Year End Report 2015

Engineers Without Borders USA

Northeastern University Chapter

Our Vision & Mission

Our Vision: EWB-USA's vision is a world in which every community has the capacity to sustainably meet their basic human needs.

Our Mission: Engineers Without Borders USA builds a better world through engineering projects that empower communities to meet their basic human needs and equip leaders to solve the world's most pressing challenges.

A Letter from the

President

Dear Friends,

2015 has been a year of new beginnings and significant change for EWB-USA NEU. The year saw a total of 14 students travel on three trips to Panama, Honduras, and Uganda. We assisted the community of Bbanda in commissioning their water distribution system, successfully providing clean drinking water to over 1,000 people, marking the completion of a project five years in the making. We traveled back to the Yoro District of Honduras to build community relations and lay groundwork for new projects in the communities of Ocotal and Potrerillos. Our Panama team made their inaugural assessment trip to the community of Las Delicias to forge new relationships and gather information about the needs of the community.

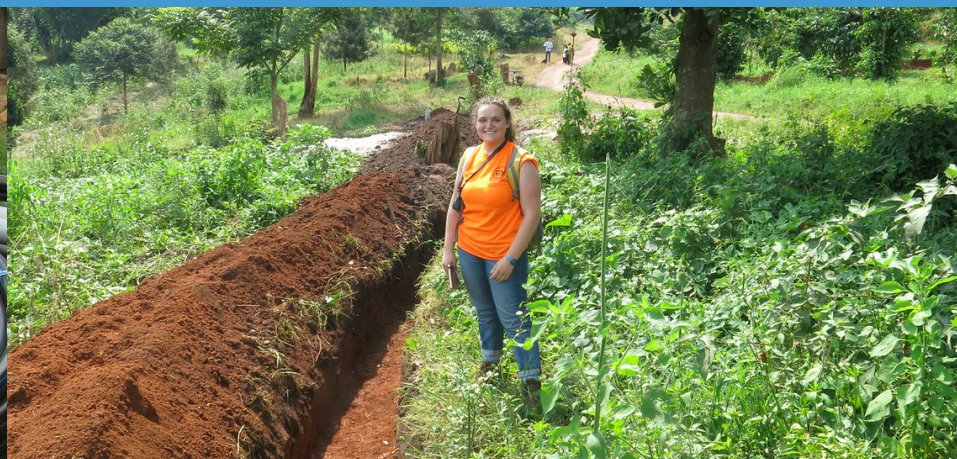
In addition to our travel overseas, EWB-USA NEU has focused efforts on student development here in the States. In the Fall of 2015, a group of eleven Northeastern students attended the EWB-USA Northeast Regional Conference in Syracuse, New York. At the conference, students exchanged ideas and had the opportunity to network with professionals and students. A few of our students even presented at the conference, sharing insight into EWB-USA NEU's fundraising strategies and annual Bootcamp! retention event.

I would like to take this opportunity to say thank you to all those that have helped this chapter thrive over the past year. Thank you to our generous *Donors*, without whom, none of this work would be possible. Thank you to our *Partner Communities*, for welcoming us into your homes and working alongside us to make our collaborative designs a reality. Thank you to our *Partner Organizations*, who continue to provide invaluable support for our work year round. Thank you to our *Mentors* for being incredible teachers and role models for our members. Thank you to our *Student Members*, who have put in countless hours working on designs and fundraising tasks. EWB-USA NEU continues to succeed because of the large support network on which we rely. We cannot thank you enough for all that you help us accomplish.

I am incredibly thankful for all that EWB-USA NEU has given me during my time here at Northeastern. The experiences I have gained internationally, and at home in Boston, have allowed me the opportunity to grow as an engineer and gain a global perspective. This process has by no means been easy or gentle; yet all of the late nights have been made worth it when I think about the positive impact that our work has had on the lives of those within the communities in which we work. EWB-USA NEU has taught me the true meaning of being an engineer, and for that I am endlessly grateful.

Emily Korot

President 2015-2016



Inaugural Year

Panama

Michael Sanders
Panama Professional Mentor

Traveled once as a mentor, twice as a student

2015 was the inaugural year for the EWB-USA NEU Panama Program. Our program works with the community of Las Delicias, a rural farming village of about 200 people. Las Delicias has a water distribution system in place, but the system is in poor condition and ultimately is inadequate for the needs of the growing community. The pipes are above ground and, as such, are subject to the elements and local wildlife, resulting in damage and leaks. Much of the community receives intermittent water at best, with some areas receive none at all and resorting to unsafe means of collecting water. The Panama program of the Northeastern EWB chapter seeks to work with the community to remedy these problems.

In 2015, we took our first trip to the village as an EWB chapter. This trip was an important one for a few reasons. First and foremost, we built a relationship with the community and the Water Board specifically. We conducted house-to-house surveys to determine the needs of the community and how these needs will change over the coming decades. In addition, we were able to get a sense of the scope of the project, scout the existing and proposed sources, and use elevation surveying and GPS to begin compiling a map so that we can start designing the system. We need to conduct another assessment trip to collect more data before building anything, but we are working to compile preliminary designs to help inform our future assessment.

Moving forward into 2016, we are attempting to establish 10% of the design of each component of the system before our next trip. Ideally, EWB-USA NEU will travel at the end of summer 2016 and gather the remaining necessary information to complete the design of the system.

Brendan McManus, '18, Mechanical Engineering

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A Year of Progress

Uganda

Timothy McGrath
Uganda Professional Mentor

Traveled 12 times

The Uganda project has made significant progress this year. We spent the first part of 2015 working on minor improvements to existing components while also refocusing our efforts on raising enough funds for another implementation trip. Another important task that we completed was securing a generator and pump. With this in place, we were ready to start planning a trip to Uganda.

In May 2015, a team traveled to Bbanda with the goal of commisioning the Bbanda distrabutionsystem. The travel team supervised the installation of the pump, the diesel generator, and the piping associated with it. We also constructed a drainage overflow pit and a tank level indicator. After an initial disinfection and chlorination of all components, we were finally able to allow water to flow. This was an exciting milestone for our chapter and for the community. The completed Phase One includes a water storage tank, five tapstands, 11 valve vaults and over 7 km of pipe.

We were happy that the community was ready to assume all responsibilities of the Bbanda Distribution System. We met with the Water Board to train them about the operations and maintenance of the system, such as how long to run the pump and how to clean the system. There are established Tap Stand Monitors in place to collect fees, a Treasurer to manage their bank account, and a Maintenance Director to oversee all aspects of the system. With these measures taken, we believe the project can remain self-sufficient. After the team left Uganda, some problems arose regarding leaks in the tank. Our members worked with the Water Board to find an appropriate repair as quickly as possible and we were able to get the system running once again. We are continuing to monitor the functionality and self-sufficiency of the BDS and are happy to report that it is in good condition.

Although we have recently made great strides, we are already moving towards Phase Two, which would further expand the system. On our next trip, we will begin this process by surveying locations for future tapstands. We hope to continue our work in the village and further improve the lives of the people in Bbanda.

Kim Perrone, '18, Civil Engineering

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Panama Design Lead
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A Year of New Beginnings

Honduras

2015 was a year of new beginnings for the Honduras program. After the water distribution system in El Carrizalito was completed, we began researching new communities that were in need of water systems. Our team received requests from four different villages for our help in their communities. We decided that the communities of Ocotal and Potrerillos were the best fit for the Honduras program.

Five students and one mentor traveled to Honduras in August of 2015. The goals of the trip were to establish relationships with the communities of Ocotal and Potrerillos, determine the feasibility of constructing a water distribution system from a new proposed source, and begin monitoring the completed project in El Carrizalito. We met with the communities to explain the goals of our visit and to discuss their expectations of the project. The travel team completed initial walks around the village, taking survey data of the potential new source, existing tanks, and locations of buildings. Health surveys and a community census established a community baseline. Water quality samples were collected at the taps, new source, and existing tank and sent to the lab for testing. A final meeting was held with the community to outline the responsibilities for the remainder of the project.

When the travel team returned, the Honduras program analyzed the data collected, including health surveys, community census, water quality, flow rate, survey data, and elevation data. From the data, we made a baseline of community health and water quality. In addition, a map of the village and an elevation profile from the village to the potential new source was created. The analysis was completed and results were compiled in post assessment trip report.

One day of the trip to Honduras was devoted to monitoring the status of the system in El Carrizalito. The team examined the tank built by the community and took measurements to complete as-built drawings for the community. In addition the team took water pressure, water quality, and flow rate data at key houses throughout the community. We were excited to find that the pressures taken at the houses were very close to the pressures given by our design! Finally, the community made lunch for the travel team to thank them for helping them completing the water system. After the success of the El Carrizalito water system, the Honduras team is very excited to work with the new community of Ocotal in the coming years.

Emily Katzner, '18, Mechanical Engineering

Peter J. Bosscher Faculty Advisor Award

Dan Saulnier

Faculty Advisor
Honduras Professional Mentor

Traveled 17 times

We are so proud of our mentor, Dan Saulnier, for being awarded EWB-USA's Peter J. Bosscher Faculty Advisor Award for Outstanding Leadership. Thank you for all that you do!

Reporting in from the

National Conference

This year's EWB-USA Northeast Regional Conference, hosted by State University of New York's College of Enviromental Science and Forestery, featured a diverse group of speakers, from David Sacco, Yale's professional mentor and NE TAC Chair, to Brian Wylie of Pratt and Whitney, to four of EWB-USA NEU's own: Emily Korot, Brandon Hornak, Ashleigh Peterson, and Dan Saulnier. Our student members presented on fundraising strategies for student chapters and "Bootcamp!" a recruitment activity – both things that EWB-USA NEU has seen great success with in 2015 – while our professional mentor gave his signature presentation on pipe hydraulics.

The NERC consisted of a series of hour long breakout sessions, which were divided into four categories: Technical, Project Management and Improvement, Chapter Presentations, and Community Relations. Sessions that stood out to our student members included: Bringing Education Globally Using Collaboration, How to Protect Natural Springs for a Water Source, The Glass Ceiling that African Women Face, and Waste Management in Developing Countries. Feedback from conference attendees was overwhelmingly positive, and EWB-USA NEU students were eager to share what they learned with the rest of the chapter.

Engaging in conversation with other chapters, both student and professional, is of tremendous value to our members and projects. The 2015 EWB-USA Northeast Regional Conference allowed students to learn from the successes and failures of their peers in the Northeast Region, returning to Boston with fresh ideas and new methods to cultivate EWB projects. Armed with inspiration from Alfred Jacques and new technical knowledge from Conference breakout sessions, EWB-USA NEU looks forward to nourishing our projects in Panama, Honduras, and Uganda.

Elaine Kehoe, '19, Civil Engineering

Conference Speakers

Dan Saulnier, Faculty Advisor/Professional Mentor—Introduction to Water System Hydraulic Calculations

Ashleigh Peterson, Student member '18, Uganda Program Director—Bootcamp! A Recruitment Activity

Emily Korot and **Brandon Hornak**, Student members '17, President and VP of Development—Fundraising Strategies for Student Chapters

Student Enrichment

Bootcamp!

In 2015, EWB-USA NEU hosted two successful sessions of our trademark recruitment event, Bootcamp! This day-long event, created in 2012, aims to quickly educate new members about the EWB-USA project process and EWB-USA NEU projects specifically. To do so, EWB-USA NEU holds discussions, presentations, and activities to simulate technical and cultural aspects of project process such as assessment, design, implementation, and monitoring/evaluation.

At the Spring 2015 installment of Bootcamp!, EWB-USA NEU hosted student and professional chapter members from all over the MA-RI region. The day began with the attendees working through a mock project process including assessment, design, and implementation activities. Next, we heard presentations on technical report writing from Uganda Professional Mentor Tim McGrath and the PMEL program from EWB-USA MA-RI representative, Ryan Gordon. Finally, the attendees split into groups for discussion. This allowed time for collaboration between EWB-USA chapters as we shared challenges and successes in our work. This regional event proved to be a valuable experience that furthered the development and maintenance of our relationships with other EWB-USA members.

The Fall 2015 Bootcamp!, as usual, focused on the education of the new members of our chapter. Upper-class members acted as facilitators to lead new members through assessment, design, and implementation activities. The design activity, a new feature at this year's Bootcamp!, simulated the process of designing a gravity-based water distribution system. Students engaged in discussions about the cultural and logistical factors that must be taken into account in designing such a system. The day concluded with a presentation on the PMEL program from Uganda Program Director, Ashleigh Peterson. Feedback surveys showed that new members appreciated the event as a means to become more involved with EWB-USA NEU.

Alina Rossi-Conaway, '19, Mechanical Engineering

Senior Spotlight

Catherine McManus

Catherine McManus – despite holding the influential positions of Uganda Design Lead and VP of Development – does not get enough credit for her impact on Engineers Without Borders at Northeastern University. While Catherine was the Design Lead (July 2013 to August 2014), the Uganda group traveled to Bbanda for six construction trips, completing the majority of a village wide, gravity fed, water distribution system, and paving the way for the successful commissioning of the system in May 2015. This was only possible because of Catherine's dedication, and the dedication she inspired in the rest of the group, resulting in a group working tirelessly together for a common goal. Catherine McManus' influence on both the Uganda project and the people of Bbanda truly cannot be overstated.

Q: Why did you join EWB?

A: I – and I think a lot of other members – joined for the same reason we became engineers: to use our skills to make a positive and tangible difference in the world. Even though I was a student, and still gaining and developing those skills, I thought EWB was a good way learn and grow while contributing to an impactful project.

Q: How has EWB shaped your time at Northeastern?

A: EWB has *been* my time at Northeastern. It was an effective way to connect the learning from my classwork and coops in a meaningful way. Seeing the progress we made in Bbanda, and the impact it could potentially have on the community, inspired my third coop at a construction management firm specializing in health infrastructure in Haiti and West Africa. I can see myself returning to the developing world or Engineers Without Borders in the future after more work experience.

Q: Any advice for younger members to get involved with EWB?

A: Ask questions, sign up for any work, and participate in activities. You don't need to do anything incredibly difficult or ground breaking. If you engage in a dialogue – no matter how trivial you think it is – with the older members, people will notice; interest and initiative are very important traits of successful members.

Alexander Piers, '17, Electrical Engineering & Physics

Alumni Spotlight

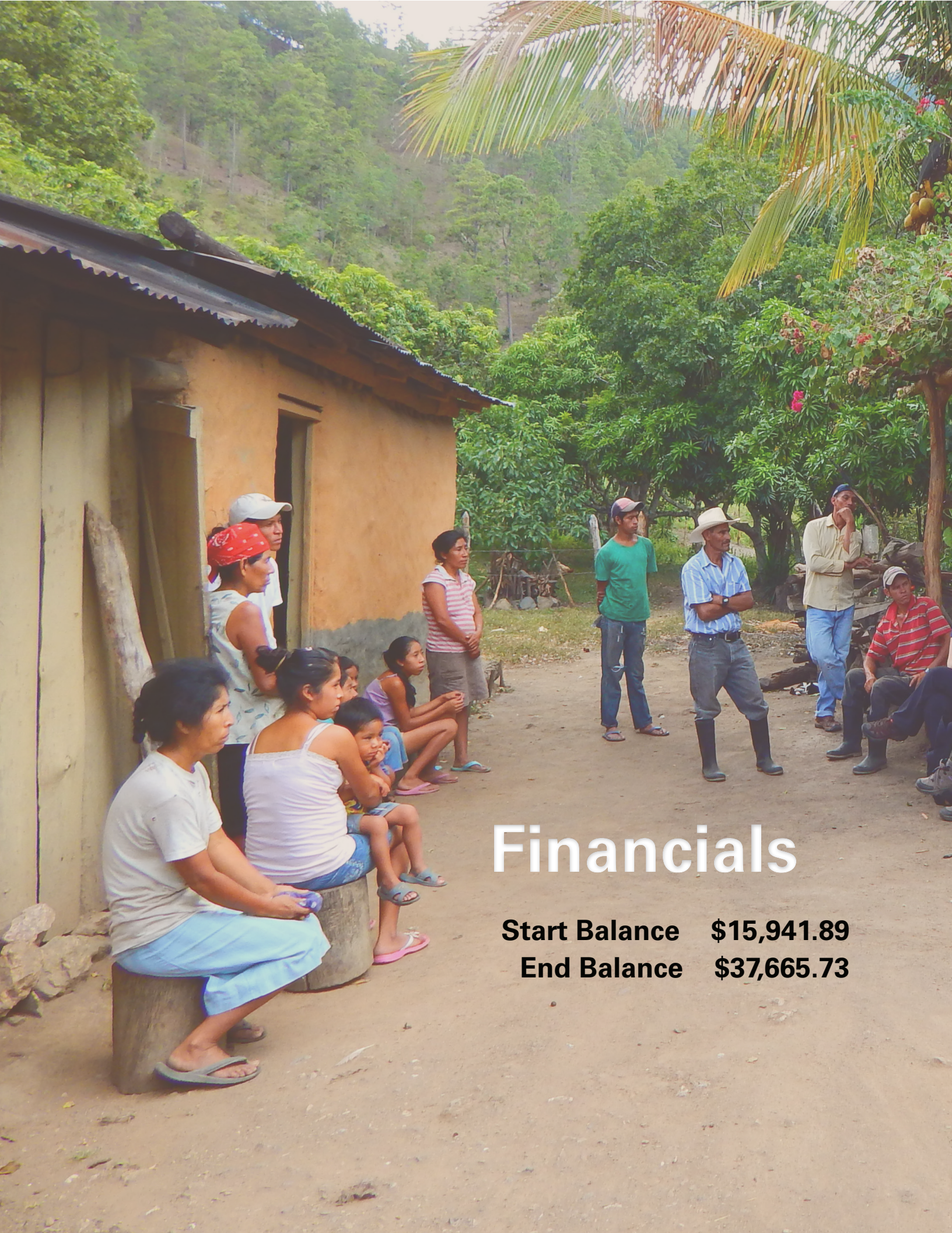
Ryan Mahoney

Ryan Mahoney, class of 2010, embodies the mission and vision of EWB-USA. In his days at Northeastern, Ryan was a member of our Honduras program. Working with the community of El Chaguite, Ryan was inspired by the realization that a truly successful engineering project requires an interface between the project and the environment in which it is to be implemented. As he puts it, "working with EWB gave me context for the non-engineering aspects of engineering projects; it allowed me to think more holistically about the design process, and to see the importance of interfacing with international development and global poverty."

Following graduation, Ryan was determined to use his skills to empower people in developing countries. Thus, he was led to the University of Colorado Boulder to pursue his Master's degree in a program called Engineering for Developing Communities, a program created by the founder of EWB-USA, Bernard Amadei! Ryan worked with the Peruvian community of Llacamate, working with EWB-CU on a water distribution system and doing his practicum for his degree.

Since September of 2014, Ryan has lived and worked in Kakamega, Kenya. He is an implementation manager for WASH Benefits, a randomized public health study on the effects of water treatment, sanitation, hygiene, and nutritional intervention on child health and development. As such, Ryan oversees the implementation of water treatment systems, latrines, and hand washing stations in over 1,000 communities in rural Kenya. He says of the experience, "this wouldn't have come about if I hadn't gotten involved with EWB in my undergrad."

Alina Rossi-Conaway, '19, Mechanical Engineering



Financials

Start Balance	**$15,941.89**
End Balance	**$37,665.73**

Revenue	
Corporate:	$14,725.35
Personal:	$19,511.35
Grants:	$19,050.00
Student	$1,922.71
Partner NGOs:	$23,120.39
Other:	$25,479.00
Total:	**$103,808.80**

Expense	
Honduras:	$20,068.51
Uganda:	$45,034.42
Panama:	$7,308.25
Student Betterment:	$3,150.30
Administrative:	$4,985.18
Other:	$1,538.30
Total:	**$82,084.96**

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