

To: Hat Island Board of Trustees and Water Consumers
From: Sandy Bettencourt, Island Manager

Subject: Water Production/Usage Concerns

As required by the Department of Health staff submitted the **2015 Drinking Water Quality Report** on July 1, 2016. This report was sent to all owners (274) with meter connections.

Water Use vs Production Information

Water Operations staff reported:

<u>Well Production</u> 2,423,371 gallons	<u>RO Production</u> 1,593,140 gallons	Total: 4,016,511
Water Use: 1,963,608 gallons (<i>Taken from water meter readings from 4th quarter 2014 – November 2015</i>).		
Total Unmeasured Use: 2,052,903 gallons or 51.1 percent unaccounted for production. Difference between gallons produced and gallons used.		

Because of this highly unusual number, staff has been working aggressively to find the source of the problem. At this point in time we would like to update the Board and Community on our findings so far.

Data Collection & Reporting:

A review of the water usage data collected in 2014 revealed some inputting errors. These errors have impacted the information reported in the 2014 and 2015 Consumer Confidence Reports. After spending several hours on this project, we decided to focus staff time on creating better checks and balances in water production and customer use reporting.

Field Operations (Meter Readings):

Staff also reviewed the meter reading program and do not believe these readings are the problem. However, we are reviewing our practices of meter reading and making sure staff and volunteers read the meters the same way. All meter readings for quarterly billing are reviewed by the office bookkeeper. Any major increase in use or lack of use compared to the previous month is re-checked by the water operations staff. Volunteers are trained to report any unusual signs of damage, or meter activity for a residence that is not occupied.

Meter Calibration:

Chuck Motson, Water Committee member and past Island Manager, confirmed all production meters were replaced approximately 3 years ago. The meters are very accurate and sensitive to water flow.

Working with outside organizations:

The Island Manager and staff continue to work closely with Department of Health and other water operations professionals to assist with evaluating our system and determining where a leak or leaks might be. **Evergreen Rural Water** was contacted and their NW region representative came to the island on August 11, 2016 at our request. See the following report from their representative Joe Barbee:

Report from Evergreen:

On Thursday August 11, 2016 I performed a routine leak detection survey at the request of Hat Island Utilities. In general I found the facilities managed were clean and well maintained by treatment personnel. The Operators had a firm grasp of the nuances in a water system that could result in a major leak. They were also actively monitoring the system in case a break should occur.

Normally leak detection surveys are performed when the variance between the produced water and Customers usage is greater than 10%. While the amount of unaccounted for water was 2,000,000 gallons in the past calendar year, it only panned down to 3.2%. This amount is far lower than the normal action level and is makes it harder to pinpoint a definitive source. Most unaccounted water in your system can be attributed to valve leaks and small service line leaks, which we observed while performing our survey.

The equipment used in the survey was the Subsurface LD-12 Water Leak Detector. This equipment uses a process called heterodyning which translates the leak frequency into a sound range that can be detected by human hearing. Depending on pipeline construction materials, leaks may be detected from a distance of city blocks. Pipeline pressure also plays a role since higher pressure usually means a more turbulent (noisy) leak. In general, as you get closer to a leak, the running water sound will increase until you can approximate the leaks position in your service line.

We covered about 60% to 70% of the water system on our survey, concentrating on the larger four inch and six inch mains. When we performed the survey we noted very minor leaks in the system. No large leaks were detected. It should be noted that a portion of the distribution grid is located in steep slide prone areas. This would make it extremely hazardous to locate and repair if a break occurred. There were two areas we tested that appeared flooded with water; however Scott assured me that he had tested the area and only found surface water, not plant water. The

Storage tanks were in good condition and we could not detect any substantial leakage coming from them.

In closing my recommendations for the systems are:

- *Check your water distribution system for leaks each year.*
- *Implement a Cross Connection Program as soon as possible*
- *Implement an on-going system rehabilitation program.*
(The State can supply resources to pay for this – just look up Washington State Water System Acquisition and Rehabilitation Program)

Submitted by:

Joe Barbee

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RO Plant Operations:

The RO plant is currently making water! Both staff and Water Committee members have worked many hours with CASE RO (contractor) to redesign our dock pump system and consult on the overall operational aspects of the RO plant. The Water Committee has made several reports over the past several Board Meetings and that information can be found in our past View Points. CASE will continue to be a partner with us as we make improvements or repairs to this system.

Moving Forward:

While it was reassuring to us that we do not appear to have a catastrophic leak, we know we have leaks in our aging system. This issue has been discussed over the years and as part of the Reserve Study work. Our infrastructure is wearing out due to age and use. It is important to understand as a community we will need to be vigilant in funding our reserves to required levels so we can better deal with these types of issues including working on the replacement of our water system buildings and lines.

Staffing and Water Related Projects:

As suggested in our meetings and recommended in the Evergreen Rural Water's survey report, we need to approve funding for the leak detection program. Funding of \$5,000 was approved in 2014 to install a leak detection system and replace aging production meters. The meters were purchased however lack of staff has prevented the installation of the system. At this time only two of the meters have been installed. Since that time several meters have been utilized as residential meters have worn out. Staff have been tasked to inventory the remaining supplies and to provide the Island Manager with a cost estimate of supplies, equipment (approximately 13 meters, valves, meter boxes, pipe and fittings at a cost of: \$6800.00 and staffing estimated

\$8,736 or at **total of \$15,536** needed to complete this project if the budget is approved in 2017. It is important to point out that staffing is **critical** to accomplish this work and other water related projects such as the Island Drainage Plan. There will be a full-time staff position requested as part of the 2017 budget process to accomplish maintenance work on the island including the water system. Water system improvements cannot be accomplished without additional resources.

Conclusion:

Water operations staff is committed to providing high quality water and service to our residents. They will continue to investigate all possible avenues to locate and repair leaks in our system. We are grateful for the residents who have stepped up to volunteer to read meters or participate in the Water Committee in order to re-direct staff time to water production and other island services.

Staff will continue to respond to and implement improvement recommendations from the DOH water survey including updating the DOH Coliform Monitoring Program (draft submitted to DOH on August 15, 2016 for review). The Department of Health and Evergreen Rural Water will be providing support and informational resources for staff to develop a Cross Connection Control plan for the island. We are pleased both organizations view the overall Hat Island water operations as having good drinking water quality and knowledgeable staff.

Staff and the Island Manager will make periodic water updates to the Board and community including providing detailed production and usage pattern information. We hope this information is helpful and provides a better understanding of our water system issues. If you have questions we have not answered in this report, please contact the Island Manager, Sandy Bettencourt.