Aqua Clara International E-News Flash

August 2013

Dear Friends of Aqua Clara International,

It has been a busy 2013 for us. We have been well on our way with new technologies being developed in the lab. Along with our Bio-Sand Filters, we have scalable Hollow Fiber Units available now. It has been exciting for ACI to expand its capabilities. Some implementation of these Filter Units have been put into place already. More and more areas of the world are receiving clean water and YOU make this possible.

Below are some of the stories of the work we have been doing all over the world this year!

Household Units in Haiti

Below is a video with a partnered organization, Haitian Artisans for Peace International (HAPI), in Haiti. At 8 minutes they show and discuss our Household Units implemented in rural Haiti.

Sealants for Haiti

ACI Receives Nvidia Project Grant

This summer ACI was informed that they had received a $50,000 High Impact grant from the Nvidia Foundation to be used for our Kenya Clean Water Program. Nvidia is an American global technology company based in Santa Clara, California. The grant will be used to supply over 5,500 Kenyans with a sustainable clean water program using our newest Hollow Fiber technology.

Our project there qualified for the three key areas that Nvidia focuses on:

Health and Human Services: 500 Household Units will be installed in rural and urban homes in Kisii and Eldoret a long with two School Facility Units and two Clinic Facility Units which each will supply 3000+ liters of water a day.

Education: ACI has been working on a simple system in 48 schools in Kenya dealing with hand washing stations, Health and Hygiene Clubs, and Rain-Water Harvesting systems in 36 of these schools.

Environment: Through the sale of Household Units, families will not have to go and collect wood to boil water. This reduces the amount of carbon emissions and the amount of deforestation.

We send a large thank you to the Nvidia Foundation for helping us out with our cause!

Arsenic Removal in India

Aqua Clara collaborated with members of the Gauhati South and Tacoma Washington Rotary clubs on a Rotary Global grant project to bring ACI facility /arsenic filter systems to schools located in the poor rural communities near Nalbari and Naogaon District of Assam, the state in the northeastern region of India. The project site near Nalbari has a population of about 20,000 whereas the population in the project site near Naogaon has 10,000. These two project sites are among the worst in the country with groundwater contaminated by arsenic and fluoride. The public health department of government of Assam has not provided safe drinking water to these communities located outside the cities or towns. There is no safe drinking water supply or sanitation facility in the community. People generally use dry pits and natural field which causes contamination of existing water source.

The Aqua Clara facility/arsenic filter system was chosen to be the central technology to be installed in four schools in these communities as it eliminates both bacterial and arsenic contamination at the same time. The system was designed to eliminate arsenic contamination of 200ppb and to do so for 2.2 years, whereupon the Adsorptia compound would have to be renewed. One of the benefits of the compound is that it

can be safely disposed of in a yard or fill area as warranted by the U.S. EPA; there is no possibility of arsenic leakage as the arsenic will have been adsorbed by the compound and essentially rendered inert.

In March, Harry Knopke travelled to Assam where he met Rajkamal Bhuyan of the Guahati Rotary Club and Arvind Pukhan of the Tacoma Rotary Club along with their colleagues who compose the water team of the Guahati Rotary Club.

The first set of construction activities involved drilling a well on each school site and building a structure to house the filter system. The building and the frame to hold the filter system were designed to be readily replicated from one site to another. As no electric drills were available, holes were made in the water containers with a heated metal rod.

Because there is no electricity available to the schools, hand pumps were fitted to the wells dug at each site. The water is pumped by hand to a storage tank that feeds the Aqua Clara hollow membrane filters and then the arsenic filter.

While the filters and Adsorptia compounds had been shipped to India the month before he left, they arrived on site two weeks after Harry returned to the states. Harry taught members of the water team how the Aqua Clara systems are constructed and managed using only a hollow membrane housing cap as the central element of the filter structure. Despite that disadvantage, the filter team was able to readily construct filter systems in other schools once the first unit was assembled.

Testing done at the sites after the filter systems were installed showed near-zero quantities of arsenic in the water now used at the schools.

Rajkamal Bhuyan of the Guahati Rotary Club and Arvind Pukhan of the Tacoma Rotary Club with Harry

The water pump and filter site

Making a hole with a heated metal rod

Installing the Arsenic Facility Unit

Locals collecting clean arsenic-free water

Peru - La Comunidad de Huayllarqocha

La Comunidad de Huayllarqocha, a community of approximately 80 families, including 400 individuals, is a small Quechua village in the Andean mountains of Peru (altitude: 12368 ft.), outside Cusco. It is a small farming community; individual families own some farms, while others are co-owned by collectives of families. There are three small shops that sell food, beverages and cleaning supplies. In the center of the community there is a restaurant and folk art store. Employment outside the community is rare. The level of income within the village is verymeager. Those fortunate enough to have employment outside the community find the added income a great help. This picture below provides a glimpse of the people, animals and homes in this community. Each family lives in a small compound made from adobe brick. The village is contiguous with Sacsayhuamán. Sacsayhuamán, with origins dating back thousands of years, is considered one of the great wonders of the world and is part of the series of monuments that includes Manchu Pichu.

Jim Tuinstra and Harry Knopke travelled to Huayllarqocha with the principals of the Kumpi Mayu Foundation, Dean and Marti Rutherford, and worked with members of the community's water team to install an ACI facility filter in one of the village's central building.There they taught the essentials of filtration and filter construction.

A sand pre-filter was constructed and placed on a wooden tower made by members of

the water team. Water is piped to this filter from a source located up the mountain from the village. The water is contaminated by livestock, other animals, and seepage from latrines.
The ACI facility filter was mounted on an inside wall

Pure water is now available to all community members via a valve-controlled outlet on the outside of the filter house.

The community-wide celebration was held on the last Sunday of the trip to enable all members to drink the new, pure water and to convey their gratitude for the gift of pure water.The celebration included a Despacho ceremony, an ancient ritual of thanksgiving. The ceremony entails the construction of an elaborate, symbolic-filled art work that is subsequently burned, signifying the transience of life and its elements. This village is one of 14 indigenous mountain communities around Cusco and the first to have pure water available to it. Aqua Clara will be working with the Kumpi Mayu Foundation to bring clean water to the other villages in the months ahead.

A local farmer in the village

The Sacsaywaman Monument

Jim and Harry teaching the construction of the Facility Unit

Sand pre-filter for the Facility Filter Unit

The Facility Unit filter unit

Water exiting the Facility Unit, supplying the whole village with clean water

Harry and Jim with Dean and Marty Rutherford of Kumpi Mayu Foundation and members of the water team

Village celebration of thanksgiving with a Despacho ceremony

Querétaro, México - La Universidad Autónoma de Querétaro

The last full week in July, ACI had the privilege to share their knowledge and technology to the Universidad Autónoma Querétaro. Paul Kaufman and Jay VandenBrink led a weeklong training session where more than fifty community members came to listen. The group of students consisted of engineering students, professors, non-profit workers, and other well-educated and motivated individuals. All of these people had one thing in common; they wanted to help the less fortunate living in their country.

For five hours a day, Paul and Jay took turns teaching the students on what ACI does and what can be done for the contaminated water in the rural communities of Mexico. With the teaching, Paul and Jay constructed each kind of ACI filtration unit in the University's hydrology lab. The University was excited to have these as examples and was eager to test the water exiting them.

Along with the training at the University, ACI was invited to a local Querétaro Rotary Club meeting to present what we are about. The Rotarians were very excited to learn from us and are eager to help with future projects.

The partnership with ACI and the University has been an ongoing partnership, and now the University has the knowledge to go further and implement our filtration units in rural Central Mexico. We look forward to what is next.

Paul showing how to construct a BSF

Paul and Jay stand in front of constructed filters in the Hydrology Labratory

Jay teaching about ACI Hollow Fiber Units

The students performing water tests

Nicaragua - World Christian Schools and NicarAGUA

This past April and May Harry, Deanne, Dale, and Jay headed to Managua to examine ten schools associated with World Christian Schools (WCS) that will benefit from our Facility Units. This project is funded by a generous grant from the Barnabas Foundation.

The first of these filters was built by a student-run team made up of engineering students. The team was called NicarAGUA and is part of the BLUELab (Better Living Using Engineering Laboratory) of the University of Michigan. The goal of this trip was to construct an Aqua Clara Facility Filter in a 400-student Christian school in the outskirts of Managua, fix a filter previously built and still in use in Leon, gain hands on experience on filter supervisions, and plan for a rainwater harvesting system for next year.

All of these goals were met. Monte Herman Christian School of Managua now has a Facility Filter built into their kitchen supplying 400 students with clean water. The filter took three days to find supplies and build. After this, the team headed to Los Alpes Eco-Tourism Ranch in Leon. There, they lived in a rural setting and experienced a lot of the real Nicaragua outside the city. Two of the days were spent traveling to the town Felix Pedro, to fix and improve the Facility Filter that was implemented a year ago. The 400 students of the public school were still using the filter, but parts had broken and were replaced by sturdier ones. The students, with the help of our on-site engineer Jairo and our Project Manager Jay VandenBrink, designed this system.

The next project was to meet with local farmers and villagers to plan for a rainwater harvesting system to supply drip irrigation to future crops at the ranch. These crops will be used to provide food and income for the surrounding villages. Measurements were made and information was gathered for a great future project.

The final work that was done was to travel to three surrounding villages of Leon to supervise bio-sand filters that have been in use since 2008 and 2009. The team tested the water for coli forms and arsenic. This was a great experience for the students for they saw our filters in use and they were part of our on-going sustainable plan.

The final day was spent going to the beach. The day was spent fishing in the mangroves, taking on the strong pacific waves, and playing Frisbee at sunset. It was a perfect end to a very successful trip. The students had a great experience and were shown Nicaragua in a way most people do not see it. They look forward to a second trip next year and implementing a rainwater harvesting system.

Jairo and Jay stand in front of the first Facility Unit installed in a WCS school in Managua, Nicaragua

Team NicarAGUA stands in front of an improved Facility Unit in Léon, Nicaragua

An Update From Sam Simmons in Kenya

Greetings from the Aqua Clara Kenya team! My name is Sam Simmons and I am the Program Development Manager for Aqua Clara in Kenya. I have been working for ACI in Kenya for the past two and a half years. Our office is just outside of Kisii, Kenya in a little place called Rigoma. Here in Rigoma, the majority of our work for the Kenya project is carried out. In this update we will discuss our recent developments as well as the future of Aqua Clara Kenya.

The Aqua Clara program in Kenya has continued to grow over the last several years to finally put us onto the brink of in-country sustainability. For any development project this is a major milestone because it denotes the potential for true and quantifiable long-term success. Several factors have played key roles in bringing Aqua Clara Kenya to this position, in country staff development, market security and non-donor based funding streams.

Development of our in country staff in Kenya has been a major point of focus for the US based Aqua Clara team members. Through activities such as continuing education for staff as well as creative problem solving cases our Kenyan staff has developed by leaps and bounds over the past year. Not only does Aqua Clara focus on our directly employed office staff but we have brought a significant amount of recourses to our CDE's (Community Development Entrepreneurs: Filter Builders) and CHP's (Community Health Promoters: Monitoring and Evaluation Team).

One such example is our Rain Water Harvesting (RWH) program. Aqua Clara Kenya has been installing RWH systems in our partner schools for the last year and a half. We have structured the supply chain to now be able to serve our team members as well. This has increased the product range of each individual CDE and CHP along with the potential for securing income.

The training was conducted early in the first quarter of 2013 and the team members have been selling RWH materials and tanks to their community members since then.

As I mentioned in the introduction, market security and product sales have been very important to our recent success in Kenya. These issues continue to make themselves heard and are a major focus of all ACI operations and work streams. Our bio-sand filters have found a niche in the rural markets but to ignore the urban market would be a gross oversight. ACI is rolling out an entirely new product line of membrane filters. These filters will have all the capabilities of the bio-sand filter with the versatility to not be used everyday and transported from house to house.

At ACI we have been blessed through our corporate and personal network. DOW Chemical Co. has been generous to add us into their sustainability corps. With this

addition we have seen our technical and business abilities soar. Earlies in 2013 DOW sent out a programmer to Kenya to see our project and better understand our technical needs. After his evaluation and meetings with the ACI Kenya team we decided it would be best to develop an app on the android platform to assist the team in monitoring and evaluation.

Since then the Sustainability Corps. at DOW have been hard at work creating an app to be rolled out and implemented in the final quarter of 2013.

On the business side of things ACI is pleased to announce the addition of two consultants joining the Kenya team for the month of November. Bob and Maggie Charlton are going to be coming to Kenya to lend their expertise in the business and training fields to the ACI staff in Kenya. Bob is the former Vice President of International Communications for DOW. The Kenya staff could not be more excited to host the Charlton's in Kisii. The team will be working on projects related to market research, supply chain management as well as increasing training capacity and ability of all individuals connected with ACI in Kenya.

The piece de resistance of 2013 for the ACI team is the finishing up of our non-donor based funding stream. Over the last several years both individuals based in the US and Kenya have been working very hard to secure Carbon Credits from the UNEP Carbon Offset Program. After many long months of auditing, checking and rechecking, the final proposal has been placed before the UN auditors. Pending their approval, the Aqua Clara Kenya team will be able to be self-sustaining off of previously constructed bio-sand filters and SAM units.

Thank you so very much for your interest and continued support. Here is to a positive and productive final few months of 2013 and an amazing 2014. The rural poor value your inputs more than you can imagine. Thanks again.

Sincerely, Sam Simmons
Program Development Manager: Kenya Aqua Clara International

CDE'S and CHP's At the Aqua Clara Kenya Offices in Rigoma

A group of new CDE's and CHP's after being trained at the ACI Kenya Offices. Also pictured the Aqua Clara Kisii Office Staff.

Welcome Miriam Chege

I am ecstatic to be in Holland, learning and gaining exposure to the work Aqua Clara is doing.

A little background about me, I am currently a junior at Michigan State University, pursuing a degree in Mechanical Engineering. My career aspirations revolve around the idea of utilizing technology to improve the livelihood of those who need it most. I hope to return to Kenya, my home country, and use my degree to benefit not just our people but the country as a whole. Yes, my dreams are big.

Currently, in the lab, I am helping run a few experiments, as well as assembling the hollow fiber filters under the supervision of the great staff in Holland. I'd like to give a big thank you to them. Not only has everyone here been kind but they have gone over and beyond into making sure that I am faring well in this new place.
Cheers

Miriam in the ACI lab

Editors Note: Miriam has been an outstanding intern for Aqua Clara this summer. She is so eager to learn everything as well as willing to do anything we have asked her to do. Miriam has made a real contribution in supervising a work team manufacturing 1,000 assemblies of the Household Hollow Fiber unit. She has also conducted tests and monitored performance of these units too. We are so glad that she can work with us this summer!

Aqua Clara International

Aqua Clara International is a Michigan-based 501(c) 3 non-profit corporation whose mission is to forge sustainable and scalable solutions to the problems associated with potable water in developing countries. Our overriding goal is to provide those who live on less than $2 per day with affordable clean water. Our team of engineers, scientists, business people and program managers, whether full-time, part-time or volunteer, is fully dedicated to carrying out this mission by developing and deploying technologic solutions to worldwide water issues that are appropriate to various local contexts and needs. To complement and supplement our efforts related to water and to meet other community needs, we also provide solutions to problems related to sanitation and community health and welfare.

We make these solutions available at no charge or on a cost-recovery basis to individuals and groups who participate in our training programs in order to bring the solutions to their communities, typically through the new small businesses they learn to create and manage. The principal ACI-supported sites are located in Kenya and Nicaragua, while we also partner with many organizations representing a range of faiths and belief systems to bring our solutions to other countries.

Please:
For more ACI information, click here.

Or contact information at 616.396.8511 (mbuck@aquaclara.org)
Donations may be sent to Aqua Clara, 88 Sun Ridge Dr., Holland, MI 49424

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