El Barril Trip Report
June 13-20, 2004

Participants:

Project Members: *Joe Bassett, Kristen Drobinski, Angela Hogg, Neil Mendenhall, Hoa Tran*
Additional Trip Participants: *Carolyn Nesbitt, Jennifer O'Brien, Jeremy Rode*

Primary Sponsor:
Mr. James Jameson

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I. OBJECTIVE OF TRIP

The objective of this trip was for the IRPS team to coordinate with the community of El Barril to install and implement a water system designed by engineer consultants working with this team. Specifically, the purpose was two-fold: First, to install the main water distribution line, and second, to install a float-switch that shuts off the well pump before the intake of high-sediment water.

II. PRIMARY ACTIVITIES

El Barril Gravity Water System Description: Inflow/Water Supply
(Pump, Generator, Electrical Connections, Water Supply Line and Holding Tank)

The existing single horsepower pump was rewired with waterproof connections in the well. All plumbing connections were replaced and valves were installed for the community to pump to the tank while still allowing access to water at the well to keep the existing rudimentary system working while finishing the new water system. Furthermore, a new generator house was constructed near the well which houses a new grounded panel with a 240 volt pump circuit and two120 circuits for future uses.

The new panel is powered by a used, recently purchased 10-kilowatt gasoline powered Generac generator, which will now be protected from the elements by the newly constructed enclosure. The pump has further been protected from the uptake of sediment with the installation of a float switch. This switch is located in the well and will turn off the pump when the water level gets too low and will reduce the need to service the pump. All connections to the switch have been terminated in the generator house to facilitate overriding this safety mechanism in case of switch failure. At least three members of the community including Luis were present while the wiring was connected and detailed explanations were given. This knowledge will enable the community to conduct basic diagnostics and repair of the electrical system in the event of future problems.

The existing 5000 liter water tower has been connected to the well pump with approximately 300 feet of 1 ½-inch PVC tubing which was buried at a depth of 1 ½ to 2 feet to prevent damage by UV light and vehicles. The tank was cleaned and filled multiple times where both the tubing and the tank were tested for leaks and the system worked flawlessly. The approximate fill time is around 30-45 minutes.

Water Distribution Section
(Main Distribution Line, Branch Lines, Shut-off Valves in Register Boxes, Water Taps at Each House)

As planned, approximately 1200 feet of 1-½ inch PVC pipes with three shut-off keys were laid through the center of the camp serving as the main distribution line. With the help of the project engineer, it was calculated that fourteen branch lines, each with shut-off valves, were needed to distribute water to all households in the community. Each shut-off valve was protected with

register boxes. After completing the main line, secondary water delivery lines to individual households were marked from the branch lines. Some lead directly to individual homes whiles others T-off to connect additional homes. As mapped, each branch currently serves 1-3 households. Smaller PVC tubing of 1-inch in diameter was laid at 6 inches to 1 foot underground connecting to individual homes with an outdoor spigot. Although the secondary lines meander up and down, the project engineer and consultant assured us that inclines and declines of 30 feet or less will cancel any friction caused by inclines, thus not affecting the pressure and distribution of water to homes further away from the water tower. Eight houses were connected to the system with the limited supplies of pipes that were purchased. Trenches for the remaining 18 houses are being dug. The rest of the pipe was scheduled for pick up on Monday, June 21, 2004. Upon completion of the project, approximately 5,000 feet of pipe will connect 26 homes to the main line.

Community Celebration and Meeting

On Saturday evening, a few hours before the project group was scheduled to leave early the following morning, the community held a ***con bibio de traje*** (potluck) to celebrate the new water system. We successfully introduced the community of El Barril to Hoa's California sushi rolls, Joe's cheese and vegi pizzas, and IRPS's oatmeal cookies. Before dinner, El Barril and IRPS Baja Project women played an invigorating game of basketball. After dinner, the men played soccer, while the children learned calisthenics from Kristen. Neil thanked the community for its hard work and introduced Hoa and Joe as next year's project leaders. Before the evening ended, the Baja Project group and the community briefly contemplated the next project ideas to be further discussed at the tentatively scheduled meeting in October 2004. The celebration ended with many cordial hugs and kisses and sincere "thank-yous."

III. FUTURE PROJECTS IN EL BARRIL

Health projects:

1. *Health Clinic:* The community is hoping that the former elementary school room will be converted to a health clinic to be used by visiting government medical teams. The center can possibly be also used for health training and environmental education. We will help with this process in the upcoming year.
2. *Sanitation / Latrine system*: Due to the sandy soil and current location of outhouses relative to the well, the safety of El Barril's water supply may be at risk. In the next year, we will be researching alternative latrine systems, such as the use of cement or other liners to keep waste from entering the water table. We will also be researching new waste recycling systems that actually create fertilizer from waste.
3. *Community Garden:* The community expressed an interest in improving their garden. The community's current diet consists almost exclusively of fish and simple starches. Adding fruits and vegetables, such as peppers, tomatoes and melons, will surely benefit the health of the community. Daily watering of such a garden will be a considerable strain on the well, so "media sombra" partial shading and choice of vegetables will be critical to minimize water usage. The issue will be addressed by the IRPS team, and guidance will be given to avoid using contaminated water from the latrines to irrigate any food crops, which is a practice in other areas of developing communities.

Water sampling:
Justin Kulongowski, a Scripps Institute of Oceanography graduate and hydrologist at U.S. Geological Services, has offered his assistance in analyzing the water supply. This analysis will be crucial in evaluating potential need for water filtration systems.

Capping of second well:
Capping of the second well is needed to insure safety for children playing in the area, and water security, as this well located 1 mile from main well and is an important reserve water source.

Improved cap, main well:
The potential benefits from more secure cap, i.e., cement instead of current wood construction, needs to be addressed. Wood will need constant repair and the thin plywood top may be a safety issue.

La Cancha Lighting:
The cement area in the center of town, used daily for soccer, basketball and other athletic activities, also serves as the community gathering place for meetings, fiestas, etc. Project engineer, Jeremy Rode, believes that a lighting system can easily be constructed utilizing the community's unused solar panels, light bulbs, and mounting posts. The community can perhaps raise money for these lights and posts through social events and donations. Such fundraising would be consistent with the philosophy of the Baja Project Group of the need for community involvement in each project. We will research these lighting costs in the fall.

IV. SUMMARY OF ACTIVITIES

The main purpose of this trip was the installation of the main water distribution line and a float-switch that protects the pump from the uptake of sediment when the well water level is low. These project goals were accomplished within the first two days due to the unexpected high level of participation from the community members. As a result, we decided to continue with laying the secondary water distribution lines, which we had originally expected would be the responsibility of each individual household. Because this last-minute addition to the project goal was unplanned for this timeframe of the project, we were unable to procure the amount of required 1-inch PVC tubing from Guerrero Negro during our visit. Additional tubing to finish of the project was scheduled for pick-up a week later. Despite the lack of supplies, the community members were extremely eager to have all the secondary distribution trenches dug. By the end of our project stay, 8 homes had functioning water faucets less than two feet outside of their homes. It is expected that the remaining homes will be connected to the water system in the coming week, upon the arrival of the necessary supplies.

We certainly have exceeded all our goals this year in constructing a water system for the community as well as building a trusting relationship. This is obvious in the successfully installed water system, high level of participation from community members in the project, and their warm reception and sincere gratitude as shown at the celebration on the last evening of our

stay. However, much of this success is owed to the active involvement of committed community and project members as well as Mr. Jameson's generosity and volunteer consultants.

V. STEPS TO TAKE BEFORE OUR NEXT VISIT

- Maintain contact with the community to troubleshoot and address any issues arising with the water system.
- Recruit team members for the 2004-2005 year. We hope to find 3 or 4 new members, including at least 2 from the incoming IRPS class, to secure the future of the project. Criteria will include Spanish-speaking ability, previous development work & general work history, and ability to donate a significant amount of time to the project, both during school breaks and throughout the academic quarters.
- Delegate leadership roles to continuing second year students. Jeremy, Hoa & Joe are to formalize roles and responsibilities.
- Begin groundwork and preparation for the second year's projects.
- Consultants for next projects on health:
    - Cathy Fitzgerald, Ph.D. in Environmental and Water Systems, and
        - CathleenFitz@aol.com
    - Carolyn Nesbitt, Master's degree in Environmental Education.
        - cnesbitt_bol@yahoo.com
- Next trip tentatively scheduled for October 2004!

VI. OTHER TRIP NOTES AND EXPENSES

The team of eight students took two cars down to El Barril on this trip to install the water system. Due to scheduling and to ensure that all necessary supplies were obtained, one group of students traveled on Monday and a second group traveled on Wednesday. This allowed the first group to contact the second group and obtain additional last-minute supplies needed for the completion of the system.

Both groups rented Jeep Grand Cherokee Laredos from Dollar Rental Car in San Diego and traveled to El Barril via Bahia de Los Angeles. Both groups started driving between 6 and 7 am and made it to El Barril by 7 or 8 pm. Both southbound trips were without incident, with the exception of two flat tires on the approach to El Barril from Bahia de Los Angeles.

The return drive was also uneventful with the exception of one flat tire on the road from El Barril to Bahia de Los Angeles. We departed El Barril around 7 am and arrived in San Diego around 8:30 pm.