

# **Frank Colver Flow Sensors Research**

Aug 29, 2023

This proposal supersedes all previous proposals made by me about using flow sensors in the water system.

## ***What is proposed ?***

What I am proposing now, is for the district to install a single, bidirectional, noncontact sonic, continuous flow sensor in the main line. This sensor would be placed just below the junction of the poly tank and the round tank lines and measure all flow rates into the main line. It would be located in the new vault that is planned for the site.

## ***What would it do?***

The flow sensor would provide a continuous reading of the flow into the entire community system with the exception of three properties that are connected directly to the round tank. Being bidirectional it would also provide instant reading of the flow from a well into a tank during pumping times.

## ***What are the benefits?***

Having this information available at any time would help save time and effort during the search for a suspected leak. The water manager, after seeing a suspicious drop in tank level, can then start to shut valves in the system and see the results without having to wait to see how much the tank has dropped since the valve closing. If the flow sensor was able to send its data to devices located below the canyon mouth then the turnaround time, in searching for the leaky section, would be shortened considerably more.

If an abnormal drop in a tank level was noted, the manager would not have to wait to see if it was continuing to drop at the high rate. The flow sensor would show if the high usage had stopped and of no further concern.

If the software on the device downloading the data from the sensor, could produce a continuous graph of the flow then a history of community water usage could be established. This historical data would give the water manager the ability to predict from month to month how high to keep the tank levels. It could also help to determine if there was a leak based on the history of usage at that period of time and the manager's knowledge of how many people were in Canebrake at the time.

When a well pump was operating, the flow into the tank could be noted and an idea of how long to run could be determined. This would be especially helpful in the fall, winter, and spring seasons when more water would be extracted from the pump flow by the community.

It is very probable that more benefits would be discovered as people get accustomed to having this flow data, both real time and historical, available at any time.

*What capabilities should we look for in a sensor?*

We would be very lucky to find a sensor with all of the desired specifications, so the task is to choose the sensor that best fills our needs.

The sensor should:

1. Be water noncontact using a sonic signal to measure flow.
2. Read in either gallons per minute (preferred) or cubic feet per minute.  
Useable in the range of flows it will see.
3. Be battery powered with a dedicated solar charger.
4. Be bidirectional in reading flow.
5. Wirelessly transmit the data outside the vault to an external digital device.
6. The data signal should reach the community center either by the sensor's signal alone, or with some type of booster, satellite, etc.
7. Be able to operate at the temperatures encountered in the vault (vault cover should be white).
8. Any other desirable specs someone thinks of.

I suggest to the board that Gunnar be tasked to search for this device, if he agrees.

Sincerely,  
Frank Colver  
08/29/2023