WEFTA Policarpo Galindo Daily Log
Volunteers: Meredith Caley | Dave Caley
April 21-25, 2025

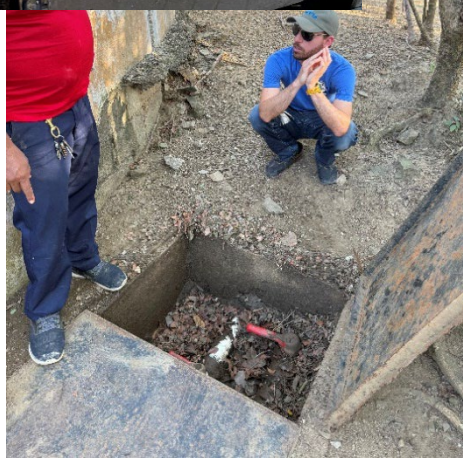
Monday, April 21, 2025: Walking the system

- Water system walk with Concepcion Bacadano (*Concho*), who was one of the original plumbers under Fausto Baiden. He left because there wasn't enough money to pay him and the other plumbers. He did not agree with Fausto's approach. We viewed wells, tanks, and walked the line through a complete sector and through a few others up to the main water tank at top of community.
- Met current plumbers, Carlos Urbina and Benjamin. Both Carlos and Benjamin were friendly and seemingly open to talking with us. They showed us the central well/pump, collection tank, and pressure vessels. Benjamin walked with us for a while to a few homes.
- Current well flows total approximately 40 gpm (w/ individual well flows of 15 gpm, 14 gpm, 5 gpm, and 6 gpm). Measured by timing how long it takes to fill a bucket. Wells run 24/7, except possibly on Sundays when the plumbers have the day off, though this was not totally clear. All 4 wells have flow meters/totalizers.
- The pump delivering water to the main tank at the top of the community runs for 12 hours at night, while the delivery pump located at the central collection tank runs 12 hours during the day to deliver water to the lower portion of the community.
- Carlos and Benjamin spoke about their frustration with the "*empresa*" they work for (referring to Fausto Baiden). His instruction is generally to not do maintenance but replace things when they burn out.
- The plumbers are in a difficult situation. We got the impression that they want to do the job well and care about providing water, yet folks resent them because they represent the poorly functioning system, and by extension, Fausto Baiden. They said they have trouble dealing with many families.
- We spoke with many houses about their view of the water situation. When Benjamin was present, it was clear that folks were trying to speak well about the water situation. There were shifty eyes from some homes when he was around, giving the feeling that the water users did not want to say anything negative in front of the plumbers. When Benjamin was not there, the community reports were consistent.
- Houses currently receive water about every 3 to 4 weeks. While people consistently said 10 years ago, the water came every 8 days. The plumbers turn on the water sector by sector, letting the houses fill up their tanks or receptacles. For the gravity-fed areas of the system, manual manipulation of the valves is used to make sure each house has water to fill up. The tanks are drained somewhat quickly as there is a cycle of getting water, filling storage and draining the resource. For this reason, it can take a few days for each sector to get water.
- Houses are responsible for maintaining their service lines; we saw at least one service line that was leaking and needed repair.

- Concho and the plumbers claimed the system had grown from an original 400-500 taps, to now at least 800 and possibly as many as 1,100 taps.
- There were some claims that the plumbers are not paid even minimum wage and may accept money from some users (i.e., bribes) to get water to particular houses outside of their sector's schedule. This was not verified.
- 80-90% of houses have large storage tanks of at least ~2,500 liters. Benjamin claimed some houses have as many as 40 drums worth of storage (i.e., 2,200 gallons or > 8,000 liters). Other houses use makeshift tanks such as refrigerators laid on their backs, gallon jugs, buckets, etc.
- Every house pays 250 lempiras (L250) for up to 12 barrels of water. Concho claimed that for every additional 12 barrels of storage, a house would pay an additional L250, with some houses supposedly paying as much as L750 or L1,000 per month. Most (if not all) of the community currently pays for water, as those who do not pay are quickly cut off from the system. Money is collected by an administrator who puts it in a bank account that is owned by Baiden. She may also take some of that money to her house and let the plumbers use it for repairs, so it doesn't go right to Baiden. This was not confirmed but spoken about in whispers.
- When houses do not have enough water, they buy *botellones* or large jugs of water for L45.
- It seems like the water system could be close to self-sustaining with the existing fee structure (i.e., existing funds would likely cover routine maintenance, salaries etc) IF the community had access to outside funds for larger capital expenditures, or even some larger routine maintenance needs (e.g., well redevelopment).
- Suggestion: Need Operation and Maintenance manual/schedule.









Tuesday, April 22, 2025 (morning): Meeting with Sussy Ochoa of Polo's Water Association of West End and Elsy Zamora, civil engineer with Coral Reef Alliance

- Polo's Water Association (PWA) is the water treatment and water provider for West End. They presented their history (only about 15 years old), how they obtained legal status and how they operate.
- We learned a lot about the Junta de Agua legalization process, supporting agencies (ERSAPS) and tips for success. Sussy and Elsy are a wealth of knowledge and would love to help guide Policarpo in how to legalize and legitimize their Junta de Agua. They provided a written guide/educational book for the Junta de Agua which we have a copy of and gave one to Policarpo. These 2 agencies see themselves as a network to help other communities be successful.
- They also advised that we should go to the municipality to help with the Fausto Baiden "ownership" complication. They told us about the Marco Law (*Ley Marco*) which says that municipalities can give water power to a Junta de Agua and authorize it. There will need to be *personería jurídica* (which the Patronato may already have if the Junta de Agua does not).
- A few of their suggestions were:
    - There should be a separate Junta de Agua from the Patronato.
    - Junta de Agua members serve for 2 years.
    - Key parts of a successful Junta de Agua:
        - Liderazgo y compromiso comunitario
        - Legalización
        - Análisis tarifario (ERSAPS can help do this analysis of how much to charge)
        - Contratación de personal clave
        - Integración de manteamiento y medición
        - Cumplimento de normativas y regulaciones
        - Plan estratégico de inversiones
        - Cooperación internacional

Tuesday, April 22, 2025 (evening): Meeting with Patronato

- We met with members of the Policarpo Galindo Patronato, including:
    - Junior, Samy, and 4 others.
- The biggest concern for the Patronato is transparency. They are very frustrated with Fausto Baiden and Living Water. They have tried to put together a Junta de Agua in the past but Fausto apparently "didn't accept it." Fausto is reportedly a smooth talker but doesn't deliver. They were told they need to spend money to legalize a Junta de Agua and go to Tegucigalpa to do it and were afraid to spend the money since he hadn't followed through in the past.
- Samy says Living Water built many systems in Honduras and all have been turned over to their respective communities with the exception of Policarpo. This is very frustrating for the Patronato who would like to have a better maintained system, increased water and transparency of costs. Sami says Fausto Baiden had shown him a certificate naming Baiden as the legal Living Water representative in Honduras, which he claimed granted him "ownership" of the system.
- Samy reached out to Living Water a few years ago to report that Fausto was not helping maintain the system and that he suspected he was skimming money and/or falsely reporting work. Living Water said that "someone would be in touch". A few days later, Fausto called Samy. It turns out that Fausto is a family member of someone connected to Living Water (according to Samy).
- We asked what the community would need for a successful water system if Fausto were not in the picture and were told:
    - More water - maybe 1-2 additional wells to increase water amount.
    - Money for improvement and maintenance - specifically to clean the current pump piping and wells because it has been years since they have been able to do that.
    - Budget/permission for plumbers to maintain system - currently not "allowed" to spend money for "good glue" or other smaller things, nor to do preventative maintenance such as well cleaning.
    - They have previously discussed adding solar panels to the system to help lower electric costs, which is by far the single largest operational expenditure for the system.
- They said the community owns the main tank, 2 (or 3?) of the 4 wells, and the piping network. Living Water apparently paid for the central well, and the original pumps in the well(s). They said they would gladly plug that one well to help get Living Water/Fausto out of the picture if WEFTA were able to provide funding to drill/install 2 new wells.

- Elena took the floor and announced that over the last several months, Alice has contracted her and a group to do a community census. They are almost finished with this work. They (Alice and Elena) have put together a financial plan for the water system for the next two years. She said that Alice has a sum of money to help with the water system if the Patronato can provide a signed agreement to form a Junta de Agua by May 25, 2025. She said that WEFTA is here to provide 2 wells and Alice's organization has other funding. We were unaware of this announcement and provided nothing to suggest WEFTA was a part of this decision, rather, this was Alice and Elena's deal.
- The Patronato debated this for a bit and were again concerned about Fausto's claim on certain parts of the system. They are afraid of making an enemy. Would the plumbers harm the system for Fausto? They were also worried that a legalized junta will take a long time to create. They said they would be willing to hold another election for a junta de agua and pursue legalization if guided along the path (we mentioned Polos/Coral Reef Alliance as potential facilitators in this regard).
- Concho was at the meeting and spoke about how Fausto has no respect in the community, even with businesses.

This is a photo of Elena, our community contact/ "make it happen" support person and me. Her baby Danna had fallen asleep during the meeting, and I didn't mind holding her while Elena presented. 😊

Wednesday, April 23, 2025: Walk with census group

- We walked with several census group members as they collected data to complete their project. This group included: Nelson, Elena, Concho, Evelin, Maria and a few others.
- We spoke with houses who echoed the water storage due to only getting water access every 3-4 weeks. They spoke about not having enough water to wash clothes and bathe if they prioritize drinking/cooking water. Some houses mentioned they would be willing to pay more per month for water if they didn't have to buy the extra drinking water.

- Nelson was very active in conversation about change and water education. He spoke to folks about habits and setting new norms. 1) don't waste water, 2) we need to maintain, clean, fix and prevent and 3) expand system.
- We heard that some of the pipes in the steep areas have "exploded" in the past (likely at fitting connections).
- Again several people said there were currently as many as 1,100 taps connected to the system.
- One house mentioned that they felt the plumbers could use some water system training to be a little better at their jobs.

Friday, April 25, 2025: Meeting with Roatan Alcalde

- We met with Alcalde McNab, 3 members of the Patronato (including Junior and Samy). Samy works at the municipality and had briefed the Alcalde about the Fausto Baiden concern. In our meeting, it was clear that the alcalde was familiar with the situation.
- We asked if/how a junta de agua could be legalized or legitimized in order to take control of water system. The Alcalde brought in a lawyer and after some discussion, he said that the municipality could give control of the water system to the junta de agua that would work under the Patronato, which already has *personería jurídica* (required for legal status).
- The lawyer told the Patronato they need to bring in documents to get the processes started. He was very clear that the Patronato needs to inform the community of what is happening for transparency. The Patronato decided to try and have a meeting about water on May 11th so folks could be informed.
- They community will elect a new Patronato (or reelect this one) on May 25th. They will hold elections for the new Junta de Agua on that day as well. There is fear that if the other person running for president of the Patronato wins, she will want to work with Fausto since she "sold" him land for a pozo in the past (though this is agreed by all to have not been legal).
- The alcalde points out that all water wells must be registered with the municipality and that Fausto/Living Water has not registered any. He also says the community needs to start using flow meters at every house

for transparency and long term success of the system. The Patronato thinks they could start with the businesses in town.

- The municipal lawyer scolded the Patronato for not coming to the office with documents about Fausto sooner. The lawyer then wrote us a letter saying that the municipality is now working on turning over the system to the Patronato/Junta de agua and would love for WEFTA to be able to help with 2 wells.
- The 2-well idea only came from Elena at the Patronato meeting but has quickly morphed into a concrete idea for everyone. They now say Living Water donated 2 wells (Pozos Central y Bonerge), compared to only one mentioned at prior meeting.
    - That said, if an elected junta de agua can legally take control of the system from Fausto, there should be no need to plug the Pozo Central and the Pozo Bonerge that were donated by Living Water and so any number of new wells should be decided based on pending census data and verification of the number of users.
- The lawyer also made it very clear that the community should not be paying Fausto any longer. This would mean putting the water bill money in a different bank account, which the Patronato needs to set up. Lawyer/McNab said at this point might as well wait until the Patronato election in May, as the bank account situation needs to be updated after every election.
- McNab requested that if WEFTA does decide to help drill a new well(s), to please send a letter to the Alcalde/municipality so that the new well(s) can be approved/legally registered.
- Plumbers need to be kept in the loop so they can work for the community/Junta (if desired by them) not Fausto.
- Everyone leaves the meeting and week feeling very positive that there is now a plan to elect a Junta de Agua in a month, having it work under the Patronato's legal status to bypass that complication. That should mean a new bank account can be opened for the community and improvements can be made to the system and the Junta can be trained to maintain system.

WEFTA Community Water Analysis Report

Colonia Policarpo Galindo, Roatán, Islas de la Bahía, Honduras

Completed by Meredith Caley, M.A., and Dave Caley, P.E.

April 2025

Introduction

During the week of April 21-25, 2025, WEFTA volunteers Meredith Caley and Dave Caley visited the town (*colonia*) of Policarpo Galindo, located in the central steep hilly terrain of the island of Roatan, Honduras. The goal of the trip was to meet with community members, local leadership, and generally review the community water system to provide the following community analysis as it relates to the potable water situation in the town.

The summary presented below is mainly based on meetings and interviews conducted during the trip, including with community members, the two plumbers employed to work on the water system, a former plumber who worked on the system for almost ten years, the Policarpo City Council (*Patronato*), and an organization associated with the town Clinica Esperanza, who are currently conducting a census of the colonia. Additionally, WEFTA volunteers met with Mayor Ronnie McNab of the municipality of Roatan, which incorporates Policarpo Galindo, and a municipal attorney. Other known information based on prior WEFTA visits and reports may also be incorporated into this report. Much of the information could not be independently verified during this brief visit.

Administration

Background

The first parts of the Policarpo Galindo water system were originally donated by a charitable organization called Living Water for Roatan (LW4R) around 2008. Though accounts sometimes differ, it appears LW4R donated funds for the drilling and installation of two supply wells (the *Pozo Central* and the Pozo *Bonerge*) and associated pumps, piping, and controls. That said, community leadership states that the rest of the system, including transmission and distribution piping and the main storage tank, were installed and are owned by the municipality/colonia. According to the *Patronato*, LW4R (possibly under a different name) has built multiple water systems in Honduras, all of which have been administratively and legally turned over to their communities, with the exception of Policarpo. This was not verified.

Current Administration

Attorney Fausto Baiden, who lives in Tegucigalpa and has no direct connection with the colonia, is the legal representative of Living Water in Honduras and was appointed administrator of the Policarpo water system by Living Water sometime after construction. Baiden employs two plumbers to run the system who provide minimal maintenance to keep the system running. The *Patronato* and the colonia writ large do not believe that Fausto Baiden is working in the community's best interest and would like him to turn over control of the system to the colonia so they may administer it and make decisions for themselves. The *Patronato* has requested that Baiden hand over control of the water system to them and the colonia many times since construction. Baiden, however, has refused and appears to claim ownership over the system, even going so far as to demand the colonia must buy the system from him.

The *Patronato* states that Baiden has told them multiple times that if they elect an official water committee, he would turn over control of the system to the committee. As of April 2025, Policarpo does not have an official water

committee, although they have held two elections in the past. They report that neither of these elected water committees were "accepted" by Baiden. The *Patronato* is motivated to address water concerns in the community. There is widespread belief in the community that Fausto Baiden is skimming money from the community water fund. Several community members provided WEFTA anecdotal evidence that in 2023, the colonia met with Baiden and requested documentation of expenses which he could not provide. This caused anger in the colonia and local leadership. The *Patronato* is very clear that they want transparency and are very motivated to find a solution to provide more water for their community, leading with the transparency they do not currently have. It was also reported that members of the *Patronato* reached out to Living Water several years ago to report Baiden's wrongdoing and were told that a representative would reach out to them. A few days after this call, Baiden called the community on behalf of Living Water, effectively ending the complaint.

Users are charged L250 (about $10 USD) per month that they pay at a central community location. Their payments are logged by a clerk and then deposited into a bank account owned by Baiden. From that account, Baiden pays the two plumbers. At this point in time, the plumbers are supposedly paid less than minimum wage (though the exact amount could not be confirmed on this visit). The plumbers report the state of the system and needed repairs to Baiden who decides if and how to address them. It was reported that routine maintenance and cleaning are discouraged. According to the plumbers, Baiden prefers to let the system's pumps or other equipment "burn out" versus conducting routine and preventative maintenance, as they could potentially get funding for replacements elsewhere instead of using the water fee funds for maintenance. Other colonia members and the *Patronato* reported a lack of access to funds for routine maintenance or emergency repairs, highlighting the lack of transparency in spending.

According to *Patronato* members and the current and former plumbers, the colonia is currently home to more than 1,000 homes, with estimates on the number of taps ranging from 800 to 1,100. If all 1,000 homes (users) pay L250 per month, that would generate L250,000 or over $9,800 USD per month. Even the lower estimate of 800 users at that rate would generate L200,000 or over $8,100 per month. Key information was not available on this visit to do a reliable accounting balance, but it is known that the single largest cost for the colonia's water system is electricity to run the pumps. WEFTA's 2021 report suggested LW4R was paying about L110,000 per month for electricity, however, this was not verified with actual power bills. Even so, with 800 paying users on the system, that estimated electrical cost would leave half of the fund every month for operation and maintenance activities.

<u>Opportunities and Resources:</u>

- On the last day of this visit, WEFTA and three members of the *Patronato* met with Mayor McNab and a Municipal Attorney, Norman Reaños. McNab informed WEFTA that he and the municipal lawyers could quickly transfer control of the water system to an elected water committee under the legal status (*personería jurídica*) of the *Patronato*. This would be the most efficient method for the colonia to take legal control of the water system. The other option would be to have the elected water committee pursue its own *personería jurídica,* a process which can take over a year in Honduras. The municipality provided a letter stating they would assist the colonia with this transfer of control from Fausto Baiden to the community.
    - Mayor McNab stressed the importance of water meters at the meeting. The *Patronato* said they would start a water meter discussion within the community and target businesses as the first "test cases" for using water meters. Water meters are currently only installed on the four system wells.
    - Per the mayor's request, the *Patronato* began planning a community meeting to keep the people informed of what is happening.
    - They plan to schedule an election for a new water committee as soon as possible, possibly in conjunction with the next scheduled election for the *Patronato* on May 25, 2025.

- The community and particularly the *Patronato* are motivated to move quickly to take measures to provide more water to the community as water is especially scarce in the dry season (generally late January through September). Their hope is to drill any new wells as soon as possible.

- Sussy Ochoa of Polo's Water Association of West End, Roatan, and Elsy Zamora, civil engineer with Coral Reef Alliance, are excellent local resources. When an official water committee is elected, the committee will need training to perform the roles of administration and operation. Ochoa and Zamora are not only a wealth of knowledge on this subject but can also provide written guidebooks and presentations to help provide training for the new committee to set them up for success in their new role.

- Census data is currently being collected and will be instrumental in technical design and system modifications as well as determining the financial viability of the water system. It is estimated that if all houses pay (as most are doing already), the system could be close to self-sustaining (paying two plumbers and performing routine maintenance). However, larger investments will need to be made for cleaning the current wells, replacing pumps/motors, and drilling new wells.

Water System Summary and Operational Status

WEFTA volunteers spent half a day walking several of the water system distribution lines with former plumber Concepción Bacadano (Concho), and for part of the time, with the current plumbers Carlos Urbina and Benjamin Reyes. A detailed analysis of the water system with recommendations for improvements can be found in prior WEFTA reports from 2021 and 2022, so only a brief summary is given here along with any updates since those reports were written. WEFTA suggests any future water committee review those reports for their recommendations.

<u>Groundwater Well Supply</u>

Estimates on the number of current water taps range from 800 to 1,100, pending completion of census data collection. As mentioned above, there are currently four groundwater supply wells connected to the water system: *Pozo Adventista*, *Pozo Bonerge, Pozo Central, and Pozo Municipalidad*. Well flows were measured the day before the visit, with the combined flow from all four wells totaling about 40 gallons per minute (gpm) at that time, suggesting total daily production of 57,600 gallons. The consensus is that all the wells used to produce much more than they do currently (how much more is unclear). If the number of taps on the system is indeed as high as 1,100, this would imply a daily supply per tap of only about 52 gallons. This quantity would likely only be sufficient for a household of two people, using an average water requirement of 100 liters per person per day.

The plumbers stated the wells operate 24 hours per day, but that they do not always operate on Sunday as the plumbers do not work on Sunday. According to the plumbers and the 2021 water system report, at least one of the wells produces rather significant mineral scaling and/or siltation. Similarly, the plumbers stated the pump drop pipe for at least one well needed to be cleaned every 3 to 4 months, however, to do so requires 4 to 5 people that are either not regularly available or cannot be paid by LW4R. Therefore, they said the drop piping often goes uncleaned, likely resulting in reduced well production. This would also cause more wear on the pumps and motors, a likely cause of the apparently short lifespan of pump motors on this system. They stated the well screens have also never been cleaned or redeveloped; doing so would likely increase production. During WEFTA's meeting with Mayor McNab, it was stated that other communities had seen problems with wells installed by the same well driller who installed the colonia's wells. That said, the simple fact of operating the wells 24 hours per day has also likely resulted in decreased production, as the aquifer is not given enough time to recover (except possibly on some Sundays).

Chlorination

Water from the wells is piped to a central 12,000-gallon collection tank adjacent to the *Pozo Central* for chlorination. Apparently, an automatic chlorination unit used to be installed on the system, however, it appears to have never been used and had been uninstalled by the time of this visit. Additionally, the plumbers stated they did not have access to the liquid chlorine solution required for its use and so have relied on chlorine tablets that they drop into the collection tank every week or so (though WEFTA could not verify a set chlorination schedule).

Distribution and Storage

The water system is divided into two pressure zones: the lower zone represents the lower houses in the colonia and is fed via pump and pressure tank directly from the collection tank for 12 hours during the day; the upper zone is fed via gravity from the main 65,000-gallon storage tank at the top of the colonia. The lower zone supply pump is a variable flowrate pump that fills a small (about 75-100 gallons) pressure tank that regulates pressure to users. At the time of this visit, line pressure at the pressure tank was about 76 pounds per square inch (psi). The plumbers stated that was on the lower end of the normal pressure range, which can peak around 100 psi. WEFTA observed the lower zone operating normally, with houses near the collection tank receiving water during the visit. At least one house's service line, however, was leaking. Houses are responsible for fixing their own service lines, and Benjamin advised the residents they needed to fix it.

The main 65,000-gallon storage tank is filled for 12 hours during the night via two booster pumps, one located at the central collection tank, and a second located uphill at the Zapote #2 booster station. Each of these booster pumps is rated at 39 gpm. At that flowrate, the pumps would fill the main storage tank to only 28,080 gallons over 12 hours, just below the estimated well production over that same timeframe (28,800 gallons). WEFTA did not observe these pumps operating as the visit occurred during the daytime. The tank appeared in good condition, with water levels relatively low at the time of the visit late in the afternoon (as expected given the tank is filled overnight). Service pressure in the upper zone appeared to be higher at taps compared to the lower zone, given the large elevation difference between the main storage tank and most houses, with several people recalling at least one incident of a distribution line "exploding" (likely due to a failed cemented PVC connection).

Within the two pressure zones, the system is divided into sectors by manual valves on the distribution piping. Operating these manual valves occupies the majority of the plumbers' time. Generally, on a daily basis they open flow to one sector at a time within each pressure zone to allow users to fill their household storage tanks. Each sector is given enough time to fill their tanks, before the plumbers shut off flow to the sector, and open it for the next. On average, the plumbers said each sector obtains water for about a day, though depending on the volume of their household tanks and the flow they receive at their tap, that time could range as low as a few hours to as long as two days. With this system in place, there was a general consensus among all users and colonia leadership that at this time the average household obtains water only once every 3 weeks, with that sometimes extending to 4 weeks in the dry season.

WEFTA observed a large variety of household storage tank types and volumes. Carlos, Benjamin, and Concho agreed that at least 80 percent of households likely have at least 2,500 liters (about 650 gallons) of storage available, with some having as much as 8,000 liters (about 2,100 gallons) available, while some may have as little as 300-400 liters (about 80 – 100 gallons). This highlights a large inequity in water access within the colonia. Because users generally have access to water for as long as it takes to fill their tanks, those who are able to afford larger storage tanks generally have better access to water. That said, the only locations that currently have water

meters installed are the well pumps, so the true amount of water being delivered to each household is generally unknown.

Opportunities and Resources:

- The colonia is its own best resource here! Once an official water committee has been established, per discussion above, it is clear from this visit that community leadership and members are motivated to improve the water system and operate it with the transparency necessary for success. WEFTA encourages the colonia to maintain this momentum for the work ahead. Establishing the water committee to take over operation and maintenance is only the first step – there is much work ahead.
- Mayor McNab noted at the meeting with WEFTA that the municipality was planning to contract a well driller from the Honduran mainland to install 8 wells for the city of Coxen Hole. He suggested the colonia could take advantage of that driller's mobilization to see if it would be possible to add any new well(s) for the colonia onto the driller's schedule. This driller came highly recommended from the mayor.
- Again, engineers Sussy Ochoa of Polo's Water Association of West End, Roatan, and Elsy Zamora, with Coral Reef Alliance, are excellent local resources. Once an official water committee is established, Ochoa and Zamora can provide written guidebooks and training to help set up the new water committee and plumbers for success in their new role(s). They or WEFTA can help develop an operation and maintenance schedule to ensure optimal system functionality.
- Per the 2021 WEFTA report, there is a local contractor on Roatan capable of cleaning/redeveloping drinking water wells, who could be contracted by a new water committee. As of that report date, the cost was quoted at $2,350 USD. WEFTA strongly urges the colonia to conduct well cleaning/redevelopment on at least the one well known to have significant scaling and silting issues. The other three wells could be cleaned/redeveloped over the course of, say, the next year to help spread out costs.
- In addition to WEFTA's recommendation to implement water meters at all service taps, all organizations WEFTA met with during this visit (e.g. the municipality, Polo's Water Association) agreed on the importance of installing water meters to be able to track water usage (and waste) and charge users accordingly. Given that WEFTA observed one leaking service line during the visit, and only walked a portion of the piping network, there is the distinct possibility of others. While visual observation by users and the plumbers is always a first line of defense, an additional benefit of water meters on all service lines is their use as a backstop to detect water loss from leaks.

User Experience

As mentioned above, the colonia water system is divided up into sectors, with the plumbers using manual control valves to send water to each sector. Each sector receives water for at least several hours, or as long as it takes to fill their storage receptacles (some sectors/houses reported getting water for more than a day to have enough time to fill their larger storage tanks), before flow is shut off and routed to the next sector. There was consensus from everyone that this sector cycling used to only take 8 days within the past 10 years. Indeed, WEFTA's 2021 report cites only a 12 day wait for sectors to be delivered water. As mentioned above, on this visit users repeatedly stated a minimum of 3 weeks to obtain water, which reportedly sometimes stretches to 4 weeks.

Water Bills

Currently, each family with a tap (user) pays L250 (about $10) per month for water. If more than one family shares a tap, both families pay L250 per month. There was consensus that almost every user pays their water bill because those that do not get their service lines cut and capped. That fee includes use of up to 12 barrels of water, or about 650 gallons. According to Concho, houses with more than that volume of storage are charged an additional L250 for each additional 12 barrels of water. As stated above, though, the majority of houses have about 650 gallons of

storage, so only a minority of users are likely paying more than L250. If households do not have enough water to last the 3 to 4 week gap, many families purchase large jugs of potable water for L45 (about $2 USD) per jug. These jugs can be challenging to move from the point of purchase to the home. Some users stated they would pay a higher monthly water fee (e.g. L500) if water availability was pushed back down to the 8-day gap of ten years ago.

Challenges

The lack of water is a multifaceted problem and is primarily based on three factors: population growth, lack of maintenance, and household water storage. These three factors create a cycle. As the population of the colonia has grown, there is more demand on the system. It is estimated that there are more than 1,000 families using the water system that was designed for 400 families. Current water production from the wells does not appear to have the capacity to service that many families and is also likely reduced due to the lack of cleaning and maintenance, combined with the almost continuous operation causing aquifer drawdown and lack of recovery. As the gaps in water service grow longer and longer, families need to store more water to have enough to last the time without water access, thus creating more demand and exacerbating the cycle. If interventions are not taken, the cycle will continue and families could see even longer wait times.

Opportunities and Resources:

- Several community members are motivated to educate the community on sustainable water practices. They will be great resources to use as water use habits will likely need to shift or change along with upgrades to the current system.

- We heard from a few families that they would be willing to pay a larger sum for their monthly water bill if they had more water access and did not need to buy jugs of potable water.