact Name	Contact Email	Contact Phone # (with country code)
Eric Anderson (Peace Corps Volunteer)	-	Not present in country
Aaron Oppelt (Peace Corps Volunteer)	Aaron.oppelt@gmail.com	Not present in country
Jefferson Francisco (Peace Corps Volunteer)	Jefferson.francisco@gmail.com	Not present in country
Don Maximino (Community leader)	-	+503 011 732 89195
Don Paschal (Community member)	-	+503 011 2413 7119
Don Miguel Angel (Community member)	-	+503 011 7732 8309
Alida Gladiz Martinez de López (El Naranjito School Principal)	alidadelopez@gmail.com	+503 7225 6575

6.1 Additional Information

Over the years, EWB-OSU had the benefit of having three different Peace Corps Volunteers (PCVs) serving in the community. The first PCV in the community, Eric Anderson, had initiated the relationship between EWB-OSU and the community. He informed EWB-OSU of the conditions of the community at the time and assisted EWB-OSU travelers through the first two assessment trips. Since then, the three PCVs served as translators, guides, and community contacts. EWB-OSU was always able to purchase most materials required for implementation trips through the PCVs beforehand. They were experienced diplomats when EWB-OSU and community members had to agree on the scope of each project and they provided guidance to the students of EWB-OSU in terms of the direction of the project.

Based on the relationship EWB-OSU had with PCVs, there is no hesitation recommending having a close contact in the community who understands the chapter's intention and the community's understanding of the project. A contact person in the community will not only become a great asset during an implementation trip, but will also contribute to the success of the project by enhancing the chapter's relation with the community.

7.0 Educational/Training Materials

In December 2008, EWB-OSU initiated health promotion education within the community. There were four major goals set for the December 2008 trip to El Salvador: (1) the dissemination of health assessment results from the December 2007 trip, (2) the distribution of Potters for Peace water filters, (3) the initiation of a meeting with the local health educator, and (4) the provision of educational tools that encourage hand washing practices within Cerro Caballo.

A community meeting was held on December 21, 2008 on a piece of newly purchased land in the outskirts of Las Mercedes. This land was purchased by the community and was intended for the development of a health and community center that will be available to all in the area. More than 30 individuals arrived to a meeting that was led by members of the water board along with other community leaders.

Health Assessment Presentation

After major discussions were covered by community leaders, a poster presentation was given to the group that highlighted important findings from the health assessment that was performed in December 2007. Community members were very responsive and interactive with the information that was given, especially the women.

Potters for Peace Filter Demonstration and Distribution

Many people present traveled by foot from around the region to purchase Potters for Peace water filters and to learn how to use and maintain them. An explanation and demonstration was given to the group by Julia and Kaileen, followed by filter distribution. Emphasis on the replacement of filters every two years was given to those who received them. The distribution of filters occurred after the meeting was finished, as people had to walk back to Las Mercedes to the house of Don Maximino and Doña Emiliana, where the filters were stored.

Community Health Educator

After filter distributions were completed, a meeting was held with the community health educator to talk about the perceived health needs that were present in the local communities, especially those that were relevant to the EWB project. The health educator identified many health problems, a few which were directly related to the access of clean water. These included, but are not limited to, diarrhea, intestinal parasites, and malnutrition in children under five years of age, in addition to the absence of strong hand washing practices in people of all ages. Many of the problems identified by the health educator are exacerbated by misinformation within the community, a result of older and uninformed belief systems. The health educators that work in these communities are trying to educate people by holding health fairs and going door to door, in addition to providing them information on where they can

access health resources. This emphasizes the importance that EWB has in these communities by providing access to clean and safe water to those in need.

In an attempt to encourage hand washing practices in the community, “tippy taps” were constructed for households in Cerro Caballo. The tippy taps were made from old, plastic containers that had been previously used to hold water and were set up as hand washing stations. These educational tools were easy to construct, used only a small amount of water to implement, and were fun for the children in the community, as can be seen in Figure 4.2. Small soap containers were also attached to the structure to encourage effective hand washing practices. Tippy taps were hung outside the door of dwellings for easy access.



Figure 4.2: Tippy Tap used by children in Cerro Caballo.

8.0 Professional Mentor/Technical Lead Assessment

8.1 Professional Mentor/Technical Lead Name (who wrote the assessment)

Malia Kupillas
Greg Kupillas

8.2 Professional Mentor/Technical Lead Assessment

The project team prepared a professional document to close out this project. Various members of the team participated in preparing their first draft of the document, and they managed their time well considering they are also attending classes.

8.3 Professional Mentor/Technical Lead

We (Greg and Malia Kupilla) were the technical leads for monitoring the past implementation projects completed by EWB-OSU. We accept responsibility for the course that the project is taking.

9.0 Appendix

Nota de Acuerdo / Memorandum of Understanding

Ingenieros Sin Fronteras / Engineers Without Borders - OSU

“El Salvador Project” final assessment trip / Viaje de evaluación final
“Proyecto El Salvador”:
3/15/2011 – 3/27/2011

A los miembros de las comunidades de El Naranjito y Las Mercedes,

Este viaje de nuestro grupo de Ingenieros Sin Fronteras es el último a su comunidad. El objetivo de este viaje es para evaluar los sistemas de distribución y filtración de agua que hemos construido en los viajes anteriores, y para preguntarles a ustedes sobre las diferencias en sus vidas gracias a estos sistemas.

Estamos muy agradecidos de la oportunidad que hemos tenido durante los últimos cinco años de trabajar con ustedes. Esperamos que los sistemas les sirvan bien. A partir de hoy, el mantenimiento de ellos será exclusivamente su responsabilidad, porque este grupo de Ingenieros Sin Fronteras no volverá otra vez a su comunidad.

Sin embargo, si tienen preguntas sobre los sistemas u otros aspectos de nuestro trabajo desde el comienzo del proyecto en sus comunidades, estaremos encantados de contestarlas. Pueden enviar cualquier pregunta al presidente de Ingenieros Sin Fronteras - OSU por correo electrónico, a la dirección President@ewb-osu.org.

Muchas gracias por su colaboración durante nuestros proyectos en sus comunidades.

Fecha: 22/3/2011

Miembro de la comunidad

Miembro de Ingenieros Sin Fronteras





José Maximino Escobar
Nombre

Sordan Machbelinckx
Nombre

[Firma]
Firma

[Firma]
Firma

Copia para Ingenieros Sin Fronteras - OSU

<u>Nombre y Comunidad</u>	<u>Firma</u>
Elroy A. Garcia antera No1	
miguel Angel Escobar las Mercedes	
Maria Elena Escobar Las Mercedes	
Pascual Escobar LAS Mercedes	
Alida Gladis Martinez de Lopez C.E. El Naranjito	