

journals07

- [Amanda LaBelle](#)
- [Brienne](#)
- [Daniel](#)
- [David](#)
- [Earl](#)
- [Evette](#)
- [Melissa](#)
- [Ryan](#)
- [Sara A](#)
- [Sara S](#)
- [Steve](#)
- [Tamar](#)
- [Vincent](#)
- [Zaheer Tajani](#)

Amanda LaBelle

1/27/07

Some thoughts on Honduras...

It was good to be back to Latin America - to the rhythm, the tortillas, the people, the language, the mariachi, the heat. For me, the immediacy of sand, sun, and roosters was a welcome change from the all-too-insulated world of academia.

After spending the semester approaching the problem of potable water in Honduras through MathCAD algorithms, being in Honduras brought the challenge of water treatment into three dimensions, complete with all the nuances and complexities borne with such a transition. Time and again in Honduras we saw treatment plants that had been reduced to skeletal structures no longer serving a functional purpose, designs that failed in some way to make this transition from blueprint to implementation. In their exclusion of such design parameters as accountability, regulation, maintenance, economics, or politics, these plants generally proved to be unsustainable. While the following should be taken with a grain of salt as two weeks is hardly time to begin to understand the intricacies of a new place, new people, new attitudes, and old histories, below are some themes that came out of my time in Honduras.

Perhaps first and foremost is the need for capacity building and the development of human infrastructure. Capacity building means training plant managers to understand not only how the treatment facility works mechanically, but also equipping them with an understanding of the scientific processes to reinforce the significance of each part of the process. For example, knowing that the lamella in a sedimentation tank should be at a 60 degree angle because that is how the designs are drawn holds less immediate consequences than knowing that they need to be this way to achieve the necessary settling of flocs by substantially increasing the active area of the tank. We talked some about the possibility of having a certification class wherein a handful of interested engineers attend and take an exam to chose and certify the plant operators. Such a system would ensure not only a certain level of training, but also a degree of staying power, hopefully capable of outlasting the vagaries of the local political scene. Furthermore, such a system might help to develop an increased sense of accountability and personal investment among plant operators.

Capacity building also means assuring that, on a daily basis, plant managers have the materials, chemicals, finances, etc to effectively operate the plants. It means eradicating the possibility of running out of alum or chlorine or of not having the correct equipment readily available to perform maintenance. It means not having to order parts through Cornell. Or wait for funding from Cornell. I am not sure how one approaches this as it seems so tied to further reaching issues of economic security and availability of resources.

Building human infrastructure also means developing relationships that are broader than the technical realm, that take a genuine interest in individuals and communities.

Secondly, there seems to be a need for community-wide reevaluation of water strategy. This means local education pertaining domestic usage, relevant health concerns, the conservation of available resources as well as some degree of regulation and planning with respect to natural water sources. This was evident in the Tela plant where lack of foresight and land use planning quickly made the treatment plant obsolete. As pig and cattle farmers began settling upstream from the plant, the water was made so turbid the plant was no longer capable of treating it. Now murky waters flow through empty sand filter chambers, are ineffectively chlorinated, and flow directly to people's faucets.

Antonio brought up an additional factor that is especially pertinent when considering these needs and the role of AguaClara. He spoke to the deep-seated history of paternalism in Honduras and the ways in which international help can be crippling to domestic ingenuity and community ownership. That is to say, there is a history of international aid that has led Hondurans to expect that, given time, solutions will come from abroad and, in so doing, has quashed any tendencies for solutions to be generated domestically. The resulting reliance not only discounts the notion that Hondurans know what is best for themselves, but also reinforces a sense of disempowerment to change one's own circumstances, which has implications that extend indefinitely beyond water treatment technologies.

I think this is something that AguaClara generally recognizes and tries to grapple with. It is why we evaluate our presence in Honduras and why the involvement of Agua Para el Pueblo is so very important. It is why the technology should be replicable but at the same time scalable and adaptable, not a cookie-cutter design, but one that accommodates its community both technically and socially. I think this is one of the most difficult challenges of the project - knowing how long to stay and how much to influence and what kind of legacy to leave. At the same time, we should not be paralyzed by these concerns, but aware of them.

Brienne

We've been back from Honduras almost a week now and I am still trying to digest everything that happened. Whenever anyone asks me how the trip was all I can say is "it was really good" because there is so much to say that it's hard to know where to start. I have my day-by-day journal sitting in my room, but I think this version may be more interesting and beneficial to me as a reflection rather than as an itinerary.

Going on the Honduras trip I expected to see a lot of heartbreaking sights. I expected to see poverty and disease, dirty drinking water (of course) and people who had just given up. And while we certainly saw a lot of these things, what shocked me was the amount of truly amazing people that I met. Before going to Honduras I had never really believed the "one person can make a difference" adage that we hear all throughout grade school, but on this trip I got to meet people who really were making a difference themselves and in some ways I think this trip restored a lot of my confidence in the human race.

The first amazing person we met was our driver and Monroe's close friend Jorge. On the surface alone he was a great, happy man who bridged the strong language gap (he only speaks Spanish and I speak so little Spanish that I am embarrassed to even try) with his enthusiastic gestures and ability to communicate. He was one of those people that is just good at everything whether it be playing the guitar, playing soccer, playing basketball, driving- pretty much everything I saw him do on the trip he did well. I think my favorite Jorge moments were 1) the time we were sitting in the town square of Ojojona, all of us a little gloomy and tired- Jorge came up to Sara A. and said, in English, "get happy!" later we found out that he'd asked some of the Spanish speakers on the trip how to say it 2) the time we were in the vans and Monroe asked Jorge what his least favorite part about being our driver was and he said that he wished he could understand our conversations and that he plans to try to learn English now, granted I agree with Sara that he'd probably be very disappointed at the topics we discussed, but the sentiment was very touching 3) the long bear hugs that he gave everyone as we left the airport 4) him singing along with the mariachi band at our final night dinner, I love seeing someone who is so happy and 5) meeting Jorge's wife and family, but more on that later.

On our third night in Tela, we had an "interview" with Jorge and through this and other tidbits along the way, I was able to hear a lot of Jorge's life story. I wish I could have understood it the way he told it because I feel like I missed out on all the details. From what I understand, Jorge grew up in La Ceiba, which is named after the Mayan's sacred ceiba tree and known for producing intelligent people. Jorge tried his best to get through as much education as possible, but in Honduras it is costly and difficult to remain in school for long. I am not sure of the order of his jobs but he had many included driving dignitaries (Monroe was surprised to know that Jorge knew what a "doughnut" was and had been trained to do them) and running his family's sawmill. The family lost the sawmill and a great deal of money in hurricane Mitch, but Jorge's only comment was that he learned a lesson about helping other people. One day we got to see Jorge's house, the family used to own the large house next to it, but had lost it in a sketchy business deal and was forced to move into the small house that they used to rent out. When I first walked into the house I was surprised to see his daughters watching *Gilmore Girls* in the front room. As many people know, that show is kind of an obsession for me and I had a short and very simple conversation about the show with his daughters. I think that little connections like this were my favorite part of the trip.

Jorge's current job is working with his church to help gang members. Gangs are a huge problem in Honduras, when we met students from UNITEC, an engineering university in Tegucigalpa, on girl explained to Z how recently a group of gang members had broken into her apartments, tied her and her mother to chairs, and taken everything in the place. This happens to them every once in awhile and there is nothing they can do about it. If she had a brother, they could gain protection by him joining a gang himself, but other than that they just have to put up with it. It seems that in many cases joining gangs is viewed as a necessity for teens. To join a gang as a guy you have to kill someone and as a girl you have to sleep with a member of the gang. To become a full member of a gang you must kill three people and drink the blood of a person or animal. The members get tattoos of teardrops and a coffin for each person they kill. Jorge works to protect members of the gangs in prison and to help members who wish to leave the gangs. He helps them get out and get rid of their tattoos so they are not always branded from their past life. It's a very dangerous job, and I am guessing that it doesn't pay much, but he does it because he dreamt that it was the right thing to do. Another interesting detail of his job is how the system is set up. His Episcopalian Church works with one gang while the Catholic Church works with another. In this way they both maintain the trust of the gang by no mixing with its enemies, I think it is a great example of cooperation with those of different backgrounds in order to do good in the world.

Jorge's wife works as a teacher. We had a short interview with her as well and she stressed to us the importance of education. She works at a public school and knew she could make more money working elsewhere, but she chose her job because her family had always stressed the importance of helping other people. When Monroe arrived in Honduras, it was apparent that Jorge's family was just scraping by; yet they spend their time helping others who are in worse shape than them. We saw this all over the country, people with little means of their own helping those with even less, and it was very touching. The strange thing to me, however was that here in the US it seems like we have a pattern of the rich helping the poor through donations and service work, but in Honduras most of the help from the poor comes from the poor. The richer people there seemed less concerned with helping others. I wonder which system works best, though I don't know enough about it to even speculate.

The second amazing person we met was at a Mennonite water-bottling facility we went to on a whim. Jorge used his connections to get us in - that's another thing about Jorge, he seems to know everyone in the country. The treatment system was small and expensive looking, certainly not a solution for a community, but for me the water treatment was not the striking part of the afternoon. The head minister explained to us how he had bought the huge factory site near Tela on a loan, which he had to pay back in one month. Somehow he was able to sell all the scrap metal on the site to pay for the land; he attributed it to the grace of God, but I got the feeling that he was the type of man who got things done and that he had known what he was getting into when he purchased the land. He started the bottling plant with the idea of making clean water for his congregation, and it is mostly his congregation that buys the water. He researched the technology and bought it, and now produces clean, good-tasting water at a cheap price. What is even more inspiring is his plan for the rest of the land he purchased. At first I thought that it was a little silly of him to purchase this huge tract of land when only one room of it was used for the water purification, but then he told us why he had bought it. In the future he hopes to form a sort of safe community and commerce area with shops around and a university. This man has a vision of what he can do to help his congregation and his community and he is doing it. After meeting him, I have no doubt he will succeed, and the whole thing was just amazing and refreshing. It is great to know that there are people like this minister and Jorge in the world.

The final amazing person we met that comes to mind (I am sure there are plenty of water board members and others that I am leaving out) was Ken Brown. Ken Brown was a Cornell engineering student who went on to become very successful and is now the main source of funding for the Agua Clara project. He and his family came down to spend a weekend with us for the opening of the Ojojona water treatment plant. The family was fun and happy, and on a more personal note, Ken Brown was the first person in a long time who has made me feel that it's okay to go and work as an engineer then move down the managerial MBA route rather than getting a PhD. But relating to my earlier thoughts on the best way to help people, it was nice to see the American way of helping work. Rather than just throwing their money at a cause, as I believe Americans are prone to do, Ken Brown took his time to find a good project and to check up on it and see it through. As much as I want to make change in the world, I know that I am not a Jorge and could not do something like this for the rest of my life. I want to be the type to go out and join the Peace Corps, but I am just not cut out for it, and it was good to see that there is another way I can help and other things that need to be done.

Another major thing that struck me in Honduras was the way of life. This was definitely the most relaxing, mind-clearing vacation I have taken, and for the first time I arrived back at school on Monday completely refreshed. The number one thing in Honduras was that people were happy. They may not have had much but I didn't see people walking around looking sad or grumpy, these people put on their best clothes and walk around with smiles on their faces. I have a lot of guesses about why this is, it may have something to do with appreciating the little they have or not working so hard. I think it's more likely about the way they interact with each other. When we were in Ojojona we got the UNITEC students to help us do surveys in the town. I expected them to be the way American students would have been, hesitant to walk up to people and afraid to knock on doors. But they were quite the opposite; they quickly walked straight up to people, all of which were happy to stop, talk, and answer the survey questions. If we had done that in the US I imagine that maybe one in every ten people would have been willing to answer, which explains why the American students hesitated before walking up to people on the street. In Honduras, people are welcomed with open arms; the family that cooked for us in Ojojona treated us like old friends and they felt like old friends by the time we left. Also the people there are always outside. The kids are always around playing with each other, interacting with others in the town, and it's great to see kids acting like kids. Also the people there are not as paranoid. Dave asked Jorge's wife a question about kids and food allergies and she sort of laughed and said they had no such things there. They let kids eat with dirty hands when they're little so their bodies become used to it. A lot of the things we saw made me feel like as Americans we are big babies, and more importantly we spend way too much of our lives worrying about what we have and what could take it away from us.

I guess I should close by talking about the water treatment plants we saw, as this was the focus of our trip. While the people of Honduras pleasantly surprised me, the water treatment plants, for the most part, surprised me in a negative way. First we saw a treatment plant in Tela. The plant was mainly broken and just diverted dirty river water to the town, I think they had even stopped adding chlorine because it was pointless. At least the town was trying though, they had gotten an engineering proposal written up for a new plant. However, in a town with only 8% percent employment, there was not enough money to complete the plans (or even pay for the plans for that matter) so the town was trying to get money from another country or NGO so they could build the plant. I knew that much of the country's projects were supported by aid, but I never realized that the country goes out in search of aid. The second plant we visited was La-34, the first plant designed by Agua Clara. We were unsure if the plant was even running because the town had been left to its own devices since it was built before we started working with APP. The plant was running, but at first it was a bit of a disappointment to me. The flocculation baffles were all falling apart and it looked like they weren't maintained well. However, we then went to the town and had lunch with the water board and I realized that the situation was quite the opposite. They were thrilled by the plant and claimed to have the best water of the 8 towns in the area. Even better, the plant operator showed real initiative in dealing with the plant. A float valve had broken, so the engineer had gone into a larger city to get a new one made. He also had managed to secure enough alum and chlorine to keep the plant running for another few months, and I realized that the baffles were a design issue and did not have much to do with the plant's upkeep. Overall it was great to see a town really take to our project and keep it going after we left, it was a big difference from what we saw in La Ceiba. In this town, there were two plants from Spain, and the manager there had no sense of ownership for the plants. The first one had a flocculation system that wasn't really working, and the manager did not know much about how it should work. The bigger disappointment was an entire metal plant that had been shipped from Spain. The plant was not even running because the operators could not get it to work. Apparently there is a similar plant elsewhere in the town that is computer automated and it cannot be adjusted without an engineer from the company going out to look at it. It was sad to see a town that had an opportunity to make their water clean (unlike Tela) but lacked the knowledge necessary. It was a model of exactly what we don't want our plants to be like. The next plant we saw was our recently built plant in Ojojona. This was a bit of a disappointment as well. Again there were major baffle attachment issues, and parts of the plant just weren't built well. Furthermore there was tension between the town and the engineer Gabriel. However, I think that with the new engineer Antonio, things will work better. Also we now have ideas of how to fix the Ojojona plant and how to make our future designs better. Finally, we went to a few possible sights for new plants. These were mostly a disappointment, one town hadn't used its chlorinator for months because sediment had clogged the tube and they were waiting for an engineer to fix it. The town next to Ojojona, however, seemed promising. They were very excited about the prospect, and I think that building our plants in towns near each other would be ideal, not only for APP's sake, but also so the towns could work together in the future for fixing problems and securing chemicals. Ultimately new towns will be the choice of APP not us, but it was interesting to get an idea of what they're working with.

Overall I think this trip was less about the technical aspects, with the exception of the plant fixes at Ojojona, and more about seeing the way things work and making connections with people. We got to connect with Jacobo, the head of APP who always seems to bring a mariachi band with him to dinner, Antonio, the APP engineer in Ojojona, UNITEC students, who may someday be our Honduras student partners, and other friends in Ojojona. We got to see projects that worked and projects that didn't work, and I think now we understand this project more fully and know what we need to do to have successful plants in the future. As much as the engineering and design is important, connecting with the towns and giving them ownership of their plants will be the key to success.

Daniel

Honduras Journal

So let's divide this into three sections: Tela, Ojojona, and Copan.

Tela:

My first impression of Tela was of a town that once was something. Our hotel was right on the water, many of our group's rooms faced the ocean, and the mountains, and hmmm all that stuff. It was sad to see how badly kept the beach was, with trash floating around in the water and strewn about the sand. Also on the beach were loads of children, mainly girls selling pan dulce and maybe a few other little food items. They all sold the same things, and I never saw anyone purchase anything from them, yet they were out selling every day. One older lady offered Steven pan dulce and trencitas. Jeje, he should have let her braid his hair. I would have if mine was long enough.

The hotel room was pretty nice for what I expected. You'd think room 1 would have an ocean view, but our room just led out to a hallway full of A/C exhausts. The first night I made it a point to become familiar with the owners of El Hotel Puerto Rico. They seemed like nice people, and they were. We had dinner at the hotel's restaurant and I had some fried Robalo. I didn't know we would be having fish the next day, but it didn't matter. Since we had been traveling all day, that afternoon/night was free of anything except for our first meeting to get everyone on track.

A few of us tried finding away to communicate with El Norte (the US) but failed because some places were closed. We also tried to buy a chip for the cell phone, and no luck. So the family had to wait. That night a few in the group went around town meeting people. It was great to see everyone trying to communicate even with little Spanish---enjoying the friendliness of the people. We also went dancing at Iguana's, and that of course was a great time. People are a lot more open to just dance in Honduras (compared to Cornell).

The next day we went to Punta Sal, and it was amazing. We got on two different boats and were bouncing around in jellyfish infested waters for about 45 minutes. It was all a blast. Once we got to Punta Sal the difference in the beach and landscape was immediately apparent. There was not one piece of garbage or anything on the sand. The only things there were a few little huts where a family lives. They are allowed to be there because they were living there before Punta Sal was made a National Reserve. Getting off the boats was a bit of a mission for some in the group---no one expected to have to jump in the water to be able to get off. But it was warm and the water was perfect, so no complaints were heard.

The next part of the day consisted of hiking through a trail and making noises to get the monkeys to respond. After this we got on the boats again to a different part and went snorkeling and played like little boys and girls in the water. And we tanned. They were tans that lasted the rest of the trip and beyond. After this we ate fried fish and tajadas (fried plantains) and of course: good old American soda. We were able to hang out for a while, drink coconut milk, eat almonds, but soon we left.

The Tela leg of the trip had those fun parts, but we also worked. We visited a "treatment plant" that was really just, well, nothing. Dirty, really dirty water from the top of the mountain poured directly into a distribution tank where some chlorine was added and then it flowed out of there through asbestos pipes directly to people's taps. Back in the day in the 1940's when the plant was built, the water was cleaner and there was a sand filter in place that apparently used to function very well. But it's not the 1940's anymore and the sand is nonexistent and the water is much dirtier. The water was visibly filthy, it was a brownish color and this wasn't even during the worst season. The water was also much more than just visibly dirty: up on the mountain, above the "treatment plant," there are pig pens and cattle farms and all sorts of contaminants. The water is no where near fit for human consumption.

We also saw other treatment plants near Tela in La Ceiba. There were two in the same location. One was functioning, though not very well. It was a standard floc-sed setup with slow sand filters. I will make a few comments on it: there were fish swimming in the water in the floc tank. It was pretty dirty and the operators weren't very clear on what was going on in general. This is a general problem we ran into while visiting Honduras. Adjacent to this plant was one of the famous Spanish plants. This space age monstrosity was just sitting there, out of use, causing debt to the town that it was "given" to. It is a huge modern looking....thing...that serves absolutely no purpose because it is all computerized and uses many electronic parts that break down and are almost irreplaceable. The operator really had no clue what that machine was about. It was a disaster.

Ojojona:

Getting to Ojojona was a breath of fresh air. It is a tranquil small town with very hospitable people and loads of fun kids running around. The best part of being in Ojojona was by far seeing and working with the water treatment plant. It was a thrill to hike up there and finally see the product of ones work. To many, it was a disappointment and a sort of disillusionment to see the problems that the plant had. I didn't look at it that way. The plant was built in Honduras and led by an engineer who didn't care about the project. It was clear that problems would be waiting. Even so, the plant was functioning and it was a pleasure to see water coming out cleaner than it had started even with the plant not working at its capacity.

After a quick inspection with the group, we discovered that the flocculation tank was only partly working. Some of the baffles didn't quite reach the bottom of the tank and thus the water was not making the up and down travel path it was designed to make. The baffles and lamella were all attached to the walls of the tanks with screws that were placed there rather unprofessionally. A few other problems were discovered as more time passed and I became more familiar with the plant operator, Antonio. He seemed to be very dedicated to the plant and its operation and also knew what was going on and what the problems were. The best part of talking to him was that he also offered his opinion on solutions to the problems. He was very willing to work with us and showed sincere interest in the plant's success. After that first day, a chat with Monroe let me know that he felt the same way. I thought that if this was true, then we had a teammate in Honduras and the plant would indeed work perfectly fine in the end. This was the main source of realistic optimism---the best kind.

While in Ojojona some of us decided that being up at the plant was too much fun and working up there as much as possible was the best way to spend time. After talking to Antonio and learning about the details of maintenance and such from him, we emptied out a sedimentation tank and confirmed yet another problem that we had suspected, the lamella were not only incorrectly attached to the tank, but they were at an incorrect angle. We knew that a relatively small change in lamella angle could cause a big change in functioning in the plant. The water was probably coming out dirtier than it needed to, all due to a simple error.

So we decided to fix the emptied tank as best as possible for the sake of experimentation. The inauguration was in a day and a half, so we had little time to waste. We started removing lamella and placing them under the stock tanks very carefully. It was a mission because of all the wind up there. After a few were out we had to jump in to inspect the tank and finish removing the lamella more easily. Lotta fun. After going in, we saw that the inlets into the sed tanks were also incorrectly made. The cuts on the elbows were totally incorrect ~~another simple error with very negative effects. We called the other group that had gone to a hardware store in Tegucigalpa and asked for tie wraps~~ the second greatest quick rig invention in the world (second to duct tape). We did a few nerdy engineer things involving shoelaces, rocks, and a calculator to figure out the angle we were going to place them in and then got to work. We replaced them and tied them up with tie wraps.

After this it was time to refill the tank and this taught us another lesson. There was no way to refill the tank without disturbing all the settled floc everywhere, including the two other sed tanks. We finished on time and the inauguration was coming.

The inauguration was a great pleasure because I was able to see support and curiosity for the plant coming from all different sources. In line with tradition, everyone thanked everyone for about two hours. It was great. We later trekked up to the plant and had to give a million and one explanations on how it worked to all sorts of people. All a fun time. Then the ribbon was cut and we drank water and Monroe was soaked and all sorts of things were going on.

Memorable character of the day: the old Cuban man with the Billy club tucked under his arm and the unlit half-smoked cigar that never left his lips.

Copan:

Copan was a good last leg of the trip. The first day half the group (I was in this half) went to see the ruins. We had a great tour by an old man who was recommended to us named Antonio. He was great, a funny guy who speaks a million languages and talks about how much of a ladies man he still is. He has been giving tours of the ruins for decades and was very knowledgeable about, well, everything. After his grand tour he got the group in contact with a canopy tour. After lunch we loaded up on the back of a broken down pickup truck with no idea who was driving us or where we were going. We were perfectly safe though, no one could miss a truck full of gringos speeding down the streets of Copan. Once we made it to our destination we were suited up by Ginger Loveless and her gang of Honduran zip-liners. We again loaded up on the truck, except this time with a few extra passengers hooked on the back with their harnesses. The rest I will leave to pictures, it was a blast.

David

Honduras 2007

David Railsback

Travel:

6 hr car ride to Ithaca

7 hr wait for the bus

4 hr drive to Newark

6 hr flight

2 hr wait

3 hr drive to Tela

total time in transit: 28 hrs

Tela

We arrived at the Hotel Puerto Rico. Stefan, Ryan and I got a room facing the ocean. Immediately, we changed into bathing suits and headed onto the beach. I met a guy from D.C. who had been traveling in Central America for 4 months. He had been traveling with a girlfriend and a buddy, but the girlfriend had to return to care for her child, and the buddy had fly back to sell his house. The man's next stop would be the Bay Islands. He said he did not mind traveling alone. He was staying in a hotel that cost him 100 Lempira per night. That is about 5 dollars.

A group of us played soccer on the beach with a local, about our age. The goals were coconuts.

The hotel room had two double beds, one next to the other, a tv, and a cold-water-only shower. When I took my shower it was only a trickle. I found out that the trick to getting enough water to bathe was to not flush the toilet before showering. There wasn't enough water pressure to fill the toilet and run the shower at the same time. We had a large group dinner. I had fried conch and a Salva Vida. I drank and brushed my teeth with bottled water.

We all ate breakfast at the small restaurant next door and then left for the docks. Breakfast was fried plantains, some meat, eggs, and fruit. We boarded boats and headed off for Punta Sal. Punta Sal is a nature preserve on the north coast of Honduras. Melvin was our enormous guide. We began with a short hike through the forest, over a small ridge. We saw a crowd of Howler Monkeys in the trees. Melvin tried to get them to howl by yelling monkey noises at them. The snorkeling was not good because the water was cloudy. Only a few natives live on Punta Sal. They lived there since before it was protected and so were allowed to stay when it was made a National Park. They catch fish in the morning and grill them for the tourists in the afternoon. I believe that was my first time eating a whole fried fish. I had two.

The ride back was more choppy. Some people looked ill. I spotted another boat waving a flag. The boat was long and slender, with about six people on board. One woman was very old, lying on the floor of the boat. They were having engine problems.

That evening I asked the owner of the hotel if she could change 20 dollars into lempira for me. She said she couldn't, but that she would let me borrow 500 lempira for the night.

We visited the water treatment plant built in the community of La 34. The plastic baffles in the horizontal flocculator were in poor condition. They were very brittle and the operator said something inevitably broke whenever he cleaned them. The hike to the plant was steep and fun. On the way down, I noticed that my foot hurt. I looked down and it was covered in small red ants. I had red marks where they bit me. We had lunch in town, prepared by our hosts, and many thanks were given by the community. The members of the water board were there. The community seemed very satisfied with their improved water.

We went to visit the water treatment plant for a portion of Tela. There was once an effective treatment process there, apparently. Now brown water passes through a grate, is mixed with some chlorine, and is put in asbestos concrete pipes for consumption by the population of the poorer section of Tela.

The next day we visited the Dole Pineapple plant near La Ceiba. Shoes and long pants were necessary to get in. Vince had pants and I had Shoes. Rock Paper Scissors, I win. It was the most modern thing I had seen so far in the country. In a very scientific system, pineapples are sorted according to size and color. Cameras help sort the fruit. Pineapples that will last the longest are sent to Europe, those with less shelf life are sent to the US, and the rest are sold in Honduras. All palettes sent into the US must be treated with heat to kill any pathogens they might be carrying.

We visited a water bottle filling station. The plastic jugs are cleaned and filled with water from a filter and UV light purifier. Soda and beer bottles are also reused. They are much heavier than US bottles and they are clearly worn down. Some bottles looked like they have been in circulation for a long time.

The water treatment plant for La Ceiba was also more modern. It was made in Switzerland. Seems like it would be difficult to repair.

We also visited the wastewater treatment plant. There was a series of lagoons where wastewater was gradually broken down and cleaned through natural biological processes. I asked the plant operator where, from the second lagoon, water was taken to be released into the river. Is the cleanest water at the bottom, middle, or top? This seemed like a basic question, but the woman showing us around did not know. She said that it was in the plans. She was a civil engineer...

During the drive to Ojojona, we passed by Lago Yojoa, the large lake in the center of Honduras. I was sitting at the small sandwich shop, eating my jamon y queso, when I noticed the stout man standing in the doorway with his finger on the trigger of a worn-down shotgun. I gave him a look like "how are you doin', guy with the shotgun?"

He gave me a look like "Good, how do you like my awesome shotgun, gringo?"

I said to him "Como se dice eso?" (What is that thing called?)

He looked at me, real gangster like, and said "Escopeta... Doce."

When we arrived in Ojojona, the first thing some of us did was to play a small game of soccer with some children. They also asked us for money. The town center was cobble stoned with a small pulperia, an internet room where some classes were taught and one could check three emails in a half an hour (forget about sending one), as well as some municipal buildings. The family we stayed with seemed to have cleared out of part of their house to make room for six guys. I roomed with Vince. Ekeh, EJ, Ryan and Danny were in the other room. The toilet flushed by pouring a bucket of water into it from a 55 gallon drum. You showered using the same bucket and the same 55 gallon drum of water. Who needs Honduran coffee when you have a Honduran shower? The nights were cold, and a sweater and maybe a hat could be appropriate. The days were still sunny and warm. The only time I saw prolonged rain in Honduras was in Ojojona one morning.

A few of us went to see the small water distribution system for the nearby town of Santa Ana. It consisted of two distribution tanks, each with a box of chlorine solution on top, which is meant to drip in continuously. The plant operator, a man with a curly mullet, said that sometimes he comes to check on the distribution system and the tank is full. This concerned him because that meant the pipe was clogged. Sometimes he returns and it is empty. This is better, he said, because the chlorine was in the water, and it was working. He did not seem concerned about any negative health effects if the water did not have chlorine in it. The system would often be without chlorine for a period of days.

It was also a pleasure to meet the mayor of the Santa Ana. We sat in his office and I didn't understand a word he said.

We saw the Ojojona plant for the first time, and it was easy to see how the next one could be improved. The baffles in the flocculators were made of the same cheap plastic as in La 34. Some already looked broken. Baffles in the vertical flocculator had been spaced incorrectly. The lamella in the sedimentation tanks were also at an angle of 75 degrees instead of 60 degrees. This problem was fixed in one tank by moving the baffles over a few screws and securing them with plastic pipe ties. The fact that there were screws in the wall was troublesome for Antonio, the plant operator. He said that they leaked and needed to be fixed. The next design should not require any kind of screws going into the sedimentation tank walls.

Antonio seemed more concerned with technical aspects of plant maintenance than other plant operators we encountered in Honduras. I spoke with him about the switch from CMU's to Bricks for the next plant. He preferred bricks because he said the porosity of the concrete had proved to be a problem.

The UNITEC students from Tegucigalpa seemed mildly interested in the plant. They asked questions during the pilot plant demonstration and some became involved in technical discussions at the plant.

Every day at 4pm, all the able bodied young men of Ojojona go out to the field and play soccer. Most are small games with small goals. People of the same skill level seem to find each other. I played with a group of locals with Ryan, EJ, and Ekeh. I accidentally kicked the ball into the face of one of the locals, got the nutmeg about 4 times, and didn't score a single goal. Afterwards we played some basketball and I felt like a god when I could jump and touch the rim.

The next day was the opening ceremony of the Ojojona plant. The daughters of the director of Agua Para Pueblo translated to me during the ceremony. At the plant I poured a 5 gallon jug of water over Monroe's head. He got me back. It seemed that about fifty people attended the ceremony that I had not seen before. I'm guessing local folk coming out to see what they were paying more money for.

The next day we drove to La Tigre in Pico Bonito National Park. The vans did not make it up one very muddy hill. The hike we took was pretty, but unimpressive. There were some very large trees.

Afterwards we went to a cathedral in Tegucigalpa. We met a few of the UNITEC students there. Ernesto pointed to a tall doorway about twenty feet off the ground. He said "that is the door that David uses to get into the church." The church was beautiful, but not well kept. The dome, for example, was dirty. Afterwards we went to a park overlooking the city. After that we got ice cream.

I went to UNITEC to drop off the pilot plant and spinning bottle test. After trying my best to explain in Spanish and English how the pilot plant is operated, we went to get coffee and the café on campus. We ran into a few of the students we had met before including Ernesto. We sat and drank coffee and I learned a few Spanish structural engineering terms. I also got a UNITEC civil engineering shirt. We left the pilot plant as well as the rolling bottle test at UNITEC with a few scales, pH test kits, alum, and clay.

There were some young children at the house where we ate our meals in Ojojona. I played a lot of soccer with them. There was also a stack of wooden planks in the back yard that they called "el barco". Jose liked to play the game where he would cover your eyes and make you guess who it was. The problem was that Jose was the only one ever playing the game. This made the game easier for everybody else. One girl was deaf. Communicating with a deaf girl who speaks Spanish is very difficult. Somehow, though, she still had a lot of fun playing with the group.

For the 7 hour car ride from Ojojona to Copan I took Tylenol PM. I was out like a light. Apparently I drooled a lot in my sleep. When we stopped for gas there was a monkey chained to a bench outside. I fed it some nuts but when he scratched my arm a little bit I made a noise. Then he freaked out. Good thing it was on a short leash. Crazy monkey...

The hotel in Copan must have been a star higher. Some rooms had hot water. The room I shared with Vince didn't. Our room had a window into the center of the hotel where people would eat breakfast and hang out in hammocks.

I went to a bar with Vince called the Red Frog. It was owned by a young (25 yrs old?) American who had purchased it online for four thousand dollars from a man who was being run out of town. We found out about the canopy tours and bird park from Sam the hippie. Sam made and sold tie-dye and jewelry at hippie craft fairs across the US.

I went to the Mayan ruins with half the group. Our guide was Antonio Rio. He claimed to be in the Guinness book of records for his many years of guiding and many languages. I didn't find him online.

We did the canopy tours in the afternoon. The longest wire was 1km long and 300 ft high. The views were breathtaking. The guide was an Army brat. His father had been stationed in Honduras when he was young. He married a local girl and had a little boy.

I went to a bird sanctuary called Macaw Mountain. I learned that Pappagaya birds can live to be over 150 yrs old. They open coconuts with their beaks. I put my finger in the beak of a Toucan. It held my finger and shook it hard, but it did not hurt. They had a bird that was trained to cry like a baby when the trainer put him in the trash can.

And now, a reflection...

I think that Honduras has a problem with initiative. If all the baffles are breaking on La 34, why hasn't something been done to fix them? If the material has proved to be flimsy, why haven't plant operators given recommendations for new materials? If the plant operator in Santa Ana often finds that chlorine has not flowed into the plant for days, why doesn't he make more frequent trips to the distribution tanks? We also discovered on the trip that the APP engineer Gabriel Lopez rarely visited the Ojojona construction site. I spoke with a business professional in Copan who said that people who worked for him in a manufacturing plant did not come to work with the attitude to get anything done. The just came. Maybe I am being harsh. Maybe I have been influenced by a few abnormal observations and conversations that do not reflect the true motivation that exists in the average Honduran. Certainly there are many shining examples of Honduran resourcefulness, ingenuity, enterprise and drive. And laziness is not an isolated incident. We are, after all, Supersize America. I think it is important to have more people like Antonio involved in APP. He brought ideas to the table, including suggestions for improvement. He seemed motivated to make things better.

Earl

Sunday, January 7, 2007

Today is Sunday, a day of rest. Let me start with yesterday since this is the first time I am able to write since then. I rushed to pack around 10 pm. We boarded around 8:15pm and arrived around 1:30pm(eastern time). Flying in I could see how beautiful the country is and how much farming they did. We got to the airport and waited 40 mins for Prof. to arrive with the buses to take us to Tela. When we first got to the airport a little boy approached me with his hand out. I searched around for change to give him. We settled into a hotel, Hotel Puerto Rico, that sat right on the side of the Atlantic Ocean. That first day we frolicked on the beach and played a little soccer. That night we ate at the hotel. I had an enormous migraine headache afterward and went to sleep earlier. Some folks went out.

Next day, Sunday, we took a small speed boat to the beautiful island of Punta Sal. It was directly across from the hotel, about 45 mins away. On the way there our tour guide told us that a total of about 60 indigenous people lived on the island and that it was turned into a national park. We docked and set foot on a trail through the forests on the island. We saw monkeys, palm, almond and banana trees. Our guide also pointed out a tree that secreted a sap that was similar to blood, we were not allowed to cut them though. We snorkeled and chilled at the beach for a little while then ate a feast of fish and rice and peas for lunch, it was delicious. On the way back to Tela we passed by a boat waving a flag; our guide turned our boat towards them to see what was wrong. turns out their motor was malfunctioning but still ran, so we continued on and told them to get help at Punta Sal. We cleaned up, and ate dinner and headed out that night to a disco. It was interesting. Buenas Noches.

Wednesday, January 10, 2:39AM

It has been 2 days, and so much has gone on I may have forgotten everything I wanted to write. Let's start with Monday. No, let me start by saying that I am still getting used to cold showers. Anyway, it could be worse, so no complaining. Monday we set out to La 34, home of the inaugural Cornell designed water treatment plant (W.T.P.) in Honduras. It was a rainy morning, but a peaceful ride. We had to trek up a mountain path to reach the site, crossing a stream and climbing a steep hill. Fortunately, by the time we reached it had stopped raining so we could enjoy God's beautiful landscape in the mountains. We looked over the plant and discussed current problems the operators were facing. The chlorinate was not working up to standard, but was still effective. We hiked back down to the village of La 34. The citizens and water board opened up their homes to us with welcoming arms. We sat down to eat a lunch the had so generously prepared all morning. The councilman in charge of water treatment and a public safety officer spoke to us and they expressed how grateful the town was and appreciate they were to have clean running water. This was defiantly a motivation for our team and the work that we are continuing to do for this project. Everyone on the water board gave a small speech continually thanking us for the help. We also talked about small issues they were having with the plant and possible solutions. One thing I found interesting is that they asked us on advice for conserving water, however, I feel like we should be the last people to give this advice because as over-privileged Americans we waste water every day in unbelievable amounts. Also, we do not know the day-to-day lifestyle of the individuals of this town and how they use the water. Everyone was tired after eating. Mad props to the translators on this trip. Shout out to Evette and Danny, they worked hard without complaint. I would give them time and a half pay.

After La 34, we headed to a water treatment and bottling center located in Tela. It was overseen by a Mennonite sect established in the country. Site was originally a banana box production plant. It was bought with continuing plans to build a school and church on the property. The man we spoke to felt led by the Spirit to set up this water treatment system in a small room on the property. The water was sold to help pay for the expenses and upkeep of the church as well as provide clean water for its members. I thought his testimony was great; it showed how strong his trust and faith was in God to help in raise money for the facility. This visit was short, but a good experience. A friend of mine on the trip pointed out how much more faith people have in these types of countries because they have no other options. In America we are so privileged and blessed, so we don't always feel the need to rely on God; but then he said remember how everybody filled up churches after 9-11. Anyway, let me get back on target of this trip.

We then left to go to a treatment plant run by the city of Tela. From what I understood, it provides treated water to a small village adjacent to it. The living conditions were some of the poorest I think we saw on the entire trip, and the treat of the water was poorer. A river ran alongside the village, but the water was very contaminated with animal feces and byproducts resulting from cattle and pig farms that lied further up the mountain towards the water source. All the plant did was add chlorine and distribute the water. With our knowledge we now how ineffective this is for water with very high turbidity. The operator himself, knew this was not really helping the water supply, but explained how difficult it was to make changes since people did not want to change. he said if they stop the water for a second the whole town would be on his back. This is the first example of many that we got of how important and difficult this situation is. It is important to educate the society about the importance of water treatment to their health. They have been living with untreated water and see no problem with it, so why change? Is it our place to not only design these plants but to also educate? The social aspect of this project plays a major role that cannot be overlooked by our team.

Dag, that was just Monday. Tuesday was an even longer day. We started out by visiting a W.T.P. in La Ceiba that was quite modern and developed in comparison to what we have been exposed to so far. A tour was given on the process and of a new center they were building adjacent to it. Next, we visited a waste treatment facility in the same town I believe. It was a simple process that just included a series of sewage intake pipes and retention ponds. They let nature do its "natural" work on the water to clean it. In the first pond biological processes killed bacteria, next they let the water sit some more before dumping it back into a nearby river. From there we got the opportunity to talk to Jorge's wife. I think I left out earlier that we got the chance to talk to Jorge on the second night of this trip. He had a excellent testimony share with us about the work he was doing with gangs in Honduras. His wife was a teacher and she talked with us about the educational and political system in Honduras. (Also about globalization good, bad, and ugly). One repeated lesson is that folks always try to run up in a country without knowing about the lifestyle of the people and implement their own plans which may or may not work within the environment. I've concluded that any engineering is social engineering. We design things for the betterment of people but we first have to analyze the behavior of society and how we can help, not force "help" on others.

For the remainder of this trip, a combination of laziness and lack of time forced me to shorten my journal entries.

Wednesday, January 10, Evening

We drove to Ojojona, not too long of a trip. One word to describe the landscape of Honduras. BONITA. I can't get over it. I could drive through these mountains for days.

Thursday, Jan 11

Visited Unitech in the morning, a technical university in Tegucigalpa, the capital of Honduras. Attended a meeting about the future of APP and Cornell's involvement in this project. The future is promising as they seemed to be a great interest in what we were planning to do. On the flip side I got sick this night. Had fever chills, stayed in all night and until the next day.

Friday, Jan 12

Unitech students came over to Ojojona. We showed a demonstration of the pilot plant and took them up to visit the plant. I did not want to miss out on this experience because it was interesting to see how native Honduran students would react to this concept. My Spanish is limited, that really hurt me. I could not stay the whole time however, got nauseous, went back to bed and slept the rest of the night.

Saturday, Jan 13

Opening day of the plant in Ojojona. I didn't care how I felt today I was making it out for this and I am glad I did. The town and water board dedicated the plant it was a great ceremony. See pictures, they speak thousands of words.

Sunday, Jan 14

We went hiking in "Cloud Forest". Visited the largest cathedral in Tegucigalpa. It's something about churches that give everyone this feeling. This place was grand. Went out that night for dinner to celebrate Mrs. Brown's birthday. Saw a real life mariachi band for my first time. Good times.

Monday, Jan 15

Went with other group members to change the baffles in the sedimentation tank. They were originally constructed at incorrect angles. Went to the town right beside Ojojona, Santa Ana to survey some of the citizens about their water. Santa Ana was a possible future site for us to work on. Played soccer in the evening.

Tuesday, Jan 16

I'm not one for long road trips, so the idea of an 8 hour drive to Copan was not too thrilling. Legs and knees cramped up, still good though. Got a new hotel with hot water +++. Walked around town a bit, definitely a tourist spot.

Wednesday, Jan 17

Went to Santa Rita, possible site for us. Prof. met with the mayor. I got tested for parasites and bacteria. Tests came out all negative, still have issues though. Visited a very dusty coffee plant. Walked around Santa Rita. Saw US AID bagging up and giving out food. That night we had a meeting. Jacobo Nunez and Luis, a grad student/professor spoke to us. I think this was one of the best and most meaningful experiences on this ENTIRE trip. As Americans coming to help a so called "third world country" I think it is easy for us to become prideful especially when everyone is thanking and is so appreciative of us, but it is important to remain humble and remember we are no different than those that we help. The two men did not really talk about this but this idea came to me while they spoke about the importance of making Hondurans aware of the dangers of the unclean and untreated water they have become accustomed to. They talked about their meeting with the mayor of Santa Rita, I enjoyed listening to this. It brought a sense of reality to our work.

Thursday, Jan. 18

A group of us visited Copan Ruins. I could write for hours about this but the pictures tell all. Again, I love things like this and enjoyed the whole tour through the ruins seeing these structures that were built so long ago and were STILL STANDING. SIMPLY AN INCREDIBLE TIME. I would go back to Honduras just to visit them again. Also went zip lining across canopies near to Copan. Exhilarating. Karaoke later on in the night, interesting time.

Friday, Jan. 19

Went to visit the museum at the Copan Ruins, saw more replicas of structures that were excavated. Ran some errands, talked to my parents. Happy 62nd Birthday, Dad. We had our final meeting/wrap-up. Split up into groups and discussed two very important topics about the trip and our project. One, what is hindering people from getting clean water, and two, where do we see Agua Clara in 10 years. The discussion during this time was needed and a very good way to end the trip. That night a mechanical bull ripped my middle two apart, so I went to sleep early.

Saturday, Jan. 20

Never been so glad to see America, I didn't even care that it was below 20 F and snowing. I'll never take hot water and clean water for granted.

Evette

Evette Roldan

January 26, 2007

Honduras

Saturday, when I got off the airplane I was greeted with a lovely wave of warm air. Actually, it was really hot and perfect. Once everyone got through immigration found Laurie and Todd, who had decided to wait for us instead of heading off to Tela. It was great that they did that, especially since Laurie had a cell phone and was able to call Monroe and find out what the deal was.

Monroe's grand arrival to the airport was excellent. He was wearing bright blue pants, bright orange tennis shoes, a tropical patterned shirt, and a hat. As he walked towards us he had a huge smile on his face and his arms held out. We then piled into the vans and were off to Tela.

At Tela, Sara A, Cherish and I shared a room. After setting our stuff down we quickly changed into our swimsuits and made our way out to the beach.

Sunday was one of our tourist days. We had an early breakfast and headed off to where the boats were. It was about a 45min boat ride to Punta Sal. Once we were there we had a nice little hike, which would have been more enjoyable if I had not been wearing sandals, but oh well. The boat then picked us up and dropped us off at our final destination in the park where we would be having lunch. The afternoon was spent eating good food, sitting on the beach, and the floating around in the ocean. Given our lack of beach balls some of the guys resorted to tossing around a coconut, it was pretty funny and luckily no one got hurt. The boat ride back to Tela was great. The water was a bit choppy than it had been on our way out. At times we would catch a wave that would lift the boat up a few feet and then...bam, down we went. People on the boat would then burst into laughter mainly because you would get that falling feeling in your stomach and secondly because of the pain your butt experienced as it regained contact with the seat of the boat.

Monday we visited La 34. We waited at a gasoline station for the plant operator to come and meet us. Once they got there we headed towards the plant together and they led the way. At some point we lost sight of them and Jorge asked a man on the street if he had seen a green truck pass by, and if the truck had turned or had kept going straight. The man indicated that the truck had gone straight so we continued on our way. Within a few meters from that man we approached what appeared to be a very steep downhill. Jorge didn't trust the look of it and he got out of the van to make sure we weren't about to drive off a cliff. After checking it out he smiled, shook his head and signaled to the other van to head back.

The water board at La 34 hosted a lunch for us and afterwards we were able to hear their thoughts about the plant. They were all really happy with it and were telling us how out of the five neighboring communities they had the cleanest water and that water borne illnesses had gone down since the opening of the plant. The treasurer finished by saying that not everything had gone perfect with the plant and that they had run into some financial trouble, but in the end it was all worth it.

Tuesday we visited a Dole pineapple-packaging factory. There I ate the most delicious pineapple. Later the plant manager who was giving us the tour informed us that the pineapple we had just eaten was actually of poor taste compared to ones they pick during the prime of the season.

Wednesday we traveled to Ojojona. As soon as we arrived we had a meeting. Oh yeah I've failed to mention the various meetings we had through out the trip. At this point in the trip we had had quite a few of them already. The meeting in Ojojona was pretty enjoyable. We talked about what we wanted to get done and how we were going to get it done as well as reflected a little about our trip so far. The enjoyable part was translating for Martin who was a pretty cool guy and was getting a kick out of our little meeting.

Thursday after lunch we went to Santa Ana and met with their water board and mayor representative. It was encouraging to see how much these people wanted to improve their water. Their current water treatment consist of a water tank and a chlorine drip, which they themselves realize is not effective. The mayor representative summed up their need of cleaner water when he said "I can't say for sure that I come out of the shower cleaner than how I went in".

Friday the students from UNITEC came by. We started off by giving them a demo of the pilot plant and the rolling bottle test. While translating I learned some new technical vocabulary in Spanish, which is pretty cool. After the presentation we broke off into two groups and we led the way to the water plant. The UNITEC students were really lagging but we eventually walked up the hill to the plant. Yup, we walked right up the wrong hill. However, we did have a nice view of the plant and of the hill we wanted to be on from where we were standing so we were able to clearly show the UNITEC student where it is that we were trying to get.

Saturday was the inauguration. There was a good turn out and the town seemed excited about the plant. The best part was when David and Ryan soaked Monroe with a 5-gallon water jug. It wasn't filled all the way but there was still a fair amount of soaking achieved.

Sunday was our tourist day number two and we headed to the cloud forest and to Tegucigalpa. We ended the night eating dinner at El Patio where the mariachi came along and we had ourselves a little dance.

Monday was very interesting. I was able to go to the APP offices and meet up with the accountant. Together we went through every receipt pertaining to this project. At the end of it all I realized that the money was all accountant for, however I don't necessarily agree with some of the expenses made by the engineer. Hopefully we can work with a different engineer for the next project.

Ojojona was the part of the trip I enjoyed the most. It was nice to see the plant up and running and to finally be able to see with our own eyes what it was that we had been working on for an entire semester. However the thing I like the most was the feel that Ojojona had. We still got up early and had our morning and early evenings packed with things to do, but when all was done we could just sit, relax, talk to someone, or go and play some soccer with the local kids. It was also nice to be able to come "home" for every meal and afterwards be able to get to mingle with the family.

Tuesday we left Ojojona and went to Copan. The drive was that much longer than the one from Tela to Ojojona, but the winding roads and the going up the side of the mountain only to come down again didn't sit too well with me. My ears were going crazy for most of the ride and at the end I was trying not to think too much about the winding road since it was making me queasy.

Wednesday we visited Santa Rita, a possible future site for a water plant. Water treatment at the time was non-existent. The chlorine drip had not been functioning for about two months I would say, but the operator only noticed a problem a month ago. However, the problem had not been fixed because they didn't want to touch it until the engineer came. While we were there we discovered that the problem was a dirty pipe, but when we suggested cleaning it, they made it clear that they wouldn't do anything until the engineer came. It was sad to see how the operators had no confidence, or perhaps knowledge of the system, that they didn't even want to clean out a pipe without the engineer there to supervise. Not to mention that the tanks were about 10 years old and full of leaks.

The meeting with the mayor wasn't that much better either. At first the mayor was only coming up with reasons why they wouldn't really be able to invest in a plant at the moment. It appeared as though water quality wasn't even a concern. It wasn't only until he saw a picture of the plant in Ojojona that he took interest. He explained that he thought we only wanted to build a tank of some sort, like the ones they already have. After seeing that we wanted to build a real water treatment plant he was excited and started mentioning some dates and meetings that he wanted Jacobo to attend in order to get the community interested.

Thursday and Friday were more tourist days. We went to see the Copan Ruins and went horseback riding. I spent Friday buying souvenirs for my family. The trip ended with a nice dinner and a mariachi.

Saturday we headed back to Ithaca, where it was cold and covered in snow. Oh yes and Monroe didn't say goodbye to us as he got off the bus. He didn't even wave. He jumped out of the bus and didn't look back.

Melissa

Melissa Wrolstad

January 26, 2007

JOURNAL BABY!

Honduras

Note from the Author- As I was writing, I just kept remembering more and more things to write. So, consequently, this journal is quite long. Feel free to jump around from section to section because I'm sure some are more interesting than others. =^)

Friday/Saturday: Wow... finally finished packing, real last minute. Then Cherish came over and we dropped off her car on North- hey the bridge is finally open one way! We started watching the Princess Bride on TV. Turned out they were playing it back to back, so we started watching it again, and then Sara and Dave came over. We watched Princess Bride a couple more times, and then started driving people up to Hollister. The entire time I sat terrified that someone would forget to show up. Like magic, all but one person was at Hollister at 1:55am, Luis showed up at 2am and we were off. We slept on the bus and the proceeded to sludge through the Newark airport. Ugh: getting 19 people who haven't slept through an airport at 5am- especially when they expect you- their currently semi-comatose leader- to lead them to the plane. Hey, we made it. The flight was nice- especially the real silverware and meal! I mean, the food wasn't good, but they gave it to us which was a treat. Finally, we arrived in Honduras, and it was so warm, and surprise, everyone spoke Spanish. The airport officials BARELY checked our bags as we left. It was actually pretty funny, we had to put all the bags through one of those security devices where they can look through your bags, except no one was really looking at the screen. Oh Honduras. =^)

Finally Monroe showed up after some cards /guitar playing in the airport lobby, and we were off to our hotel. It was my first taste of terrifying jam-packed van riding over the crazy roads of Honduras. Finally we arrived at our hotel ON THE BEACH! We had our first Honduran dinner, which was certainly interesting. The plantains were very tasty, but the beans looked like black tar (and had that consistency), and the rice was good, but the cheese looked like tofu. Oh, and the Coke was really really good. They make it different in Honduras, I think they use sugar cane sugar instead of corn syrup. Mmmm.... And then we took out the guitar and played music and sang on the beach listening to the waves until our eyes started to droop, and we headed to bed. Who gets to play guitar on a beautiful beach on the Carribean with toes in the sand, singing for the waves....?

First Sunday: This morning, I woke up at 6 and went with Laurie, Todd, Z, and Sara to try and catch a mass before we went on our trip to Punta Sal. Turns out, we had the wrong time, so we ended up only catching the last 20 minutes or so. Then we headed over to the place where the boats were going to take us to Punta Sal. The boats fit about 14 people, so we split into two groups, put on our life jackets, and we were off. For me, this was one of the most breathtaking/poignant parts of the trip. In the States, I've always lived near a lake (Lake Michigan, Lake Winnepesaukee, one of the Fingerlakes) and so I've never seen waves like they have in the Caribbean. We traveled over 45 minutes of waves, but to me it seemed like riding through the rolling hills of the great plains- except the hills were a mirror blue color and they actually rolled. I can still feel the breeze in my hair, and the feeling of rising and falling several feet with each wave. Thank goodness no one had a weak stomach on our boat. Every once in awhile, we would ride over a wave in such a way that we'd suddenly drop a couple feet- and BAM, we'd hit the water again and everyone would laugh because their stomachs and butts had definitely felt that one. Finally we arrived at the beach- no dock- it was jump in the water, try not to get soaked as you fight the waves to the shore. Unexpectedly, it was time to take a short hike through the rainforest. The highlights were definitely the lack on our part of hiking shoes, the monkeys, the banana flowers, and the story about the woman who fought to preserve the island and was killed for trying. (So now the forest is preserved in her name.) Next we were off to the beach. We spent the rest of the afternoon running around in bikinis, swimming in the beautiful beach, drinking coconut milk from machete-ed coconuts, and eating delicious island food. (There are only 15-16 people that are still living there, and they run quite the business making delicious food for tourists.) After our wonderful time, we headed back onto the boats for our ride home. Except this time the water was much choppy. I cannot tell you how thankful I was when someone suggested that I sit on my life jacket instead of wearing it, and just hold on for dear life (to preserve my butt.) It was quite a crazy ride- every two minutes or so you'd hear a giant BAM! as we dropped a few feet. For the first five minutes everyone laughed, but after that- as it caught up to our butts- and quite frankly started to give me a headache- it wasn't so funny. =^)

We encountered a boat on the way back that had flagged us down because their motor wasn't working. It was an entire family just floating along. Turned out they were alright, so we continued back to shore. After our return, Laurie, Todd, Sara, Z and I went and caught an entire Sunday night mass. I couldn't understand what they were saying, but I was struck by the decorations which were marked by Christmas lights and chipping stain glass, and also the music which consisted of two women guitarists singing, and then- get this- a tambourine section! Oh, I love the tambourine, and it just cracked me up that it was this old guy and this little boy, keeping up the percussion perfectly in sync through every song.

Jorge's Talk About Work With Gangs: I am not sure what day this was, but I think that it should be documented to some degree. Jorge was one of our two drivers on the trip, and a good friend of Professor Monroe's. I just got the summarize/translated in to English version of the talk (so hopefully some of the other journals cover this in more depth) but here's what I got out of it. Jorge has nine kids, lost his business in Hurricane Mitch (which was fairly recent), and lost his house in a recent corrupt business deal (so now his entire family lives in their tiny guest house which they used to rent out.) At some point awhile back, some property that Jorge owned was destroyed by one of the gangs that are rampant in Honduras. After this, Jorge had a dream or series of dreams that convinced him that he should devote himself to working to combat the gang problem. His church has developed a relationship with the largest gang to be able to work on helping get people out of the gangs safely. In exchange they give the gangs AIDS information/training- AIDS right now is a huge problem in the gangs. He told us horror stories about how people get into the gangs, how people move up through the gangs, and the incredible dangers that working with gangs puts him in. In order to gain rank in a gang you kill a person, and have a tear drop tattooed on a cheek. Once you kill three people, there's a ritual where you kill another person or animal and drink their blood. At this point he said, these members feel like they can never leave the gang or repent because they're so far in. For women to move up in ranks, they have to sleep with whoever they're ordered to sleep with (hence the AIDS problem). Jorge works on getting people out- getting their tattoos removed, working out negotiations with the gangs so that these people can try to get themselves out. It's incredible work.

Tela Water Treatment Plant: While in Tela, we visited the water treatment plant. The Tela water treatment plant was really sad. Apparently when it was built in the 1940's, they had a clean-ish water source, a rudimentary filtration system, and chlorination system. Now, farmers have moved uphill of the plant, so farm animals are polluting the water source, there is no filtration system anymore, only chlorination. Chlorination doesn't work if the water is dirty (with a turbidity of more than 30 ntus) because then the chlorine just attaches to the dirt and becomes a carcinogen instead of cleaning the water. In the rainy season the water is usually over 100 ntus. Also, the distribution system and pipes are not documented anywhere- they're "saved in people's heads". I wasn't really convinced by that, it really sounded like a mess.

Tela Nights: We headed on over to the Iguana dance club one night. We were all really excited- especially me- to dance. It was SO LOUD. Oh my goodness, my entire body was vibrating. And the band was hilarious- it was like a Honduran 'NSync- they had matching outfits, danced and everything. They weren't particularly good, but they were definitely good looking. =^) All of the music was meringue- which really happened to be the case all over Honduras- and the biggest disappointment for me on the trip. I was hoping for tons of salsa and new kinds of music I'd never heard AND especially tons of hot Latin guys to dance with. I found the hot Latin dancers pretty much absent. There are more hot Latin dancers in Ithaca than everywhere we went in Honduras. Life is funny sometimes.

La34- Our First Project: We got to see the first plant that our project designed in a teeny city called La34. It was a real thrill seeing it working, but more of a thrill to see that the community has really taken over the plant. They keep it running and maintained beautifully. We got to have lunch with them- and it was truly lovely. They were so thankful. I think it was the first major step the process of our team really seeing the true implications of our engineering work. It's real- it affects real people.

The Mennonite Water Bottling Plant: One of the many stops that we made was to a tiny little water bottling plant. It was in the room the size of a typical living room, and bottled enough water for a Mennonite congregation and some town's people. It was somewhat impressive. Then started talking to the minister as people were drifting back to the vans. We were wondering why on earth the minister had bought so much land, just to use the tiny little room for his water bottling enterprise. They had bought an old I forgot exactly what it was, either an old warehouse, an old airplane hangar- whatever it was, it was a gigantic piece of land- which they were able to buy by selling off the steel that was currently on the property. He started explaining that the water treatment plant for his parish was only the first part of his vision. (Please keep in mind that he is making this happen in Honduras, with NO money.) The next parts of his vision included a university, a market place, and several other buildings to help his community. I was struck by how he was making it all happen- as if by magic. Through all the corruption and poverty, he is slowly bringing his vision of a better world to life. He is definitely one of the most inspiration people I met on the trip.

I hope everyone else fills in the other water-treatment related adventures we had in Tela because I'm drawing a blank- oh there was the house with the swastika on it. I'm not sure anyone else caught it as we walked up to the Tela water treatment plant- but it was really frightening.

Tela Adventures of a Non-Spanish Speaker: The girls were all together at the restaurant next to the hotel chatting up a storm one night for dinner. I wanted to order another Coco-cola because we'd been sitting there for a couple hours. I asked the waitress for the drink, and she left. Then I sat for a minute and looked at my comrades and said- "did I actually order a Coke?" They all look at me and say- "No, you ordered a coconut". So I ran after the waitress and changed my order- which she and everyone else thought was hilarious. ::sigh:: I really wish I'd learned Spanish before the trip!

Traveling to Ojojona: We crammed 23 people into two vans with all of our luggage. These vans were the tall skinny vans that look very similar to the DHL delivery vans- and are probably even a bit smaller. We were jam packed inside for many hours...

Stefan trying to get on Laurie's nerves

Stefan: "Are we getting close yet?" ever 15 minutes

Laurie: "We're closer than we've ever been before." patiently EVERY time

Oh, and don't forget the "Johnny Johnny Johnny" game! Or the "Who's Wearing the Hat" game- two of the most obnoxious games to play for hours and hours and hours at length in the car until EVERYONE gets them. And riddles galore.

Finally in Ojojona: Ojojona is like a different planet compared to Tela. It's up on a mountain, it's much cooler, the buildings are white, generally with brown clay shingles on the roofs (and many with plants peaking out between the shingles.) It's also a tiny town, I do not remember seeing any restaurants or grocery stores. However, on every corner there are these little convenience stores called pulperias- which seem to be part of people's homes. They sell you drinks and snacks through windows with bars on them. It was at Ojojona pulperias that I discovered Coke in a bag- my new favorite drink. They have this incredible system where they get sodas in bottles, but they have to keep the bottles to send them back to the companies so that they can refill the bottles. Consequently, if you purchase a soda, you can't keep the bottle because they need to send them back. So, they pour your bottle of soda into a bag, put a straw in it, and you drink it like that. (The bags look like the ones that you buy goldfish in.) The only problem with Coke in a Bag is that you can't set it down. You gotta drink it in one sitting. =^)

Living Conditions in Ojojona: We were going to get set up with home-stays. What ended up happening was that all nine girls got put in someone's guest house. We were really lucky because there actually was a shower in our house. However (as all of our places that we stayed until Copan) the water was FREEZING cold, so cold you couldn't breath. Plus, sharing the bathroom/shower with nine people was a little tricky. There were five girls in one tiny room, three in another, and then one staying on a bed by the front door. It was a typical sized Honduran house, and I'd say it would fit into my apartment in Ithaca. The worst part of living in Ojojona- the worst part of the trip besides the meringue- was the roosters! I love animals- I'm a vegetarian and everything- but if I could have kicked the rooster that kept us up from 2 am to 6am every morning I would have. He must have stood right underneath our window- he was INCREDIBLY loud and obnoxious. I lived on a farm once where we had roosters, but they were never as loud as this guy.

Food and Family at Ojojona: While we were in Ojojona we ate all of our meals at the home of the family of Martine- the head of the water board that worked with our project. His sisters cooked for us, and we always saw them and got to play with their kids all the time. The kids were really funny and cute. Jose would always come up behind you and put his hands over your eyes so that you had to guess who it was. This was a little difficult when you didn't speak any Spanish, but always funny- and always Jose. One thing that really struck me was that one of the girls was deaf. There are no schools for deaf children in Honduras, and no real way for her to learn sign language. We'd see the kids playing and they'd made up their own sign language so that they could all play together. It was cute, but at the same time it was heart-wrenching because she'll never be able to communicate with people outside of her family. I can't even imagine growing up so shut off from the entire world...

The Ojojona Treatment Plant- Our Current Project: Finally, the day when we got to see our most recent work! Everyone was really psyched to finally get our hands on tangible engineering work- maybe a little too psyched. It turned out that there were some problems with the construction (which we found out later were due to a dud engineer who'd been assigned to supervise construction- and hadn't even looked at the plans we sent him!) The new plant operator Antonio that just got assigned to work on the plant was a real sweetheart, and definitely ready to start fixing all of the problems. Seeing the plant was also refreshing because seeing an actual prototype makes you realize all of the problems with the design that were not apparent in the CAD drawings that you designed. For instance, the designs that we created were not extensively reviewed with ease of cleaning in mind. Both of the operators at the plants that we went to had suggestions for how to make minor adjustments on the plant design so that all of the tanks were easy to clean.

Laurie's Birthday (Thursday): On Laurie's birthday, a group of us (including Laurie) went to the hardware store to check out supplies. Then since it was her birthday, we stopped at the mall in order to give her a chance to use the internet café (a really interesting phenomenon all over Honduras- you can use internet for really cheap and make international calls really cheap too, I never met anyone who actually owned their own computer). The rest of us walked around the mall- and snuck off to buy birthday presents! That night after dinner we had guitar playing and singing galore for ages, birthday presents, and birthday cake. It was definitely one of the highlights of the trip.

Meeting the UNITECH Students (Friday): I think meeting the UNITECH students was one of my absolute favorite parts of the trip. Professor Monroe scheduled for a class of civil engineers at the university in the capital of Honduras- Tegucigalpa- to meet us for an afternoon of demonstrations, taking a tour of the actual water treatment plant, and surveying the population of the city. First the pilot plant (a super-small scale version of the plant) was explained to the students. Then we broke up into two groups for the afternoon's activities. Our group was assigned to start with surveys. Each Cornell student paired with a UNITECH student, and we wandered off into different parts of Ojojoná. When we met later, all groups had great stories, but I think for this journal I'll just share my own. My partner- Evy- it turned out spoke no English and I definitely spoke no Spanish. It was hilarious. Somehow we managed to communicate between sign language, the collective 20 words we knew in the other language, and my Spanish-English dictionary. We got a bunch of surveys- thanks to Evy's Spanish- and became fast-friends.

Survey Results: It turned out that we were surveying the section of the city that was not actually given water from our plant. I think that everyone had assumed that our plant serviced all of the city- but it turns out that it only services the richer half of the city. We were all surprised and disappointed by this. Many of the people on the poorer side of town only got water every four days- and only about three or four buckets worth. Another striking result of the survey was that most people didn't think that their water was bad. The idea that people don't have problems with their dirty water- is really one of the biggest challenges our project faces.

Back to the UNITECH Students (Sunday): Anyways, we ended up having so much fun with the UNITECH students that we got all of their contact information and arranged to hang out with them later. We ended seeing them again on Sunday, after our hike in the Cloud Forest of La Tigra. Armando (who was completely fluent in English without an accent from watching American television and movies) acted as our tour guide through a beautiful cathedral, and park. At the park we met up with Evy (my friend), Marcos (another friend) and some of the other students. We all went and had a lovely dinner with Jacobo (the head of the NGO that we work with), Ken Brown (the funder of most of our project who came down to spend some time with us at the plant with his lovely wife Elizabeth and their very sweet daughter Lauren), and the UNITECH students. We celebrated Elizabeth's birthday with cake, a mariachi band, and lots of fun dancing. Then we all went and got ice cream, and said farewell. The next day- Monday- a couple of us- me, Tamar, Sara S, and Dave- actually unexpectedly got to visit UNITECH to drop off the pilot plant at UNITECH (for them to keep). We had a couple hours to kill before our ride came, and randomly we bumped into Evy, and then into Marcos, and then Armando and ended up chatting and having a great time with them until our ride came. I have a feeling that we'll see them again.

Trip to Copan: A really really really long ride- all packed in- people finally starting to get cranky. The only real stand-out of the trip was stopping at a gas station that had a monkey (who looked just like Marcel on Friends) chained up on a picnic table. It was really awful- poor monkey.

Copan Accommodations: Finally hot water! And- hammocks in the open food/lounge area. I'm not going to lie- I spend at least five hours chilling in a hammock. Hammock time and riding in the back of pick-up trucks are definitely my two favorite things to do in Honduras.

Santa Rita & The Saddest Water Treatment Experience: In Santa Rita I had my saddest experience of the entire trip. A group of us took a trip on Wednesday over to Santa Rita- which is only about fifteen minutes from Copan. We went to visit with the mayor to speak about potentially working with their city and building our next plant there. He was busy in the morning, so we went with the plant operators up to visit the current water treatment plant. It consisted of three big concrete circular tanks built about ten years ago, that all had ridiculously big cracks for being so new. The plant operator started explaining to us that the only treatment that the water gets is chlorine (which again only works if the water has a turbidity of less than 30ntus- in the rainy season it gets over 100ntus). Then he continued to tell us that the chlorine dispenser hadn't been working for a long time, and that the engineer was coming to fix it the next day. Professor Monroe asked if we could look at it, and so we climbed up onto one of the tanks and lifted the huge concrete top off of the chlorine tank. There was moss growing in the bottom of the tank. (Clearly there had not been chlorine in this tank in a long time.) Monroe started asking what was broken. Soon Monroe was able to deduce that sedimentation had built up in the bottom of the chlorine tank when it had been full before, and that the pipe that went from chlorine tank to the water tank was probably just clogged. (This is no rocket science.) We asked if we could screw the nozzle off of the pipe to see if it was clogged, and the plant operator said sure. When we did this, maggots started crawling out from the dirt that completely filled the nozzle. We told the operator this- but he said that he couldn't fix it, he had to wait for the engineer to come the next day to fix the problem. It was excruciating- all that had to be done was the cleaning of a pipe, but the plant operator was so disempowered that he would not fix it, he had to wait for the engineer (and heaven knows when the engineer was ACTUALLY going to come.) Who knows how long the people of the city were not even getting water that had been chlorinated, and how long they'll still wait...

Copan Ruins and Zip-Lining!: The next day we went to the Copan Ruins. They're old Mayan ruins that are slowly being excavated. We heard some crazy stories from our tour guide- Antonio- who looked about 100 years old and liked to tell us that he was in the Guinness book of World Records for knowing the most languages. Then we took a back-of-the-pickup-truck ride up to where zip-lining was. The guy that led our canopy tour (14 zip-lines from tree to tree) was actually from Tennessee. He was a sailor who met his wife in Honduras. He brought his six year old with us to zip-line too (which was one of the cutest /craziest things I've ever seen. I'd say it's akin to taking your six year old sky-diving.) Man, what a rush zooming over tree tops, only connected to a thin wire. One of the zip-lines was 1km long! On that line, the guy had me take off my shoes and carbineer them to the wire because he said- if you loose them on this line, you're never getting them back. The very last line he said that we could do 'tricks'. I ended up going down face first like superman, with the guy and his son all at the same time! It was crazy. =^)

Copan Nights: On Ryan's birthday (Thursday) we went down to a bar for karaoke. Some highlights were Brianne singing "Stand by Your Man" and EJ's performance of... oh gees, what's that song? The dancing was fun as well. The next night (Friday) was our last night so we had a party. There was a gigantic dinner, and a mariachi band.

Heading Out: Saturday morning we jumped back into the vans and headed back to the San Juan airport. We paid our \$32 to get out of the country, and hopped on our flight. They played Little Miss Sunshine (possibly my favorite movie of all time) and fed us again- which was a treat. Back in Newark, I realized that I was horribly underdressed for the occasion. Our bus drove us back to Stella's, and I walked down the hill to my house on Buffalo St. in my sandals and sweatshirt. My toes and fingers just about froze off. Oh Ithaca winters. At least we have hot water here. =^)

Other Reflections that Didn't Make it Above:

1.) There were a lot of guns in Honduras. There were military guys in camouflage with extremely large guns standing on both sides of every bank entrance and in random other parts of town. It was really scary, actually.

2.) There were lots of machetes in Honduras. People used the machetes for everything- I would say a bit similar to a pair of scissors in the States, except the machete is also good for yard work, cutting open coconuts, and skinning sugar cane. I'm not a big fan of knives/weapons, but if I lived in Honduras, I would definitely get a machete.

3.) The people were very happy. Rarely in my life have I ever seen people with as little as most of the people I met in Honduras. However, I never met anyone who sat down looking sad because they didn't have an iPod. I wasn't there very long to really get a good sense of the people, but from what I saw it seemed that the network of people and the richness that resulted from tight community living resulted in people being very content. If you really needed some extra food or a place to stay, you knew someone who could help you out. It made me think about how that's generally lacking from most communities I've lived in, and maybe why people just don't seem as happy here in the states.

4.) The weather was perfect every day for two weeks. I've never seen that in my life. It was such a treat to have warm weather that was never too hot, never super-rainy, blue skies and white puffy clouds always.

5.) If I ever have to eat tortillas with super-refried-beans three times a day again, I'll loose my cookies.

6.) Time is different in Honduras. It moves when it wants to move- in stark contrast to Cornell University time.

7.) There is very little sense of 'danger' in Honduras- another stark contrast to the United States. Whereas the United States has insurance forms for absolutely everything, there aren't guard rails on cliffs in Honduras. We were walking around all sorts of places that would in the US have had rails, plastic walls, warning signs, etc, and there was... yeup, nothing. The people there are just tougher and more careful. Experiencing life like that was really relaxing, exhilarating and empowering.

Ryan

Ryan Walter

AguaClara Project

CEE 255

1-26-07

A Stream of Consciousness on Honduras

Flying into San Pedro Sula, it seemed as though there was an air of uncertainty amongst my peers. Nobody really knew what to expect. We all realized there was poverty in Honduras, but to what extent?

The only way to describe Honduras: beautiful...in an ironic sort of way. At first sight you see the sewage system open in the streets, the military walking around and carrying AK-47s on their shoulder in public, rabid dogs running around with their jaws dropped and their ribs poking out of their lean side, trash piled high on every corner, piles of rubbish lining the sandy beaches, yet on the inside of this seemingly dump town is an image of beauty. The sense of community and family here is unbeatable. Everything here is about survival and watching out for one another. In American these days, it seems like everybody is out for themselves, without giving a flying hoot about anybody else.

One of the things about Honduras is that everybody is so kind. Every single person smiles and greets you on the street. Nobody is too good for you, or cares if you are wearing the nicest clothes, or the most ragged clothes. Speaking of clothes, everybody here dresses to impress. It doesn't matter if you are poor, or rich, every single person is wearing nice pants and leather shoes it seems like.

Coming to Honduras, it is astonishing to see how poor these people are. The nicer looking houses have mud bricks crumbling off of them, worn and ugly paint, broken and/or no windows, their cars are worn and beat, pot holes line the streets, yet Honduras is still beautiful. Everything is lush and green. People seem to enjoy life and actually live in a culturally thriving place.

One night, we listened to the stories of one of our drivers, Jorge. I was absolutely shocked with some of the things he told us about the gangs in Honduras, which are basically the product of American culture and deporting Hondurans that get in trouble here. Anyways, gang members are inducted at the age of 12 or 13; however, this is only after years of hanging around and being the outside communication for the gangs. Additionally, in order to move up in the gang, one has to either kill somebody or steal guns. For kills, a gang member gets a tattoo of a tear drop on their face, or a coffin on their arm. For every kill, an emblem or symbol of that person is placed in the coffin. After three kills, a ritual occurs. During the ritual, one must drink the fresh blood from an animal or human. Most gang members consider these satanic acts, so they are usually high on cocaine during the ceremony. Because of this, the motto of the gang is, "Enter if you want, leave if you can." Also, most gang members realize that after drinking the blood, they are forever going to be in the gangs because neither society nor God will forgive them.

After visiting LA34, it was absolutely amazing to see the sense of pride that the town and the water board had for the plant. Their pride, hope, and hospitality instilled in me a sense of how important our project really is. Every single person on that water board wanted to let us know that we were not part of their family and were welcome anytime that we wanted. That bubbly feeling shot inside of my stomach and I suddenly felt the true meaning of the project...what it felt like to actually be a changing part in somebody's life.

It was sad to visit the water treatment plants in the area. A lot of them were poorly run and/or managed, not working efficiently and clearly out of date. Some of the towns, like in Tela, which is a tourist spot, were taking water directly from the river and only dripping chlorine into the untreated water!

It has gotten to the point where I no longer look/think of different hierachies and/or the different levels of money in this country, or let alone anybody. If my stream of consciousness makes sense, then I am trying to say that people are people. Different people are almost identical in terms of their chemical makeup. All people have a heart. All people have an identity. Most people don't have culture, at least not like the people here. It seems like no matter the level of poverty, all the people here seem to keep in mind the needs of others. Families and communities are what bring these people together.

As we are driving down the streets here, I see little kids sitting out front on the porch, laundry hanging from clothes lines everywhere, houses right along the highway with their chickens running loose, a pack of bulls being herded on the side of the street, little shacks with walls that are huge pieces of plastic, children sitting in open window frames that have no glass, bars and restaurants with a company like Pepsi, Salva Vida, or Berena, as their main sign, houses with old rusted metal as roofs, mud bricks, farming along the side of a mountain, children playing with old, plastic soccer balls, beautiful and lush forests, street vendors along the highway selling fresh fruits and vegetables, advertisements painted onto the rocks along the highway, roads with no designated lanes and cars weaving in and out of each other, but most importantly I see a beautiful Honduras.

As we went to go visit our plant in Ojojona, several things irritated me very much. First of all, we made the same mistakes that we had made at LA34. Einstein once said that the definition of insanity is doing the same thing twice and expecting a different result the second time. Anyways, it is irritating to see that the baffles in the floc tank were messed up and breaking up in LA34, and then we didn't come up with a real solution to problem for the plant in Ojojona. Hence, the same problem is happening in Ojojona. The same is true for the alum feeder in both plants.

Another important thing to not about this project is the fact that our engineering design is by no means perfect, and even if it was, the transition from design plans to the actual construction of the plant, some things are going to change. For example, the lamella inside the sedimentation tank were designed to be at angles of roughly 60 degrees. Yet, the plant was built at roughly 75 degrees, which severely alters the critical velocity of a falling particle.

Yet, overall I believe the plant and the team is off on the right foot. I believe it is critical to begin some sort of program to educate the people of this town about the importance of clean water. As we went around and began to survey the people, most people didn't think anything was wrong with the water. Granted, it is not the rainy season; however, we still need to educate these people so that even more importance and pride is given to the water treatment plant. Also, it was sad to see that some people wouldn't even drink the water because it tasted like chlorine, yet we measured the residual, and it was fine.

Overall, this trip was absolutely incredible. I couldn't have asked for a better experience. When I first came back to America, I forgot how stuck up and stand offish people are here. Walking down the streets, you never get a hello. People take for granted the things that we have. Hot showers, clean water, and the chance to attend Cornell University, are all things I have always taken for granted. This trip has instilled in me a sense of awareness, and has also been a truly life changing experience.

Sara A

My Top Ten Food Items of Honduras

- 1) Tortillas
- 2) Beans (refried)
- 3) Rice
- 4) Rice and Beans
- 5) Fried Plantains
- 6) Anafre (Beans and tortilla chips)
- 7) Coca-Cola in a bottle
- 8) Fresh Pineapple
- 9) Fresh Bananas
- 10) Queso Crak

My Favorite non-Academic moments

- 1) The bumpy ride to the airport
- 2) Waking up at 6:30 like every morning
- 3) Punta Sal, seeing howler monkeys up close and in the wild
- 4) Tela, its beautiful and warm
- 5) Monroe-y
- 6) Hammocks
- 7) Dancing at The Iguana, El Patio, and the Karaoke bar
- 8) Home cooked meals in Ojojona with the Brown Family
- 9) Riding Horses
- 10) Group Meals
- 11) Seeing Mayan - Copan Ruins
- 12) Showing Monroe-y all his hand gestures
- 13) Learning more Spanish

- 14) Seeing a Pineapple Packing plant
- 15) Eating Sugar cane, like a cow, getting laughed at for it, and doing it the right way
- 16) Taking a hot shower in Copan
- 17) Getting tan

Favorite Academic Moments

- 1) Seeing La 34 for the first time
- 2) Seeing the ownership of the La 34
- 3) Talking with Gorge's wife, Rosaria about the educational system
- 4) Seeing Tela's lack of water system
- 5) Seeing other water systems in Houndras
 - a. Tela -minimal Chlorine added to water
 - b. Spanish system not being used
 - c. Honduran System not being maintained (designed correctly)
 - d. The operators not knowing what he was doing
- 6) Visiting Ojojona
 - a. Inspecting the flocculator, finding problems, proposing solutions
 - b. Seeing flocs forming during floculations
 - c. Taking apart the sedimentation tank
 - d. Drinking the water

When we first got into Honduras I was completely amazed. It was gorgeous and warm and it seemed absolutely perfect. I couldn't have imagined a better sight, coming from upstate New York where it was warm; it still wasn't in the eighties with rolling hills full and blooming with leaves. I had heard Professor Monroe say that Honduras was inclined, but I didn't expect to see so many acclivities. I imagined a land similar to Ithaca, full of hills; I take back what I said earlier, Honduras is not full of hills, it is full of Mountains. Coming from a valley I found the situation extremely comforting. There is something soothing for me to be able to look around and see hills wrapping around you, although an old fashioned it is a natural defense to all that can capture and ail you. Mountains are a defense from foreign body and they protect you from the outside world, but here I was taking new steps in a world that was brand new to me, a new language (well kind of I'd had six years of Spanish before my time at Cornell, I have a theory about languages which I'll get at later) and I was incredibly at ease. My type A personality suddenly was not overwhelming. We'd been in transport since 2:00 am Eastern time, and landed sometime around 1:00 pm Central time, bringing our grand total of travel time to somewhere around twelve hours, it was nice to be landed.

Theory of Language

Language is something for the most of us that unless in constant use, sits in the back of our head quickly deteriorating. If you spend six years studying another language you may feel very confident at the end of six years. If you let this hard work and effort go to waste and do not use these brain cells they will quickly start to deteriorate. I say at approximately double the rate in which it took to acquire your skills. For example in the six year you studied Spanish, it takes three years to loose almost 100% of the language, for common and quick study. You remember very little at first, mostly basic verbs and nouns which are not always the most useful, and when traveling to a foreign country you may think you are doing well but all of a sudden you will approach a road block "I'm getting so much better I can understand what people are saying" this is exactly when the road block will hit you, this challenge may present itself in a variety of areas, a different dialect, a speech impediment (for example a lack of teeth in the speaker), a soft spoken person that will repeat but will not speak louder (and will just think you do not understand what they are talking about), this will happen and try to make you feel like you are not regaining your grasp of the language, but its not true....you're just not fluent yet, maybe it will come or maybe it won't, that's why they call it a foreign language isn't it?

My first impression of Honduras was beautiful; my second impression was just as memorable and probably provides a better rounded view of the country. Beauty can have its sad side as well, in the air port while piling into our fifteen (17?) passenger vans driven by our amazing drivers Jose and Gorge, there was a Toyota truck that needed a push to get started, and by push I mean it needed help getting into second so that it could be finished...the guys that pushed then chased into the car to get into bed of the truck as it got started, think little miss sunshine with a truck. As we drove down the main drive in San Pedro Sula (the main as far as I can tell) it was bumpy and the cars all around us were what we call in the united states suicidal. Driving in Honduras is best left to those professionals, crossing the street might even best be left to those with high evolved senses of eyes in the back of their head and an ability to see into the future, or at least read the minds of the other drivers on the road. Honking is highly acceptable, and highly encouraged while in the US honking is angry and not tolerated, it is almost imperative, a honk can signify many different things

- 1) Hey I'm coming
- 2) Hey Move over bike
- 3) Really move over bike I'm bigger thank you
- 4) Thank you
- 5) I'm going through this red light

6) I'm going to speed through this really tight curve

7) Hello

8) I'm going to race over this crest I hope there is no one below me

I think you get the point, honking is cute with pizzazz I would like to adopt this into my current style of driving but I feel it would not be accept in the US, I feel I'd be flipped off a whole lot more.

Sara S

Honduras Journal

January 6 - 21, 2007

Day 0 - Yay! Honduras here we come! We killed the hours until the bus left for Newark by watching the Princess Bride on loop at Melissa's house. In Newark, we boarded a plane to San Pedro Sula. In San Pedro, we had to hang out in the airport with Todd and Laurie (who met us there from Nicaragua) until Monroe got there with the busses. We also had our first experience with the more relaxed Honduran society while we were waiting in the airport. The only money changing office was closed for the weekend at 2pm Saturday. Finally late that afternoon and another long van ride, we made it to Tela, a small city on the north coast of Honduras. Our hotel was right on the beach and that night we ate dinner as a group in the Hotel's large open air patio. From the very beginning lending a very different experience from anything I had ever seen before. The people were so unrushed, just strolling along, hanging out on the beach, or eating a leisurely meal. No one was rushing around; it was rather refreshing.

Day 1 - Our first full day in Honduras, which we spent at a beach called Punta Sal. It was the most beautiful island I have ever seen. Granted I had never been south of Florida and the whole lush tropical look was new to me, but still, the national park at Punta Sal was gorgeous. The group met at a dock where we all got on little motor boats that were going to take us over to the tip of the peninsula. After a 45 minute bumpy boat ride we arrived on the shore of Punta Sal. Punta Sal is a national park and the only people that are allowed to live there are the natives that were there before the national park was established. These locals make their living fishing off the coast, and they run the only restaurant on the island. After landing our guide led us on a hike through the forest to the other side of the peninsula. The hike was very different than the types of hikes you would find in the US. Huge palm trees lined the path through the forest and howler monkeys were hanging about in the trees. Our guide had a very realistic howler monkey impression trying to make the monkeys call back; they didn't take the bait. After hiking back to the boat, our guide took us to another beach where we went swimming and snorkeling. Sadly the water wasn't clear enough for good snorkeling. Lunch was eaten at the local restaurant, and consisted of plantains, beans, rice and tilapia. After sleeping on the beach for a few more hours we headed back into Tela. The boat ride back to Tela was much bumpier and bouncier than the ride over. Along the way back we had to stop and check on a local boat that was having engine trouble. After returning to Tela, some of the group headed off to mass at the local church. It was an interesting service, much more informal than the masses that I was used to from home. It was a very homey experience; it felt much more like a community coming together. When sharing the sign of the peace, the people would walk all across the church to speak to everyone. The music was also very cool; it was all local tambourine and guitar music. Watching the water from our balcony that night made a perfect end to the perfect first day in Honduras.

Day 2 - We got up early in the morning to get to La 34 and tour the plant. To get to the plant, we had to walk through a cow patch, across a river and up a very steep mountain. After hiking the very steep mountain, we walked around and got to see how the plant was working. The best part about La 34 wasn't the plant, but getting to meet all of the members of the water board. We sat around in the house of one of the members of the water board and listened to them talk about their plant. It was one of the most inspirational moments of the trip. Even though there were problems with the technology of the plant and things weren't perfect, the town was so proud of the plant. They as a collective made it work; they showed the ingenuity and responsibility to better their community. Seeing La 34 provided a very good example as to what we need to instill in the minds of the people in future towns. La 34 demonstrated that local empowerment and dedication were key ingredients to the success of any project such as ours.

In the afternoon, after visiting La 34, we went to visit the local water treatment plant for Tela. After the encouraging experience that La 34 was, this was a serious downer. The plant didn't work and looked as if it never had. It seemed to be a design that was built by an outside source experimenting with a new technology, and it didn't work. All they were doing was adding chlorine to the water and just chlorine wasn't really doing any good. Because of the development and cattle farms up stream of the treatment plant, the water they were adding chlorine to, was simply getting dirtier by the day.

After dinner that night was got to sit around and talk to Jorge, our driver about his life and experiences in Honduras. He spoke of his work with the gangs and his fight to try and help stop the AIDS epidemic in his country. He spoke of his family, his 9 children and everything that had happened in their lives from life after hurricane Mitch, to just everyday life in general. It was an eye opening conversation.

Day 3 - The following day we made our way up to La Ceiba. Along the way we stopped at a pineapple plant to see how pineapple is packaged and sent the US. It was an interesting process, basing decision of whether the pineapples are sold fresh or canned based on outer color.

After the pineapple plant, we went to La Ceiba and visited the water treatment plant there. This was another sad experience. The operator that was giving us the tour of the plant didn't seem to know how the plant actually worked. Right next to the plant was another water treatment plant that had never been used. It had been shipped to Honduras as an aid present from Spain. The down side of the good intention is that it had never worked, but they still made Honduras pay for the un-functional plant. From seeing this plant we learned that a plant will never last and isn't sustainable if the local people don't know how it works or if they are unable to fix it when it breaks. Both of these were issues with the Spanish plant. On the other side of the Spanish plant was a new plant that was being built. It hadn't been finished yet, and the operator that was giving the tour wasn't going to be in charge of running this new plant, so he couldn't really explain the process to us, but it seemed like yet another design that would have issues from the get go. A lot of the problems we had seen throughout Honduras with water treatment systems had to do with the general lack of knowledge of the over all process of water treatment. We also saw a waste water treatment plant. The basic process was that of keeping the water in lagoon's long enough to let the contaminants either settle out of the water or react out of the water.

We ended the day by talking to Jorge's wife, Rosaria. She was a local high school teacher and a very interesting person. She was very devoted to the idea that education was the way up for Honduras, but that it was hard because not very many people went to school and the local government didn't have the funding to allow school to be free for everyone. Those who went to school were required to have the fees to pay for a uniform and their supplies, and for many families this was too much of a financial burden. She also talked extensively about her family. It was very cool to hear her talk about her children and what she wanted for them. She had the dream that they would all be professionals, and all have the education to be something in the world.

Day 4 - A rather boring day, we left early and drove all day to Ojozona. We got there around dinner time and all we really did was eat dinner with our host family and meet the families that we would be staying with.

Day 5 - All of our meals were made by the family of the head of the local water board, a very nice man by the name of Martin. After eating breakfast with Martin's family we made our way down to the mayor's office. It was village custom for new people to meet the mayor of the town. He was a relaxed and chatty man.

After meeting the mayor, we walked up to see the plant. It was amazing. It was so cool to see what we had actually built. We met Antonio, the local plant operator from APP and Alexi, the plant operator from Ojojona that would be taking over full time after APP's presence diminished and the plant had been completed. We spent the morning just observing the plant and trying to figure out all the ins and outs of how everything worked together. In the afternoon and for most of the rest of the days we spent in Ojojona, we split into smaller groups and worked on smaller things that needed to get done with the plant. That afternoon, some people stayed at the plant and worked with Antonio, discussing the issues that he had found with the plant. My group made our way into the capital, Tegucigalpa, and went to a hardware store to get a handle on what materials were readily available. This gave us an idea about what sorts of materials would be good to use on the plant because they would be easily replaceable or fixable. That evening we met up for dinner at Martin's house again to hear about everyone's days. Most nights in Ojojona were spent very relaxed just talking and hanging out on Martin's porch. We really started getting into the mood of Honduras in Ojojona, the lack of planning and having nothing ever running on time, were no longer annoying, but simply a lower stress approach to life.

Day 6 - We split into two groups again to get ready for the Unitec students who were coming in the afternoon. One group set up the pilot plant for demonstration, another group was back at the plant getting things ready there. Finally we met at the community center in the afternoon to meet the University students. After showing them our technology, we split into groups to do surveys of the local Ojojona residents with them. Doing the surveys was an interesting experience. We were trying to judge local interest in the plant and more importantly get a gauge for whether or not the people were even concerned about their water, because if they didn't see a problem in their water then they were not going to want to pay the new water tariff, and they wouldn't particularly care about keeping the plant running. Over all, the surveys were mixed. Some people were very opinionated and had definite ideas for improvement; other people didn't even know where their water was coming from. In the afternoon we took the students up to see the plant. We got to explain the full scale technology.

Day 7 - Saturday, it was finally time for the dedication ceremony. In the morning, we all went to the town hall to listen to the dedication speeches. Several members of the water board spoke as did Monroe and Fred and Ken Brown. The hall was filled with people. Since they were all in Spanish I didn't really understand exactly what was being said, but it seemed to be a lot of thank yous. After the speeches, a few local women walked around handing out food to those sitting in the audience. I love the hospitality that seems to run so strongly through Honduras. The little celebrations that we tend to overlook in the US seem to be very important here, such as a water dedication ceremony. After the food, the whole group made their way up to the plant to finish off the dedication. They poured clean water over the plaque and we all lined up behind Ken Brown and Monroe and Martin for the official ribbon cutting. They then proceed to cut the long ribbon into little pieces which they then gave out to all of us who were part of the project. It was a rather touching gesture. After cutting the ribbon, all of us lined up for a picture behind the plaque, drinking cups of the water from the plant. It was the first glass of non bottled water I had had all trip. It was a really cool experience to be a part of making something that seemed to actually be helping improve quality of life. The dedication ended when we poured a bottle of water over Monroe's head (so funny).

We spent the rest of the day, just hanging out and enjoying the relaxing atmosphere of life in Ojojona; we sang songs, sat in the sun and watched a local soccer game. It was great day.

Day 8 - Given it was still the weekend, we took a road trip up to La Tigra today. It was an interesting ride to say the least. Through Tegucigalpa and up the mountain, the national park was at the top, it was a long a bumpy road. The van actually got stuck in the mud at one point along the road and we ended up riding the rest of the way in the back of an APP pick-up truck, which was an even bumpier ride. Once we got to the top, we went on a hike through the forest. Surprisingly, this hike was a completely different experience than the hike at Punta Sal. Instead of palm trees, there were pine trees and very lush foliage. It was a beautiful forest, but it seemed very similar to something that you would find in upstate New York which was not what I expected. After the hike, we met the Unitec students for dinner at a local restaurant. A mariachi band was playing and by the end we were all dancing, the fact that people outside of the US actually know how to dance is rather cool.

Day 9 - Our last day in Ojojona was filled with a lot of little errands, tying things up before we left the following day. We dropped the pilot plant off at Unitec and collected more information from Antonio. The best part about that day was the party that night. Martin's family cooked a huge dinner for us in celebration of our coming to Ojojona. They also presented each of us with souvenir to remember them by. I think my favorite part about Ojojona was the thoughtfulness of the people. They really seemed to care about us. There was a genuineness in their words and simple gift that I had never really experienced before.

Day 10 - Another driving day, we left early and drove all day to reach Copan that night. Copan was a very touristy place, filled with lots of shopping and sightseeing. My favorite part about Copan was the hammocks at the hotel, they were amazing, and we spent a lot of time just relaxing at night swinging in the hammocks.

Day 11 - We traveled to a near by town, that was a potential site for our next plant. The operator of their distribution system took us on a tour of it. It was a hard thing to see. As many issues as we had already seen with water treatment, this was the worst. The operator was waiting for the engineer to come out and fix a problem with the chlorinator, but based on the moss lining the tank he had been waiting for a very long time. The worst part was that the only problem with it was that the outlet tube had been clogged by sediment from the chlorinator. As empowered and able as the people of La 34 were, these local people were not. The operator didn't feel like he had the know how to fix the system, that he needed the engineer to come out and do it.

We finished off the day by going to a coffee plant. Surprisingly it didn't smell like coffee. The best part about the coffee plant was the sugarcane we got to eat. Given some of us had never eaten it before it escaped our observation that you aren't supposed to swallow the woody pulp, but spit it out instead. When our guide caught us he laughed for a very long time.

Day 12 - Today we went to the Ruins at Copan. We were lead through the ancient Mayan ruins by an interesting toothless man named Antonio (not at all connected to the Ojojona plant operator). We saw burial areas and what were living areas and even a sporting arena. It was very cool. After exploring the ruins in the morning we got to go horse back riding in the afternoon to see the place where most Mayan women came to give birth.

Day 13 - Our last day in Honduras was spent relaxing and souvenir shopping before we went home the following. It was a relaxing end to a very busy but very educational and rewarding trip. And of course we had to end the trip with another party to say goodbye to all of the people from APP and our drivers. We had dinner and dancing at a local hotel, it was good night.

Day 14 - A very long day. A bus to San Pedro Sula. A plane to Newark. Another bus back to Ithaca. Finally we were home very early on Sunday morning.

Steve

Honduras

It was a great experience. It taught me that engineering is not just a math problem, but a web of problems that includes politics, socio-economic stability, and education, among others.

A Brief Introduction

We first landed in Honduras on January 6 and we arrived in Tela shortly after. The hotel was on the beach and was called Hotel Puerto Rico. The couple that owned the hotel was very nice and heartwarming. We had the opportunity of seeing Honduran nightlife and it was interesting to see how their culture was different then ours. Every week there is a discotèca, which many people go to, and it is a very big social event. They are more social than bars in which people not only talk, but there is a dance floor and live music. A few days into the trip, we had a talk Jorge. Jorge is Monroe's friend, and they met, I think, when Monroe went to Honduras back in '82 volunteering in a Salvadorian refugee camp in Honduras. He talked to us about his family and the work that he does. He has nine children, seven of which are daughters. His faith in God is very strong and he seems very motivated. He is a man that lives for the well-being of his family. He is a social worker and he helps kids that are just getting into gangs and want to get out, but need the motivation and support. He also helps with STD awareness, which is a major problem in Honduras. He works along side the Catholic Church in achieving the same goal of helping these kids in need, but with different gangs. In order to get the trust of the kids he is working with, the social workers cannot work with more than a few gang members and they can only work with one gang.

Monroe and Jorge are close friends and admire each other a lot. It is interesting to see them interact.

Es una bendición.

We went to the La 34 water treatment plant. It was of cool seeing it although I was not impressed because really, it is just cement and plastic. Nothing more. It was a long climb up a steep hill. That is the problem with WTP, they are always at the top of hills so you can get that gravity powered flow going on. It is good because you do not need electricity, but it is a pain to get up to the top. The plant operator must be in good shape. I walked in a stream (or fell) on the way up so my shoes were wet all day. The van also got stuck in mud and we had to get out and push. Good times. Afterwards, we went to the town and had lunch with El Junta de Agua. They were elected water board and the ones in charge of maintaining the plant. They take great pride in what they are doing for the community and are very thankful to god for the clean water they are receiving. It was really nice that they treated us that well. We were in essence, strangers in their home, but they treated us maybe better than family. They fed us a grand lunch, one that most of us could not finish because the portions were so big and it was really tasty.

La 34 has the best water in Honduras (in comparison to 134 other WTP) Go AguaClara.

Private Treatment

We went to what I think was a Methodist Church which treated water, bottled it and then sold it to the community. It was somewhat weird because they were located on what once used to be a box factory for Chiquita Banana. According to man he bought the factory and then some American came looking for steel and he was able to sell most of the infrastructure to regain most of the money he had spent purchasing the abandoned factory. The treatment process was quite simple, a pump, three filters, UV treatment and a big machine used to bottle the water. Clean water was used to wash all the bottles, once clean they were filled and then sealed with a heat wrap. They get about fifteen hundred five gallon bottles of water in a day.

A not so great site...

So afterwards, we went to a Tela WTP and really...well... it was just a crumbly, old building that water flows through. On good days, they add chlorine, but most of the time the water just flows into a rusty old pipe untreated. Even when they add chlorine there is not enough residual for it to matter. There are two other WTPs in Tela and to get to one you have scale a cliff and if you fall, you will either die or be really hurt and then eaten by tigers...or something, so we didn't go to those, but the Engineer said that not even those were much better, although they were certainly better than the one he is in charge of. He seemed more like a technical operator than an engineer. Someone asked him how he got his job and he talked about helping the mayor get water back in his house because he knew how the weird pipe system worked...it was strange. He also said he wouldn't drink the water in the plant he was working at. It was built in 1948 and it was a slow sand filter but I did not hear the whole description of the plant because I was in the far back. It does not matter though because whatever used to be there is gone because it is so old that most of it has eroded away. There was not anything at this plant.

Pineapples at La Sailba

We went to a Dole pineapple plant and some people could not get in because they were wearing sandals or shorts. That was lame. I do not know what they did because I got in and that pineapple we got was probably the best pineapple ever. Our tour guide said it was just ok. It was crazy to see how the US market dominates everything. The best pineapples are sent to the US while everyone else is sorted out and divided for the local market and the European market.

The water treatment plant in Sailba was a bit better than the Tela WTP but even this one did not work so great. There were not enough baffles in their flocculator so they were not producing enough flocs, which caused their filters to clog very often. While it is not much of a problem right now because it's not the rainy season, it becomes almost impossible for them to treat the water when it rains because of huge spikes in turbidity.

We went to a wastewater treatment plant. I had never been to one. It didn't smell that bad. I was kind of preparing for the worst.

We got to meet Monroe's wife Juanita and Jorge's wife (Rosita?).

The drive back was long and boring. Too many camp activities...

Over the Hills and Far Away

OJOJONA we finally got to see the plant and it is beautiful. I was actually impressed. This whole time I didn't think it would look nice being made out of plastic and cement, but it was actually really cool. Stuff that I do at school is actually being used somewhere else. I mean I didn't design the plant but I knew about all about it without anyone explaining it to me. Our host family is really nice and me Stefan and Zee have our own beds so that's cool too. Nubia, Gabby, Hector, Fernando and Eric are the names of the family members of our host family. Nubia is secretary of the water board in Ojojona and she's really smart. She really seems like she knows how to run things. The town was really small and nice and I really enjoyed being here.

It's a school day

Today I went to UniTech. It is just like a high school that you'd see on TV. Everyone is just hanging out and there are no classes or that's how it seemed out. I sat in a meeting and it seems like they want to create a semester abroad type program with Cornell.

We got to see the science labs and they're just basic labs with almost nothing in them. It's really weird to see college students learning the same topics we are learning but without all the resources we get at Cornell.

We got back to Ojojona and I saw the plant for the very first time. The plant works well but there are still many problems with it. Apparently, things were changed for the worse while it was being constructed. There is short-circuiting in the vertical floc tank, the baffles in the horizontal are all evenly space, the floating valve in the chlorine tank is corroding and the pipes into the sedimentation tank are breaking all the flocs...

There is a lot to be done with the plant and not enough time but Antonio seems willing to fix everything wrong with the plant so that is definitely a good thing.

I missed the inauguration...

Another Road Trip

This trip to Copán was long, but I enjoyed it. We stopped at a gas station and there was this cool monkey. He looked like the monkey from friends and it was cool.

We finally arrived at Hotel Mar Jenny. We arrived a lot earlier then Monroe did and we had to take care of the hotel arrangements... I hope everything worked out well enough for everyone else. Apparently, Ken Brown left enough money for a free dinner so that was good especially since, I was running low on cash.

Copan Ruins was a lot of fun. We had Antonio as our tour guide who, according to him, is in the Guinness world Book Of Records as the best tour guide ever... so we will have to check that out later. Copan was the least eventful though maybe the most fun...

Well it's almost time to leave Honduras... we are on the car ride to the airport and I am definitely not ready to go... I'm going to miss this place and I wish we could stay just a longer. I am not ready to go but this trip has definitely been what the doctor ordered, so here's to Honduras!

Tamar

Some memories....

Meeting at Unitec (Thursday 1/11)

Monroe had set up a meeting with some professors at Unitec to establish better ties with the local university. Vince, EJ, Steven and I joined him. I did not know what type of setting to expect but was pleasantly surprised. Unitec's campus was the equivalent in size of half of our engineering quad. It was located about 45 minutes from Ojojona, right outside of Tegucigalpa. The school crammed 7,000 students all in this space.

We met the Dean of the engineering school as well as some public relations people with the university. Jacobo from APP also joined us.

In the meeting we heard about all the different partnerships that the college has with different universities. This made it sound like they were enthusiastic to work with Cornell students as well. Monroe expressed his desire to have students from Unitec working simultaneously on our project. Since the engineering that we do is 'open source,' we think a partnership with students so close to our project site could be extremely beneficial to our project. It would also be nice to do some student exchanges for longer term. After the meeting we did a short tour of the laboratory facilities. One of the professors pointed out that they do concrete block tests that could help us determine the strength of the material we would potentially use for the future plants. I remember Dave telling me about how difficult it was for him to make such conservative estimates because we could not have the same testing standards for materials used here in the US.

As I was walking around, I kept thinking about if could be a student here. I felt like I fit in. Although smaller than Cornell, it seemed extremely inviting. I was really looking forward to our meeting with the students the following day. One of the professors named Tony Blair would be bringing about 25 students to tour our plant the very next day.

Meeting with the Students (Friday 1/12)

The Honduras Unitec students arrived on Friday morning. We had set up the pilot plant and were eager to gain their friendship. Monroe immediately engaged them by asking questions about their water usage. It was interesting to hear them all admit to drinking only bottled water. This got me thinking about what it would take for people to feel safe about drinking from their faucets. If for your whole life you are taught that the tap water makes you sick, when would you start to trust officials that it is safe? That made me think about all the people who do not even know that they are drinking dirty water. How could you start teaching people that water, H₂O, something that we all rely on so much, could be the reason for so many deaths? As I think more about this, I realize how education must be apart of AguaClara. It seems like we must have an education subteam that would help on creating or compiling information about clean water. Maybe we could work with APP to help spread information about the importance of clean water. If the people of a town demand better water, it seems like eventually it might be something that is expected. There is so much that needs to happen though.

In the beginning my group did not talk very much with the Unitec students. Perhaps because our group had both the professors in the group, they seemed to gravitate towards him more than Monroe or us students. Luckily after lunch time we split into groups to do 'suveys' on the people in Ojojona. I found that to be really rewarding. I walked around with a student named Jorge Rivera and Lauren. It was nice because although I feel comfortable speaking in Spanish, I am sure the people we interviewed felt more comfortable talking to a native speaker. It was fun walking around our village and talking to people. Whoever seemed inviting we stopped to talk with. We asked some basic questions dealing with water use. What do you use your water for? Where do you get your water from? Do you think water quality is important? Does the water you get from the faucet appear clean to you?

The answers we got varied a lot. Most people said their water seemed clean, except when it was 'chocolate.' That seemed shocking to hear. I have never turned on a faucet to see brown water pouring through. After reconvening with the rest of our group, I remember hearing someone say that someone they interviewed said that they shower with bottled water. That was shocking. This confirmed my thoughts about how necessary education is in our endeavor.

I got some emails of some of the students we met from Unitec. I hope that our meeting was important for them. I think it could be a real step forward in the success of our project. Having students that live so close to our project site, where they could offer technical assistance and support is really critical to our project. The more we get students in Honduras excited about this project, excited about how they can become community leaders and water activists, the more we can move forward together.

I always question our commitment to other parts of the world. I hear often the idea of 'start in your own backyard.' Many of my friends ask me questions like "Don't you think there is enough wrong with our country?" These are always such interesting things to think about. The truth is, I do not know the best answer. I like to think that whatever I am focusing my attention on is worthwhile to somebody, so it really does not matter where you start. If you are so convinced that the work you do is the most important, than other groups lose credibility. I think issues that we face here in the US are also important. It is hard to prioritize, but that is something that each of us has to do in life. I know that sometimes I like to spend time working on campus sustainability, and other times I like to work on prison activism. I think that there is an endless list of things to be interested in. At the same time, if you do not pick something that is important to you, you may be floating around forever. I am not even sure if that is so bad. I do know that I do not believe the US and Latin America is on the same playing field. We have benefited over the years because of their natural resources and their labor. I think the importance again is helping them build up their quality of life. I think that starts with water.

I know there are so many things to be concerned about. But I also know that it feels really good to be apart of a project that really makes a tangible difference in so many people's lives. Even if the whole community does not realize the importance of clean water, they will begin to as more partnerships are made.

The students at Unitec 'were just like us.' Yes, there are some very clear differences in the way that we all grew up, but no one has the exact same upbringing, even in your own neighborhood. These students are all learning just like us. Working with Engineers for a Sustainable World here at Cornell, it is my job to constantly recruit people to work on projects that teach them about sustainability. It was no different for me meeting the Unitec students. I really hope that we maintain connections. I know that I will be emailing some of them.

Leaving Honduras

Leaving Honduras was extremely difficult for me. I had two amazing weeks and had learned so much. I met great people and saw beautiful sites. I also had the pleasure of meeting the Brown family. They have donated a significant amount of money to help this project become a reality. It was important for me to put a face of these people. It was incredible to see how giving people are. Although we all have our own ways of giving, it was inspirational to know that we have people rooting us on in our ways.

All the students that accompanied me on this trip were amazing. Even as president of Engineers for a Sustainable World at Cornell, I am constantly reminded that there are so many great things that engineers are apart of. I am always happy to meet more people that I feel on the same level with.

I was really scared to come back to the States because of what a great time I had in Honduras. I know that I feel energized with the faces of the people in Ojojona and I am excited to be working more on this project. It would be amazing to be able to make my career out of sustainable water treatment systems. I am excited to enroll in some water treatment classes when I get back to Cornell and to spread the word about this amazing project.

Vincent

Journal

Today's trip to Punta Sal was amazing. There was bountiful natural beauty and amazing beaches. The canal we departed from in Tela was quite polluted but the water was quite clean out at the Punta Sal peninsula was great. Highlights include snorkeling and scraping my feet on the coral, a fresh whole fish lunch on the beach, picturesque bays, and cool tour guides. I later met an interesting fellow named Henry who had played on the Honduras national soccer team. He said he played against Pele back in the day. Cool dude. For dinner, I ventured out to a chicken place on the end of the beach and met some swiss guys. Came back to the hotel for a meeting with Pedro, our driver and Honduras liaison. Went out with some kids from the group to Iguana, a local disco.

I'm loving Latin American culture. I have been dubbed "Chino" by the local kids, not because they assume I'm Chinese, but because they call all Asians or anyone with small eyes "Chino" or "China." We've been visiting local water purification plants and treatment areas. It's pretty depressing seeing the condition of some of these plants. Some are simply adding chlorine to a turbid water input in an effort to kill pathogens, which is simple ineffective. At the Dole Pineapple plant, I was denied entry since I was wearing sandals and they had a pants and shoes policy. In the bathroom, there were a few shotguns leaning up against the sink, which was disconcerting. I got a shady feel from it.

Tela turned out to be a great starting point to our trip. Great tourist activities, safer than San Pedro Sula, and quite scenic. I met many ex-patriots living abroad because they like Tela's beachtown feel and low living expenses.

LA 34 was a good trip- we got to see the plant that previous teams designed. The water board of the town organized a meeting and thanked us for providing clean water to the community. They looked honestly happy that they had access to clean water, and cited figures such as having zero pathogens in it to support their appreciation.

On the trip to Ojojona, we piled into two vans and uncomfortably traversed the Honduran countryside. It is a beautiful country with plenty going for it. The mountains force the roads to circumvent the peaks, creating winding, scenic roads that our drivers race down. The drivers are quite the mavericks, passing every car at every chance. Red lights denote little more than STOP signs in America. Honking is liberally observed and serves as a signal of warning and acknowledgement.

Ojojona reminds me of the wild west. Dusty streets, an Alamo-like church, cowboys, and guns galore. Honduras has some serious security issues. All security guards carry shotguns or assault rifles, and the police are decked out in camouflage and serious body armor.

Our living arrangements in Ojojona were less than modest. We lived separated from our host, a nice woman named Esparanza. I slept in a cold concrete room, took cold bowl-powered showers, and brushed my teeth with water that came in bags. The Ojojona plant that the previous team designed was not properly constructed, so we spent the next few days diagnosing problems and devising solutions. A small group of us decided to change the angles of the baffles in one of the sedimentation tanks, which required draining the tank and going in and rearranging the baffles, which are quite flimsy. They would threaten to blow away in the wind unless we put weights on top.

I managed to fix the alum input tube, which was not dripping straight down into the source water input. I used matches to heat the plastic tube then bent it downwards, then cut the end at an angle so it would drip straight down.

Our free time in Ojojona was spent on the soccer field and in the house of our culinary hosts, who had 4 cute kids to play with. The meals became repetitive and I craved more meat after a few days. The kids in town all play with a simple top, so I bought one and entertained myself for the next few days with it. We spent an extra day in Ojojona working on the plant. The dedication ceremony took place while we were there. There was a ribbon-cutting ceremony and our benefactor, Ken Brown, joined us with his family. For one day, we toured the plant and administered surveys with some students from Unitec, a Technical College in Tegucigalpa. It was fun hanging out with local students, and we later met up with them in Tegus for a fun night of dinner and dancing.

We took a long van ride to Copan and settled into our hotel. Copan is more developed due to its proximity to Mayan ruins, a major tourist attraction. We visited some plants in surrounding towns and toured the ruins, ziplined, and explored the town. It was a good place to conclude our journey. By the end of the trip I hadn't taken a hot shower in 2 weeks. The last few nights, there was fun karaoke, a big dinner, and a disco party. I rode a mechanical bull and hurt my back when I was thrown off onto thin mats. The last day, we packed and went to Tegus for the flight back home. Everything seemed to go smoothly on the trip. There were some planning issues and the survey probably should have been designed back at Cornell, but everyone made it back alive and with a better understanding of water purification in Honduras.

Zaheer Tajani

A Tale of Honduras

We left Ithaca, cold and rainy, for our tropical paradise of two weeks. The edge was just beginning to set in when we landed.

Getting there:

Landing was an adventure. Just looking out over the blue Caribbean waters, like sky on Earth, was awe-inspiring. As we landed, the scenery changed from the lush mountains to the less than lush farms that grew sparse beneath us. The disparity between the two environments, the two micro-economies, was humbling. They were so close, so clearly capable of equity, and yet so clearly divided. I began to steel my self to what I was about to experience, preparing my self for beauty and horror.

In the airport, children ran to and fro, families cried that their children were leaving, and the line at Wendy's was as long as ever. Hardly a change. But something was different. I could sense it in the air (which was significantly warmer, to my pleasure). A little boy ran up to me in the airport and tugged on my sleeve. Before even looking down, my body tensed, feeling the pressure of my wallet, my passport, my bag, my hat. Everything was in order and so I looked down, a feeling of shame deigning upon me for having so little faith in a new country. The boy and I locked eyes, and he extended his hand. "Money." The English was crisp and practiced. The whole boy's life flashed before my eyes, till that point. Abandoned, alone, deserted, detested. Barely living from day to day. My mind wanders to arriving in other countries and I almost give in. But then, from nowhere, I hear a small cry and the boy has run away, to another target? No, his parents? Yes. Well now, this is quite a different world.

We sit, waiting for the cars to arrive and hold our bags like sinking passengers. Is it too much? Are we in too deep? What, exactly, can integration do for me right now? I look out side and am calmed by the UV rays and mountainous terrain and two busses, straight out of Startchky and Hutch appear. We load into the newest of the new vehicles and we are off to Tela.

Tela:

Upon arriving, we pile out like sheep waiting to be herded into the hotel. The cool ocean breeze is in stark contrast to the warm air and I put on my jacket... its going to be a cold night on the beach. After what appears an eternity of dealings, the rooms are settled, the beds are present, and the water is pressure less, and possibly diseased. Nothing quite like loving where you're living. Our first meal is served in an open dining area that is white and pristine. We can see little children getting up from their day in the beach, the dance floor behind us is vacant, and the first of a slew of plantains is placed before us. The first bite is so sweet. Its own delicacy, xenophilia begins to kick in and the plantains are gone before I realize it. A cruel twist of universal irony pushes me to mutter, "God, I could really go for some more plantains."

The Island, Church, and Jorge's sermon-

After waking up early and making our way to the local church, the service is nearly complete. In this dilapidated area of the city, the church stands clean and pure. The bells ring as we leave to return that night but make our way to the beach of Punta Sal. After a...turbulent trip across the bay, we arrived at a beautiful island inhabited by indigenous people whose children do not go to school on a regular basis. After an interesting lecture about the abhorrent employment condition in Tela (95% unemployed), we enjoyed a nice day on the beach. It was odd, going from something so serious to something so calm and...fake. Of course, despite its incongruity, drinking coconut milk from a coconut is always nice.

Upon returning, we made our way, after a bit, to church. This was a refreshing experience to say the least. Nothing changes when you're in a church, and that's just nice. The sermon, despite its inaccessibility to our English ears, was still moving as we scanned the faces around us; we were honored by the wishes of peace bestowed upon us by the congregation. The sermon it self was beautiful but slightly abrasive with the...less than piquant tambourine. It was, however, its own beauty...something that is hard to imagine with out seeing the happy faces amongst the poverty.

As would prove to be true latter, a talk with Jorge was better than a 100 others. By way of introduction, Jorge is Jorge. That's basically it. He talked to us about his religious work with different gangs and where they came form. What touched/affected me most about the discussion was the genealogy of gangs. He talked to us tirelessly about the affect of gangs and how they are maintained and beyond that how they were formed. He indicated that the majority of gangs come from export. When Hondurans hit US streets, they learn about gangs and the need to stick together to be safe, and then they are returned as illegal immigrants to Honduras. Then, the logical extension is to continue this sort of fear of the other and begin to group together. It is a sad, but logical, progression given the climate of their migration and this is, it self, a tremendous sadness. I thought it was also very interesting, and inspiring, how much was put out there on his part. Despite his children, wife, life, prosperity, all of which would be so easily stripped from him with one miss step, his faith was unwavering that he was doing good and so he kept on. This sort of determination really reaches people and is a source of inspiration.

La 34-

LA 34 was its own experience. We started off by seeing the plant and taking note of its running. The plant, though not running at full efficiency, was an efficient reminder of who we were working with. Despite communication errors, a lack of knowledge transfer, the inability to maintain a physical presence, and so many more problems, there was initiative. The community of LA 34 devoted its time, its resources, and its dedication to making sure the plan ran at least as well as it could. This included everything from keeping up date on trying to buy alum, to making sure educational initiatives were executed in the community. This is probably one of the hardest things to reflect on because it was almost just the presence of the community was inspiring. We all made fun of how formal and how oddly formulaic all the discussions were. It seemed that every time there was a comment, it began with thanks, ended with thanks, progressed down the line and was oddly shallow. However, despite all that, it was impossible to miss what was really going on. How much things had really changed. How appreciative they really were. And, some how, that made it better.

The treatment plants

Tela- Oh boy...Tela. What can we even say about this one? A not so effective treatment of water that was once pure but has since been contaminated. The water is terrible due to farming and live stock up stream that pollutes the water and the water that runs through where a filter once was is now simply chlorinated. The worst part...they know this. The plant operator spoke of the fact that the degeneration in the water was both apparent and abhorrent and yet turning off the water was simply not an option. The chlorine was too high too close and too low too far and too ineffective when it was in the right amount. It was terrible knowing that people knew they were being hurt but could do nothing to protect themselves because they were being driven by an even more basic need- water.

Mennonite - The Mennonite plant, too, was a shock. Being built in a building once owned by the railroad and banana block, this religious institution sought, on a small scale, to give back to the people of the area. It was an interesting installation. The system was small but expensive and almost divinely acquired. Thanks to the good graces of some stranger, the building was bought, the machinery funded, and the operation started almost without a hitch they said. What was most interesting, though, was that such valuable resources were just sitting in that building, stones through from some clearly poor villages and communes where it was doubtful if the people were even receiving any water. What's more is the sheer sophistication of their means of filtration. 3 filters, UV light, it was beautiful, it was private, and it was inaccessible.

Ojojona- This, too, was a sight. We were able to go up with Antonio here and see exactly what has been going on. Though there were some problems, it certainly provided insight. Not only did we realize that there were certain fundamental misunderstandings in procedure, in application, in mental construction of the plant, but we also realized that that was not necessarily a major problem. The plant operators, the local people, APP, all parties seemed willing, able, and eager to cooperate and learn more. It was clear that progress was not going to be a problem. What seemed to be the theme of our time in Ojojona (other than the massive amount of wind) was a little bit of engineering ingenuity and how it was going along way. Like any group of students seeing a semester's work in action, we were excited to play, to learn, to fix, to perfect. We were lucky to have Laurie to snap up back to reality. She brought to our minds, intentionally or not, the importance of local ownership, personal efficacy, on the part of the citizen of Ojojona. It was their plant, their project, and were there, as our mission statement would indicate, as assistance for knowledge transfer. It was belittling but humbling. A double dose of goodness. It really helped me to realize exactly what the implication was of our presence in the town.

Copan- Copan was, by far, the saddest of the plants we saw. It was a clear testament to the implication of what we learned in Ojojona. It also proved that technology, money, are not all that is needed to an effective system. The plant was beautiful. It had all the components necessary to a perfectly American system, filters, electricity...compared to what else we saw, that is saying quite a bit. However, the plant operator was almost incapable of action on the plant, making him less an operator and more an observer. It was confusing to see such technology go to waste on some simple things like the height of the Alum feeder, basic problems in flocculation. The lack of knowledge, too, was astounding. Especially from government funded and run organizations, speaking as an American, I expected accountability and answers. We found none. We just found the same problems replicating themselves over and over.

Ojojona-

Ojojona was a trip all its own. The city was beautiful, its own city atop a hill if you will. It is a religious little community of people divided by wealth. Every night was dinner at the house of Martin's parents, a lovely bunch with grandchildren. The most sobering of which was a deaf girl whose fate was uncertain and all too certain. I found myself constantly questioning what would happen to her only to realize that my inability to know was like that of everyone else. With no institution around to assist, to rear, to educate, she was likely to grow, marry, and die. Worse, grow and die. Worse still, could she be sick and be incapable of letting others know? Was she in that state now? And yet, they loved her, cared for her, and looked after her with infinite care. As any parent for any child. It was clear, that something was well.

I found myself constantly schooled by little children in soccer, which was depressing, and then again by their older siblings, a more justifiable situation. It was fun just playing, singing, talking, learning about what they were doing, who they were. The meals themselves were excellent...in general. Other than the usual beans, rice and bread, we received the most delicious pancakes with fruit and honey I have ever had. It was simply a testament to just how good simple foods can be.

Copan-

To end, I will start at Honduras's beginning. It seems like we traveled back in time an eternity walking down the path, away from the armed guards, as usual, into the pristine yard of the Mayan ruins. It was beautiful. Before I get into that, we had a tour guide named Antonio who totally charged too much and was clearly scamming us. One of my few regrets from the trip, paying him the full tip he demanded. The ruins, however, were beautiful and he WAS a wealth of knowledge. It was amazing climbing through the ruins, stepping where people thousands of years ago assuredly stepped, seeing what they saw. It was sophisticated, visually eloquent and simply in its layout. One of the most striking points was a gigantic staircase that chronicled the history of the civilization, with head stones for each one of the rulers along the way. It was amazing to think about the effort and ingenuity that went into its construction. Todd brought up an interesting point regarding the conditions that caused the city to be abandoned. It appeared that the city fractured due to unsustainability in the agricultural means of production. It was as though we were receiving a clear message to the importance of listening to the people. Despite all our good intentions, what we feel is best, it was clear that something more was needed for the city to succeed, for our goals to be achieved.

The one thing I remember quite clearly is sitting for an hour or so atop the southern throne, where the king sat when watching sacrifices and looking out, imagining what it must have been like in its hey day. I could not fathom. So I thought about the scenery, the logic, the spreading of the people, of resources and an interesting memory came to be. I remembered studying social and anthropological development and its implication on development. I recalled a story of a group of scientists who were so worried about the rainforest, they attempted to preserve. After taking species samples from all the different life systems, razed the earth, fully fertilized, allowed natural development and then they began planting. Rows and rows of trees, plants, organisms, all in lines and formed with completely human perfection, a natural impossibility. It was like a forest of structure, or rather a system, because anyone who saw it would surely have missed the forest for the trees. However, as the Mayan society, it was completely impractical after a point, and after flourishing, the organization became stifling and, almost overnight, the forest died, rapidly degenerating, killing itself, committing suicide. That was what struck me most about the Copan ruins, that was what struck me most about the plants we had seen up to that point. The point is clear; the quiet acceptance of self-imposed destruction is ominous and pervasive. Horrifying, but calm. Old death waiting for new life.