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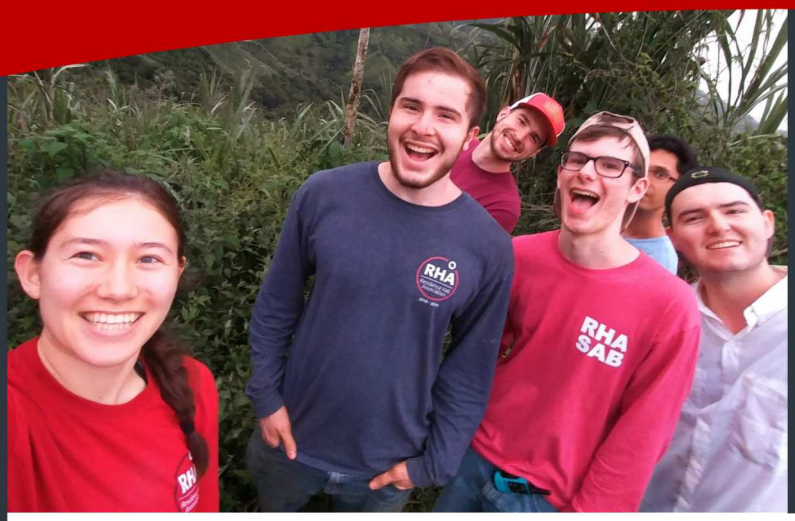
Engineers Without Borders

Rose-Hulman Institute of Technology

ENGINEERING. SUSTAINABILITY. COMMUNITY.



This issue

What is Engineers Without Borders?

EWB-RHIT is part of the national Engineers Without Borders USA organization. EWB-USA is a non-profit humanitarian organization established to partner with developing communities worldwide in order to improve their quality of life. Since its founding in 2000, EWB-USA has run more than 80 projects in 35 countries. The projects we work on are initiated by and completed with contributions from the host community, which helps ensure that our work will be maintained after we leave.

Our **VISION** is a world in which the communities we serve have the capacity to sustainably meet their basic human needs and that our members have enriched global perspectives.

Our **MISSION** is to support community-driven development programs worldwide by collaborating with local partners to design and implement sustainable engineering projects, while creating transformative experiences and responsible leaders.

Senior Luke Greenwood, surveying during the March 2020 trip to Ecuador

In this Issue

Well, it has been over three and a half years since we published out last newsletter. We still are working on our Ecuador project, but have made significant progress. Since our last newsletter we have traveled to Ecuador twice and are preparing for a remote implementation trip later on this year. The majority of the design work is soon to be finished and in the near future we expect to begin construction of the pipeline. Check out this issue to find out what we have been doing.

The EWB-RHIT Team

Co-Presidents

Will Lawton
Soph., Civil Engineering

Kayla Martinez
Soph., Mechanical Engineering

Co-Engineering Team Managers

David Lincoln
Fresh., Mechanical Engineering

Makayla Ray
Soph., Civil Engineering

Co-Fundraising and Marketing Team Managers

Walker Coffy
Jr., Chemical Engineering

Libby Smith
Fresh., Mechanical Engineering

Treasurer

Ben King
Fresh., Mechanical Engineering

Secretary

Walker Grove
Fresh., Civil Engineering

Local Outreach Chair

Tracy Orgera
Soph., Chemical Engineering

Ecuador Project Update

Since 2017, EWB-RHIT has been working on a project to bring clean drinking water to Chaguarloma, Ecuador. Chaguarloma is home to around 35-40 families, located in the northwest region of Ecuador. Currently members of the community have to walk 2.2 miles just to get clean water.

During the first trip, which took place in August of 2018, EWB-RHIT conducted a social survey to understand the community's needs. Additionally, the chapter conducted water testing and gathered preliminary survey data. The social survey revealed that on average, each family spends 5 hours a day collecting water! The team traveled to many surrounding springs to test the bacteria levels and flow rates to determine the best spring to source the water for the pipeline. Then, the team conducted a topographic survey to gather elevation data in order to understand the feasibility of a gravity fed pipeline.

After the first trip, the team had a lot to consider. They had to decide what the best solution was for the community. Two solutions to bring water to the community were a gravity fed pipeline that gathered water from a nearby spring or pumping the water from a river that ran adjacent to the community. In the end, EWB-RHIT conduced that the gravity fed pipeline was the best solution because multiple other teams have tried to install a pump but have been unsuccessful, leaving the community suspicious of a pump solution. Also, a pump would require power to operate and require more work to maintain.

The second trip took place during February, 2019. EWB-RHIT conducted more survey data, especially near the roadway connecting the potential water sources to the community. The data included GPS locations and elevations for the houses in the community. The team also met with local water board and members of the community to discuss ownership of the water resources and the land used to construct the pipeline. Luckily, most of the community members were willing to work with EWB-RHIT, but some opposed the use of their land.

Mentor, Jed Holt, working with local community members on placing the slab on grade for the spring box

Right before COVID-19 hit in March of 2020, EWB-RHIT was able to take a third trip to the community. On this trip the team was able to start constructing a concrete spring box near a natural spring to capture water that can be piped to the community. On this trip the team conducted additional survey work as well.

Samantha Stevens (CO '21) surveying on the 2019 trip to Ecuador

We are now making final preparations for a remote implementation trip to occur later on this year. The goal of this trip is to finish constructing the spring box by adding a fillet, which will remove small sediment from the water. A bar screen will be added to screen out debris from the water and a metal panel will be placed on top of the open spring box, keeping leaves and other debris out of the spring box. Finally, a gabion wall will be constructed around the spring box to prevent erosion.

As much progress as EWB-RHIT has made already the team still has a lot to do to finish out the project. Design has progressed nicely over the last several years, but there is a lot to accomplish on the construction side of the project. In the coming years the team will be responsible for coordinating laying over 6.5 miles of 1-2" HDPE and PVC pipe to bring water from the spring to the community. In addition, EWB-RHIT will construct 2 storage tanks, numerous break tanks, and valves to complete the distribution system.

Spring box construction during the March 2020 trip

The February 2019 travel team

Some of the March 2020 travel team members enjoying a game of cards after a hard day of work

Grad Student, Peter Householter , descending a hill to the spring box location

EWB-RHIT Mentors

Technical Mentors

Roger Ward, P.E.
CEO
Roger Ward Engineering

Liam Sawyer, P.E.
Land Development Analysist
Kimley-Horne

Jed Holt, P.E.
Retired

Faculty Mentors

John Gardner, Ph.D.
Professor of Spanish
Rose-Hulman Inst. of Tech.

John Aidoo, Ph.D., P.E.
Professor of Civil Engineering
Rose-Hulman Inst. of Tech.

Kyle Kershaw, Ph.D., P.E.
Assoc. Professor of Civil Engineering
Rose-Hulman Inst. of Tech.

Student Spotlight: Jackie Renn

Jackie is a senior civil engineering student. She has been active in EWB throughout her entire time at Rose-Hulman serving in the roles of Fundraising and Marketing Team Manager and Engineering Team Manager. She traveled to Chaguarloma in March of 2020 as well, where she served as one of the survey leads. She has taken the lead on a majority of the design for the project, particularly with the hydraulic analysis work where she worked through numerous design related challenges. After graduating from Rose this May, Jackie plans to continue her education abroad pursuing a masters degree to set her up for a career in hurricane engineering.

Fundraising

Fundraising is vital to our ability to continue using our Rose-Hulman education to impact developing communities worldwide. The cost of travel and construction materials is extremely high, but both are necessary for our chapter.

Through school organizations, such as the Student Government Association, we are able to raise some funds for our projects. This only covers a fraction of the total amount needed to complete our projects—especially for material costs. We rely on private donors like you to support our projects and make a difference in third-world communities.

Donating to EWB

Contributions can be made to "Rose-Hulman Institute of Technology", directed to "Engineers Without Borders" in the memo.

For more information, contact our Co-Presidents at: Grpewbpres@rosehulman.onmicrosoft.com

Contact Us

Please contact us at Grpewbpres@rosehulman.onmicrosoft.com if you have any questions or would like to become more involved.

More information can also be found on our website at:

https://wordpress.rose-hulman.edu/ewb/

Rose-Hulman Institute of Technology

Lessons With a Civil

At the beginning of the year, and when it was still warm outside, we had a night workshop where members learned how to set up and take measurements using a total station. Members were able to use this resource to learn a skill that is vital to our work down in Ecuador. With this knowledge that they have learned, the members will be able to take desired measurements to check the elevation as we start the installation process of the pipe line from the top of the mountain to the town bellow.

Team "Back Table" with Steve Harvey (Peter Householter)

EWB-RHIT Provides COVID-19 Relief

In the fall of 2020, EWB-RHIT donated funds to help with the COVID-19 response in Chaguarloma, Ecuador. Working with Engineers in Action (Now EWB-Ecuador) the club was able to provide each family with disinfectant, gel alcohol, liquid detergent, liquid soap, reusable masks, rubber gloves, vinegar, and a plastic water dispenser to help curb the spread of COVID-19.

In addition to bringing supplies to Chaguarloma, Engineers in Action also conducted workshops for the community hosted in partnership with EWB-Ecuador. In these workshops the community members were trained on sanitation, hygiene, household water treatment, and preventative measures to avoid the spread of COVID-19.

Two years later, the relief provided by EWB-RHIT has proven to be extremely helpful to Chaguarloma as they have avoided being hit to hard by COVID-19.

Family Feud Fundraiser

EWB-RHT held their annual Family Feud Fundraiser on January 7, 2022. Five teams participated in the tournament and team "Back Table" dominated the game winning themselves a Buffalo Wild Wings gift card.

The fundraise was an overall success for the club brining in close to $100, and providing an enjoyable evening of events for the participants and volunteers.

Local Chaguarloma community members learning about proper sanitation techniques

ENGINEERING A MORE SUSTAINABLE WORLD—ONE COMMUNITY AT A TIME