

The Importance of Meter Accuracy

Accurate meter readings are incredibly important for any water system. If a meter is not registering within the accuracy limits of AWWA standards, it should be replaced. The accuracy limits of a 5/8" meter should be between 95 percent to 101 percent. The accuracy limits on larger meters should register between 98.5 percent to 101.5 percent.

Generally, as a meter ages and the number of gallons that flow through the meter increases, it has the potential of slowing down or under-registering. If this occurs then the water system will show higher water loss and result in loss of revenue. The meter is sort of comparable to a cash register at a store. If it is not calculating correctly, then there's going to be a consequence.

There are several factors that can cause a meter to become inaccurate. When meters are placed too close to pumps, valves, elbows, and other obstructions, unstable or irregular flow can impact performance. Or the water can be sent through the meter with a lot of turbulence and may cause over-registration. Before selecting a meter, check the specific pipe run requirements from the meter to a stable flow profile.

In the eight years that I have been testing meters I have only experienced three meters that proved to be over-registering. One in particular was an 8-inch master meter in Leavenworth



This photo shows looping of numerous residential meters for comparison meter accuracy tests. These are all measured against KRWA's-certified test meter.

County. It was over registering by almost 20 percent. We dismantled the meter and found a 24-inch rubber gasket lodged in the meter chamber. This was causing the water to become turbulent and causing the meter registration mechanism to rotate at a faster rate. After dislodging the gasket and reassembling the meter, we retested it. It then operated at an accuracy within the AWWA standards.

I suggest when installing a new meter to purchase one with a test port or install a test port. This will allow the meter to be tested more easily. Most new meters come with test ports, but if a port needs to be involved, it is relatively simple. Just install a saddle on the waterline with a ball valve with female thread. Most often KRWA uses a 2-inch port to test the larger meters.

All residential meters have to be removed from the setter to be tested. KRWA tests them against another 5/8-inch meter. All residential meters are tested at three different flow rates. The first test is at a flow rate, usually .25 gpm for a 10-gallon

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KRWA has four units similar to this 4-inch meter. This size unit is typically used to test meters up to 500 gpm. KRWA also utilizes several non-intrusive meters for higher flow rates.

total. The final test is full flow from a garden hose, usually six to ten gpm for a 100-gallon total.

Residential meters can be tested with multiple meters at a time. This is performed by using S bars. I usually connect up to ten meters at a time. This makes the time more efficient when testing numerous meters.

Many people suggest to replaced residential meters at 10 years of age or when the register reaches one million gallons. While that may be a good rule of thumb, many other factors might be more of an influence, particularly the water quality or if a groundwater supplied system has a problem with very fine sand being pumped. The most

logical thing to do is to pull a sampling of the meters and test them.

If any water system only has several residential meters to be tested, feel free to mail the meters to me at my home address. Email me at tony@krwa.net and I'll provide the shipping instructions. Many systems send them to me; I test them at my location and return the meters. All meters tested are documented and a follow up letter is sent to the city or district with the results of the testing.

I also encourage rural water districts that when replacing a master meter to consider using the old meter as an area meter in the district. The meter does not have to be accurate. It just needs to indicate flow. Such meters in strategic locations are extremely beneficial when it comes to checking a system for leaks.

There are many contributors to having unaccounted for water. Among those contributors are inaccurate meters. Testing the master meters and a sampling of the customer meters is a good place to begin in troubleshooting a system for water loss.

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