# AGM 2024 - Water Commissioner's Detailed Report

## Overview of 2023

Due to the continuing degradation in the performance of the La Calma well that was recorded and reported in 2022, the well services company that was hired to repair the La Huerta well in 2022 was contracted to remediate the La Calma well in early 2023. Since there has been a question about the condition of the PVC well casing in that well for many years, your Board of Directors made the decision to also have the well inspected with a video camera and cleaned at the same time as the pump was removed. It was also decided to replace the pump, motor and riser at the same time due to its age.

Similar to what was found with the La Huerta pump the previous year, the coupler between the pump body and the riser was severely corroded and leaking due to rust. The incorrect type of metal coupling was used by the previous installer. This had the effect of significantly decreasing the pumping efficiency (amount of water delivered per kWhr. of power consumption) and the flow rate (liters per second).

The video inspection revealed that the well is very clean despite its age and the casing has no cracks or breaks and should continue to be serviceable for many more years.

During the year, the *"Distribution System"* in La Huerta was expanded with the addition of two new Members that are building homes along Camino Real. Most of the water meters along Camino Real were relocated or reconnected onto the new 2" line along the street and off of the old 2" line that is under private property. Only one *"Access Link"* remains to be relocated in early 2024. A concrete platform was constructed at the Camino Real well site to support the installation of a new 10 cu. mtr. Polypropylene tank that, when installed and connected, will gravity feed the five homes along Camino Real below. The site was also prepared for the installation of an automated level control and tank monitoring system. The final work to complete the project is scheduled for early 2024.

As part of this project, the power source for the transfer pump that we use to move water from the cistern at Casa Loop on up to the Camino Real pozo site was also moved. It is now fed from the *Asociacion's* CFE meter at the Camino Real well site.

## Well Performance

***How are the wells performing?***

The performance of the two active wells is monitored on a near "real-time" basis by a SCADA type system consisting of various sensors and communications network equipment installed at the well sites. Data is continuously captured and uploaded to a secure data storage server operated by a trusted equipment vendor. This data is then accessed on demand to record performance data from each well and storage facility and can be used for alert notification and post-event analysis. The system provides a high degree of accuracy and the ability to monitor the important electrical parameters (voltage, current, consumption, power factor), pump run-time and flow characteristics at each well. Following are the main parameters monitored that are important to us.

1. The **volume of water** pumped.
2. The **amount of electricity** consumed.
3. The **length of time** that the pump runs.

With this data, I am able to calculate two very important performance statistics that tell me how the *"Supply Network"* (well, pump and pipes/tubing that deliver water up to the storage tank) is performing.

1. The pumping **efficiency** is the quantity of water (in cubic meters) that is delivered to the storage tank for each kilowatt hour of electricity consumed. The greater the number, the more "efficient" the *"Delivery Network"* is operating. This factor directly impacts the *Asociación's* costs to operate the well.
2. The **flow rate** is the quantity of water (in liters) that is pumped and delivered per second to the storage tank. This is an important statistic used to monitor the ongoing performance of the well and pump over time. Consistency from month-to-month over the range of our demand is the performance that is most important thing to watch.

## La Calma Well

During 2023, this well supplied a total demand for 7,044 cu. mtrs. with an overall efficiency of 0.94 cu. mtrs./kWhr. and average flow rate of 2.39 ltrs./sec. Total run time for the pump this year was 820 hours. The demand on the well ranged from a high of 29 cu. mtrs./day in June (high season was March-June) to a low of 11.5 cu. mtrs./day in September.

For comparison purposes, during 2022 the well supplied 7,113 cu. mtrs. with an overall efficiency of 0.91 cu. mtrs. /kWhr. and an average flow rate of 2.26 ltrs. /sec.

As mentioned in the summary, the well performance continued to decay until the pump/motor was replaced in April. Average pumping efficiency deteriorated to a low of .56 cu. mtrs./kWhr. with a flow rate of only 1.37 ltrs./sec. in March. After replacement, the performance jumped up to 1.36 cu. mtrs./kWhr. and 3.55 ltrs./sec. for the remainder of the year.

As part of an "Access Agreement" we reached with the Mesa Directiva of Tlachichilco to use the servidumbre adjacent to the well site entrance, the *Asociacion* has assumed responsibility for the on-going maintenance of the lower part of the servidumbre. During 2024, time and finances permitting, we plan to repaint the metal fencing and gates, keep the area clear of vegetation and add a top layer of aggregate to the well site to make access easier for trucks during the rainy season.

## La Huerta Well

During 2023, this well supplied a total volume of 13,230 cu. mtrs. with an overall efficiency of 1.78 cu. mtrs./kWhr. and average flow rate of 5.44 ltrs./sec. Total run time for the pump this year was 675 hours. The demand on the well ranged from a high of 58 cu. mtrs./day in June to a low of 16.6 cu. mtrs./day in August. The highest demand period this year was from April to June.

For comparison purposes, during 2022 the well supplied 11,432 cu. mtrs. with an overall efficiency of 1.55 cu. mtrs./kWhr. and average flow rate of 4.71 ltrs./sec.

The water from this well has a fairly high TDS (Total Dissolved Solids) count which means it is relatively "hard" water. As a result, "*Users"* may note a slight build-up of a reddish "slime" called iron bacteria in

their pipes, especially any galvanized or iron pipes or faucets and connections that are of dissimilar metals. Periodic testing has shown though that the soluble heavy metals levels are lower than the allowable maximums specified in the Mexican Federal Standard NOM-127-SSA1-1994 for potable water. It can create problems though. In December, the master water meter on the well discharge stopped functioning. Upon disassembly, it was found that flakes of rust had jammed the turbine blades inside the meter. These particles or "crud" probably became dislodged from the inside of the steel well casing. In early 2024, a large particle filter (250 microns) will be sourced and installed in-line with the well discharge pipe to prevent this from happening again.

### Camino Real Well

This well was not operated and it has been many years since it was last used. Word-of-mouth from previous volunteers have said that it did not produce much water when it was in use. I have no information on its current condition or ability to produce any significant amount of water.

## Water System Performance Review

***What happened with the Supply Network in 2023?***

The *"Supply Network"* is the portion of the *"Water System"* that delivers water from the wells to the storage tanks.

There were no problems with the *"Supply Network"* in either the La Calma or the La Huerta side of the system during the year.

***What happened with the Distribution Network in 2023?***

The *"Distribution Network"* is the portion of the *"Water System"* that delivers water from the storage tanks to each Member's property line.

As a guide to detecting possible problems, I compare the pumping volumes from each well to the sum of all of the individual meter readings that are taken at the first of each month. The difference in these numbers is referred to as the "Loss" and can be attributed to one of three possible factors: leaks, metering inaccuracy or theft. This is of particular concern since the *Asociación* has to remit extraction taxes to CONAGUA based on how much water we pump from the wells, not what we use.

During 2023, we recorded a "Loss" of 1,042 cu. mtrs. (2.89 cu. mtrs./day, 7.9% of what was pumped) in the La Huerta branch and 523 cu. mtrs. (1.45 cu. mtrs./day, 7.4% of what was pumped) in the La Calma branch. This numbers are virtually identical to the loss figures recorded in 2022 and continue to be the lowest loss figures on record for us. This is also lower than most other water systems in the area report.

The loss of water is due to a combination of inaccuracies in metering and overall degradation of pipe seals and joints causing small leaks or seepage in the *"Distribution Network"*. The Membership is encouraged to remain vigilant and report any leaks or theft that they become aware of to one of your Board of Directors immediately.

## System Improvements

***What improvements were done to the system during 2023?***

During 2023, only a minor amount of work was completed on the multi-year improvement project for the *"Distribution System"* throughout La Huerta. Work this year was focused on completing the Camino Real portion of the upgrade that was not completed during 2022 due to budget constraints and cost overruns. There were a few remaining work items we decided to delay last year until the funds became available in the Repair & Maintenance budget. Following is the work that was completed in 2023 and the remaining work that is planned for completion in early 2024.

**1. "Lower Camino Real" Section** - this portion of the plan was for the reconstruction of the "*Distribution System"* from the McCamis/Rohac property line to the Miller/Guttierez property line along Camino Real.

We completed the cement work around the recessed area of the wall where the water meter is located at Casa Miller. The wall cavity there had to be made larger to make room for the new Access Link configuration. We also replaced the water meters and shut-off valves as well as installed back-flow preventers for the four "Lots" in this section (Rohac/Gerenda/Miller/Cervantes). They are now all taking their water from the new 2" line installed in 2022 that runs down the hill from the Camino Real well site. The new Member (Lourdes Cervantes) that joined this year has not yet started taking water.

**2. "Mid Camino Real" Section** - this portion of the plan was for the reconstruction of the "*Distribution System"* from the McCamis/Rohac property line to the aljibe/cistern located under the Loop's garage.

No additional work was completed in this section since it was completed in 2023. In early 2024, we plan to relocate/reconstruct the Access Link for the McCamis Lot. This is the only remaining *"Access Link"* that needs to be moved from inside the property out to the side of Camino Real.

**3. "Upper Camino Real" Section** - this portion of the plan was for the reconstruction of the "*Distribution System"* from the Loop's aljibe up to the Camino Real well site and enclosure.

During 2023, the electrical feed for the transfer pump in the aljibe in Loop's garage area was moved to the CFE meter pedestal and bodega at the Camino Real pozo enclosure. This now allows us to take power from and record use on the CFE electrical meter at that location that is registered to the *"Asociacion"*. Formerly, power was obtained from the McCamis' electrical service.

One of the changes we elected to do in 2022 was to use gravity feed of the water for the new 2" Camino Real line instead of "pressurizing" it for the homes with water meters along Camino Real. As part of this change, we will need to install a storage tank inside the well enclosure at the Camino Real well site. Since we will be supplying 5 homes plus the new Member, Godofredo Escanes from this tank, we will initially use a 10 cu. mtr. Polypropylene tank to be sourced and installed in early 2024. As an additional benefit of doing this, we will be able to more easily expand the storage capabilities at the site and support the transfer of water further up the hill in the future. There is the possibility that undeveloped Lots along the dam road may approach the *Asociación* for a Membership to supply potable water to them.

Also in 2023, we constructed a concrete pad inside the well site enclosure on which to place the new storage tank. The transfer pump controls, tank level and monitoring communications equipment was also installed and is ready for the support of this tank.

***What improvements do I feel need to be done in 2024?***

In our ongoing mission to relocate as much of the *"Water System"* out of private property and into common areas such as access roads and streets, the Board of Directors proposed and received approval from the Membership at the 2022 AGM for the Camino Real portion of the multi-year La Huerta upgrade and a rebuild of the *"Distribution System"* in the Villas Bugambilias.

There remains only a small amount of work to complete the Camino Real upgrade of the *"Distribution System"*. This work will be completed in early 2024. There remains a small length of tubing in the *"Distribution System"* that runs through Chirimoyo that is still located on private property. This portion runs through the Hunter and Leader Lots, some of which is only 1.5" diameter tubing. This line supplies the four homes of Leader/Sanchez/Franco/Reynosa as well as the Dwyer Apartment complex. There have been no discussions nor plans to reroute this line to a common area at the present time.

The plan for the Villas that was proposed and approved in 2022 was is to install new water lines and *"Access Links"* along the edge of the common access road through the compound. The objective of this work was to help to increase the accuracy of the water metering for each villa and ease the job of meter reading, subsequent billing and ongoing maintenance. This would also allow the *"Asociación"* to assume the support of this part of the *"Distribution Network"*. This project was cancelled in 2023 as the funds were needed to replace the pump and motor in the La Calma well. This project may be re-visited in the future however not in 2024.

## In Closing

One of the other things I keep track of is the status of the various *"Lots"* that are in the *"Water System"*. During 2023, two new Membership Applications were received and accepted which results in a total of 53 "Lots" that are eligible to receive water from the *"Distribution System"*. There remains 27 vacant *"Lots"* that have *"Responsible Members"* who have continued to keep up their support of the *Asociación* over the past few years by staying current with all Capital Assessments and annual Membership Fees.

And finally, a few words on another one of my tasks on the Board, Voter Eligibility for the upcoming Annual General Assembly. Of the above 80 currently recognized *"Lots"*, there were 58 that have *"Responsible Members"* who were fully paid up as of Dec. 31st and therefore considered to be "Members in Good Standing" and eligible to vote. 44 *"Lots"* with *"Access Links"* (of the 53) were fully paid up and 14 vacant "*Lots"* (of the 27) had paid their 2023 Annual Assessment Fees as of December 31st.

I continue to enjoy working with many of the residents and contractors in this community and to provide my assistance with maintenance and evolution of your *"Water System"*.