WEFTA TRIP TO BOLIVIA/PERU
MAY 2008

Participants: Scott McKitrick, Jason Gehrig, Jennifer McDowell, Jason Obergfell, Suma Jayma

May 24, 2008: Jason, Braulio and Jaime picked me up at airport in El Alto, then to Braulio's home/Suma Jayma office. They fed me and we made a plan for the week. Jaime and Braulio of Suma Jayma asked us to communicate their gratitude for the WEFTA donated video camera, which was put to use on several occasions during the visit.

Braulio, Jaime with WEFTA provided video camera

May 25, 2008: We met Jennifer in El Alto at a large intersection. Next we stopped in Viacha at the Suma Jayma office. There is a new sewer line (large, probably 18 inches diameter) that runs down the street in front of the office, then discharges to a field, flows to the river leading to Lake Titicaca. Next we took a look at the old Viacha WW lagoons located near the cement plant. Three lagoons were constructed in 1994, but were never used. The lift station necessary to get WW to the lagoon was never functional. Perhaps this could be a potential area for a WEFTA/Suma Jayma contribution to helping mitigate Lake Titicaca contamination, by teaming up with the Municipality of Viacha in helping bring these treatment plants back on-line.

Wastewater discharge near Suma Jayma office

Unused wastewater lagoons near Viacha

Next to Huacallaya for new system inauguration. The village is located in the Comanche region in the high Altiplano. The system is a spring catchment, tank, distribution lines, and tap stands at individual homes.

The community had set up three interesting arcos, wooden and decorated with bright local cloth, baby dolls, and one with a stuffed wild cat. This was definitely the biggest system startup party I've been to. They welcomed us with local drinks made of roasted quinoa and another sweeter one made with roasted barley, as well as coca leaves to chew. As per custom, there was a lot to drink and only a few glasses, so all shared the glasses. The custom is to give the first drink as offering to Pachamama, the earth mother. The rest is drunk, and then the glass is given back to the server, who serves the next person.

Jennifer and Scott, Arco

Kids in Huacallaya

Next we walked to the tank, which was a good 40 minute walk uphill. As Jennifer and I weren't yet acclimated, it was a pretty rough walk, lots of resting. On the way we saw several pressure-break tanks. All construction looked great.

New storage tank

Jason with village leaders

When we returned to the meeting area, the local kids (dressed in white clothes) sang the national anthem accompanied by a band. The band was made up of wooden flutes, a snare drum and a bass drum. My understanding is that the flutes are traditional and very old. This appeared to be the case, as all the flute musicians looked to be elderly. More songs from the kids followed, as well as dramatic poetry recited from memory by two young boys.

Singing the Bolivian National Anthem

Dramatic poetry

Next were speeches by the Alcalde of the Comanche region, as well as local leaders. WEFTA was presented with a pyramid made of local stone, which is quarried for monuments. We were all given ponchos made of hand women llama wool.

Alcalde de Comanche

Receiving stone pyramid

Next we celebrated the inauguration of the system. The campesinos had decorated a tap stand as a cholita, a woman who wears the pollera, the traditional long skirt of the Aymaran. I broke a bottle of beer on the tap stand, then cut a ribbon, then reached under the cholita's skirt to turn on the tap. Everyone had a good laugh at this. Next we toasted the system. Next was back to drink beer, whiskey mixed with cola, and traditional dancing. The custom is to try and wear out the visitors. Luckily I danced with an abuela who was pretty old; otherwise I might have passed out from the altitude. Lunch followed. Lunch was the traditional numerous types of potatoes, including chuño (freeze-dried, re-hydrated potatoes that have black skin and taste interesting.). We also had lamb, cheese, etc. More speeches were given, and then we loaded the remaining food on our plates into plastic bags, and made our exit. It is not polite to leave food on your plate, but it is acceptable to take the food home for later (pretty handy if you're not a chuño fan, as I am not). Altiplano Survival Tip #32: "Never leave home without a plastic bag."

A good laugh

The best advice – a plastic bag…

Next we went to Huallitiri, a community just up the road from Huacallaya. This was also a spring catchment, tank and tap stand system. The celebration was much the same, with gifts, speeches, food, and beer drinking. One interesting speaker was a woman who had been elected to a position equivalent to city council. It is not uncommon for women to be elected officials in Bolivia, but this woman was surprisingly young. Many young people leave rural Bolivia to work in the city (El Alto or La Paz), but she seemed to be very dedicated to the campo.

Storage tank – Huallitiri

Jennifer and a happy family

Next we went to Villa el Carmen for a similar celebration of their system, which was similar to the other two. On the way to Villa el Carmen, we passed through Centro Rosa Patatuli. Suma Jayma pointed out in the distance the proposed water system project area serving the rural zone of this community. Due to time constraints, we were unable to undertake a more extensive visit.

Jennifer with Villa el Carmen woman

One of the leaders of Villa el Carmen

The coordinates of these remote rural communities were taken in order to update the ongoing WEFTA/Suma Jayma projects Google Earth map.

May 26, 2008: Our first stop was in Batallas. We met with the Alcalde, other officials. The town has a functioning wastewater treatment plant, which we visited. It is made up of a bar screen, two Imhoff tanks (I think), followed by a clarifier tank, and two lagoons, with discharge to a field where animals are grazed. People are very aware of what they flush in Bolivia, so there was no trash on the bar screen. The wastewater in the lagoons was green, but little smell. We took a sample for BOD, which we dropped off at the UMSA lab in La Paz. Suma Jayma will forward a scanned copy of the analysis results to WEFTA. The community officials

were interested in help operating the system. The municipal officials of Batallas will make available to Suma Jayma a copy of the WWTP final design folder and plans. Financed with prefecture and local government funding, the Batallas officials claimed that it was the only functioning WWTP in the Bolivian Altiplano (aside from El Alto's inadequate lagoons WWTP).

Batallas Wastewater Treatment Plant

Water tank, town of Batallas

The existing water system for the town is fed by springs 12 km away. Water flows into three storage tanks above the town, and is chlorinated prior to distribution (dry chlorine used). The town population is approximately 3,000, and about 2,000 are served by the water system. They would like help serving several zones of the town which lies adjacent to the river that flows through the town. Suma Jayma will prepare project proposals to submit to WEFTA toward that end. Municipal funding for such expansion of the existing city system would also be available. The operator of the Batallas water system also requested training in chlorination procedures/dosage & application calculations.

We next attended an inauguration for five hand pump water systems in the Batallas area. It was a traditional inauguration celebration. The communities brought food, which was laid out in a large circle. We received a proposal for help with construction of greenhouses ("carpas solares" – "solar tents").

Hand pump in Batallas

Lunch celebration

We traveled to La Paz and dropped off the wastewater sample at the UMSA (University Mayor de San Andres) lab, which is located near the large Che mural, also near the soccer court on campus. We collected a rate sheet for water analysis. They also had copies of senior theses completed by students, and we copied two that were relevant to Sara Chudnoff's project, others likely available. We met with Edwin Astorga (712-60544). He informed us that the Nuclear Engineering Department and/or a group called IBTEN is working with the Bolivian Water Ministry on a project for the contamination of Lake Titicaca from sources including El Alto. A contact in the water ministry is Ing. José Diaz Benavente with the Vice Ministry of Cuencas (watersheds), where he serves as "Director del Instituto de Ingeniería Sanitaria y Ambiental".

May 27, 2008: Met with communities at Pucarani (Machacamarca, Palcoco, Viruyo), to look at system under construction. Excavation for tank and water line (north of the highway, Palcoco) is complete, next will be construction of concrete tank and water line. The source of water is a spring-fed ditch near the tank site.

Excavation for tank, distribution line

Local band (drums, flute)

A quick history on Viruyo: This is a community of 40 to 50 families that lies adjacent to Machacamarca. It is currently contributing its budgeted municipal funds (80,000 Bs.) to cover the costs of the new supply main running from the tank to the highway (currently excavated). Once the original project commitments are implemented, Suma Jayma will look at the possibility of connecting Viruyo to one of Machacamarca's principle distribution mains. (Jaime has already looked at the hydraulic calculations for this possibility). Viruyo has an existing water system (well, submersible pump, elevated storage tank and distribution system). It is unknown at this time if Viruyo's existing distribution system is of PVC (in which case simply connecting to it with the supply main would be adequate), or if its of non-pressure bearing polyethylene tubing in which case a more substantial project proposal would be in order. Suma Jayma has avoided going to the community at this time in order to not raise expectations that any work will be undertaken there in the near future. A classic example of non-sustainable development: Viruyo is just one of approximately twenty well/submersible pump/elevated storage tank potable water systems in the vicinity of Pucarani that, according to local government officials, not one of which are functioning at this time (these are fairly recent systems as well) due to pump failures for which the community members cannot afford to repair/replace or due to the unwillingness/inability of community members to keep up with the electrical costs associated with the pump's functioning.

We looked at the plans for the tank, which has no support for concrete top. Suma Jayma was planning on beefing up the reinforcing of the concrete top with larger diameter rebar, along with placing a support column at the center of the tank. Jason Obergfell, Maryknoll civil engineer living in Cochabamba, suggested addition of a support wall for roof support and to make two tank chambers to allow cleaning of one while the other is operational. He's going to look for funding for this. The source of water is surface water, so chlorination will be very important.

There has been some conflict between the Alcalde of Pucarani and community leaders, but all those present openly acknowledged the conflict, and vowed to work through the problems. The Pucarani architect was present (though not the Alcalde), and spoke positively about the project. Braulio stressed the need for the municipality to provide the funds promised prior to

WEFTA funds being provided. Several community leaders, as well as the local municipal representatives, requested that WEFTA consider making it possible that its share of the project funding be made available over a two-year phased period instead of having to wait three years as originally agreed upon.

The communities provided lunch, as well as gifts, music, and dancing.

We traveled into the high Cordillera Real to hike for the afternoon.

Llama

High Cordillera Real

May 28, 2008: We met with community leaders in Viacha, the town where Sum Jayma has their workshop to the southwest of El Alto. Viacha has grown, and abuts El Alto. Water for El Alto is served by EPSAS, a local utility. Viacha has its own water system (EMAPAV). We met with E. C. J. Flores, sub Alcalde (sub Mayor) of Viacha district 7 (along with the Mayor of Viacha for a time as well). The area they are interested in help with serving is too far away from the Viacha water system to be served. Viacha has worked with EPSAS to determine that EPSAS is willing to provide water to this are of Viacha, but can't pay for the entire infrastructure. Viacha would like help providing some distribution piping, and home connections. EPSAS requires a $155 (U.S.) connection fee. There are two potential ways to work a project here. One would be help with domestic household connections, where supply mains already exist. Low income homes would be targeted (a social study of the area exists), with a reduced connection fee ($20 or $30 per family), or a rotating loan fund. The second possibility is following the model of a Spanish government project, which included installation of 2" distribution network with local neighborhood labor, and help with connection fee. This project was relatively large, about $100,000 total funding.

The next step is for Suma Jayma to sit down with EPSAS to determine possibilities, along with technical and administrative staff of Viacha. Suma Jayma was interested in doing this project for several reasons. It is more urban, therefore there is potential to hook up more homes for the same money as a rural system. They also seemed interested in the challenge of doing something new. There is much coordination to be done, but the project may be doable.

Viacha, view toward el Alto

E. C. J. Flores, sub Alcalde

I had a discussion with Julia Dunsmore. She works with a youth group called CISTEM, which is interested in working on mine-related water contamination. There may be a way to trade technical advice on mine contamination for help by one of the CISTEM volunteers (Ivan) with Sara's project. Julia forwarded a proposal from CISTEM.

Later that day we met with Doña Fany Cardenas (email: unitas@redunitas.org, phone 591-2-2420512), Deputy Director of UNITAS, a Bolivian NGO which is funded by several European funding groups. UNITAS has funded Suma Jayma projects for the last five years. UNITAS generally only funds local NGOs for three years, in order to push other local NGOs to develop and get funding. We explained the WEFTA connection to Suma Jayma, and that it is helpful for us (WEFTA) to obtain funding if we can demonstrate funding from in-country agencies like UNITAS. Given this connection, UNITAS agreed to allow Suma Jayma to continue to propose projects for UNITAS funding, and requested that they include a letter from WEFTA with their proposals as confirmation of WEFTA's willingness to match or exceed UNITAS funding of Suma Jayma-implemented water projects. Fany noted that UNITAS policy is to just fund construction materials and that UNITAS would like to see that the next Suma Jayma project proposal to UNITAS be a gravity water system. This was great, as UNITAS reviews proposals quarterly, with grants of up to $5,000 per project. Suma Jayma is determining which project to propose for the next funding cycle.

At 5 p.m., we met with municipal officials and local community representatives from Comanche at the Suma Jayma office. The Palcoma Baja – Colla Tije project was designed in 2004 by Suma Jayma, cost at that time $50,000. Re-calculated costs in December 2007 were $56,700. (exchange rate at that time was 7.8 Bs. to the U.S. dollar.)

In general, prices are on the up in Bolivia and throughout the world (food, energy, minerals, etc.) As for the impact on WEFTA/Suma Jayma water projects, the cost of galvanized steel piping and accessories, as well as rebar, have risen tremendously in the past half year. Cement and PVC have been more steady (as a producer of hydrocarbons and not having its domestic fuel costs pegged to international markets, Bolivia has been able to keep the price of fuels relatively stable for several years now.) Also impacting project funding is the falling value

of the dollar – peaking a couple years back around 8.2 Bs to the dollar, now down to approximately 7.2 and still falling.

The project would serve 560 persons (58 families benefiting directly in the rural zones with access to safe water in their homes for the first time through installation of tapstands; 54 families in the pueblo indirectly benefiting with a new source of supply to replace the current brackish water supply the community is using now). The funding would be 50% municipal, 50% WEFTA. Families benefiting with new tapstands would be contributing 160 Bs. per family, along with their manual labor. The municipality has some funding this year, would raise remaining by end of 2009. Suma Jayma encouraged them to start with the funding they have on critical items now (spring box, tank).

The community of Kella Kella would like help with a hand pump project (35 pumps total). The families now use open water sources (shallow wells, open springs), some families use brackish water. The community was represented at the meeting by a woman. No study has been completed yet. Bolivian law does not allow for public funds to be used to benefit individual families, e.g. family hand pumps, individual latrines or even household tapstands. With the latter for example, public funding of all community elements of the water system (e.g. tanks, supply mains, distribution network) is fine. Thus in Kella Kella with family hand pumps, municipal support would be limited.

Representatives of Huacallaya met with us. They're interested in a second phase of the project to serve 36 families. These are families that didn't get involved in the first phase, due to being in isolated zones, or that they didn't believe in the project initially. One of the reasons given to compete the second phase is to avoid conflict within the community. Total cost for the project as estimated by the community is 200,000 Bolivianos ($28,000). Suma Jayma questioned the project based on feasibility, existing hand pumps (installed by Suma Jayma with UNITAS funding). Braulio was pretty hard on the representatives, told them they wouldn't take the project if it was being pushed by people with hand pumps that were jealous of their neighbors with tap stands. Suma Jayma will visit the area and determine needs, then move forward as appropriate.

Following the meetings with Comanche communities, Jason and I talked with Braulio and Jaime about their priorities. Their priorities for funding are Chacoma and Rosa Patatuli, which are both ready to move forward with construction.

May 29, 2008: I traveled to the market with Will Tillett, a UK volunteer, and the Suma Jayma guys to buy pump materials. Later, I had a discussion with Will on his impression of Suma Jayma. He had lots to say. He thought they did a great job technically, but could work harder on community organization issues, training of communities on maintenance, and hygiene promotion. Suma Jayma seems aware of these issues, and has addressed them with a proposal to WEFTA.

El Alto market overlooking La Paz

Tiwanaku

Later that day we traveled to Puno, Peru, with a stop on the way at Tiwanaku, a pre-Incan ruin.

May 30, 3008: We traveled to Totorani with Padre Juan Valero's brother, Denis. We first visited the pre-school. It is open from 8:30 to 1, and serves 40 kids aged 3-5. It has two existing latrines. A community sewer collection system is being designed now (university students from Puno were on-site surveying while we were there). They hope to have service next year. Families will be charged for hook-up. A water tank has been constructed on the hill above town, which will serve the community. The tank is not operational yet, and distribution lines are only present to 40% of the community. The remaining distribution lines will be installed in a later phase of the project. The water will be pumped from Puno to the neighboring prison, then to Totorani.

We discussed the location of the bathroom that is being funded. They'd like to it be where the playground currently exists, but that is very close to their exiting well. After discussion, they agreed that the bathrooms should be away from the well.

Pre-school children

Existing bathroom

We next visited the upper school. They sang, multiple performances, etc. We had lunch with the director and teachers as well as a representative of the town. They are ready to move forward with the project, but don't have a design completed yet for the bathrooms. Carlos Zanoni of Urubamba visited the community a year ago, but hasn't completed a design. A project works committee was formed a few days prior to our visit, including the neighborhood president, directors of both schools and other faculty members. A bank account will be opened in the name of several members of this committee. Information on the account will be provided to WEFTA by Padre Juan's NGO, VidaPeru. WEFTA should push on the design for the bathrooms. A verbal commitment by the works committee was to have the design proposal and plans ready to go "within 20 days." They also hoped to work with Ing. Carlos Zanoni, but if he was unavailable, they would find another engineer or architect from the local public university in Puno to prepare it. Scott will review/edit typical school bathroom plans from the Bolivian government and forward them to Padre Juan's email address as possible "go-bys" in developing their own plans.

We met with Eloy Vilca in the afternoon at the Maryknoll House in Puno. He is interested in starting an NGO, and had questions about WEFTA. We explained how WEFTA works. He asked if we'd like a Puno branch of WEFTA. We said we'd rather fund local groups. He has several projects he's interested in working on, including bathrooms for a 150-student school, and a health post. He may submit a proposal.

May 31, 2008: We met with Braulio and Jaime to discuss projects. Suma Jayma will likely propose to UNITAS the Machacamarca project, at least one phase. Jason Obergfell received funding from a long-time Maryknoll donor ($5,000), which he will put toward a Suma Jayma project benefiting 20 families with hand pumps who are from the same Batallas-area zone where 5 communities recently inaugurated their hand pumps.

Braulio, Jaime in Suma Jayma office

Jaime with final reports, Jason

We discussed the potential that the WEFTA money currently ear-marked for Habitat community in Chiclayo, Peru could potentially be put to work now while we wait for that project to mature. Chacoma seems like a good place to use it. The Rosa Patatuli project could be proposed to UNITAS for a future funding cycle. This would allow Suma Jayma to move

forward on Chacoma soon, with Rosa Patatuli late in 2008. Suma Jayma will communicate to WEFTA which of these water systems it will present to UNITAS for funding, required to by submitted to UNITAS by the end of June to be considered in the next round of funding, that would likely arrive sometime in September/October/November.

We discussed training potential for Suma Jayma staff. Jorge and Edgar (Suma Jayma technical staff) both have high school degrees, and are both interested in surveying. They could go to UMSA for no cost. To do that, they'd need to take pre-exam courses, then pass an entrance exam. They are interested in WEFTA helping with travel, books, pre-exam course tuition ($25 to $50 for tuition). Another option would be survey training by an NGO dedicated to providing technical training in El Alto and La Paz (InfoCAL). Half the cost is paid by the NGO, the other half by the person being trained. They train in "modules" lasting 6 months each, Suma Jayma discussed having 3 to 5 modules, cost would be $3-500 per person per module.

Jaime has an associate degree equivalent in industrial/mechanical engineering. He's interested in completing an engineering degree, which would help Suma Jayma meet the legal requirements to have an engineer on staff (the government doesn't enforce this requirement currently). He'd need another 5 semesters of classes at $150 per semester plus $75 per month, total cost approximately $3,000.

Another training potential is chlorination training from the UMSA lab staff. Preliminary discussions with the UMSA lab engineer suggested that such a workshop be three continuous half-day sessions. They'll look into this.

Braulio has an associate degree equivalent also. He's interested in completing an administration degree, but wants the other guys training to be the priority. Braulio would like to participate in various seminars from time to time (one day, three-day, week-long) on such topics ranging from municipal law to tax requirement for NGOs, etc.

We received five final reports from Jaime, as well as a proposal for training/capacitation of community drinking water committees. A computer glitch at the tail end of our time with Suma Jayma prevented Jaime from being able to wrap up the remaining final reports. He asked for the mailing address of WEFTA to send the reports to when he wraps them up, as well as for future final project updates which he intends to send to WEFTA within one month of the project inaugurations in the future.

We discussed and revised the "Communications Expectations" document between WEFTA and Suma Jayma. It was a good, open dialogue about what's realistic and what isn't; what's helpful and what could be problematic.

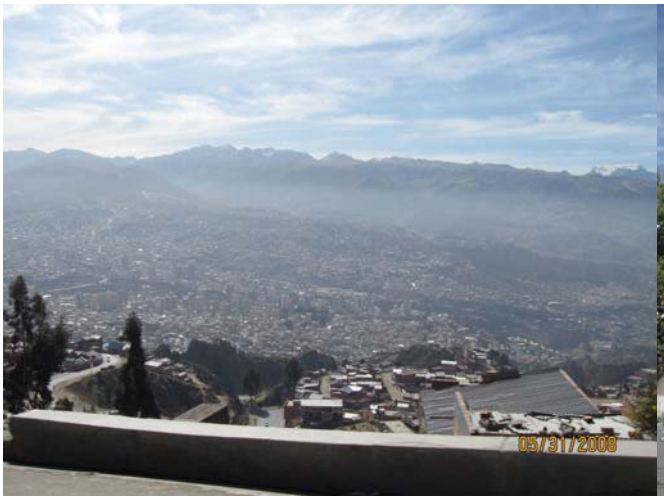
Suma Jayma will also be communicating on a regular basis to WEFTA the prioritization of community water projects it has submitted.

The possibility of simplifying hand pump budgets was presented to which Suma Jayma will follow up on in the future.

All accessories and cables for using the HP calculator as a control unit/data recording device with the total station surveying instrument is in Suma Jayma's hands. Now it's just a matter of learning how to use it... Jason G. will contact Jason O. to see if he might be able to travel up sometime from Coch to El Alto to help the Suma Jayma folks out with this.

Finally, at one point in our time together, Braulio took the initiative to thank his younger brother Jaime for the critical role he plays with Suma Jayma.

Later in the day, we traveled to La Paz.



View from the road dropping into La Paz

Plaza, La Paz