

Computer Corner

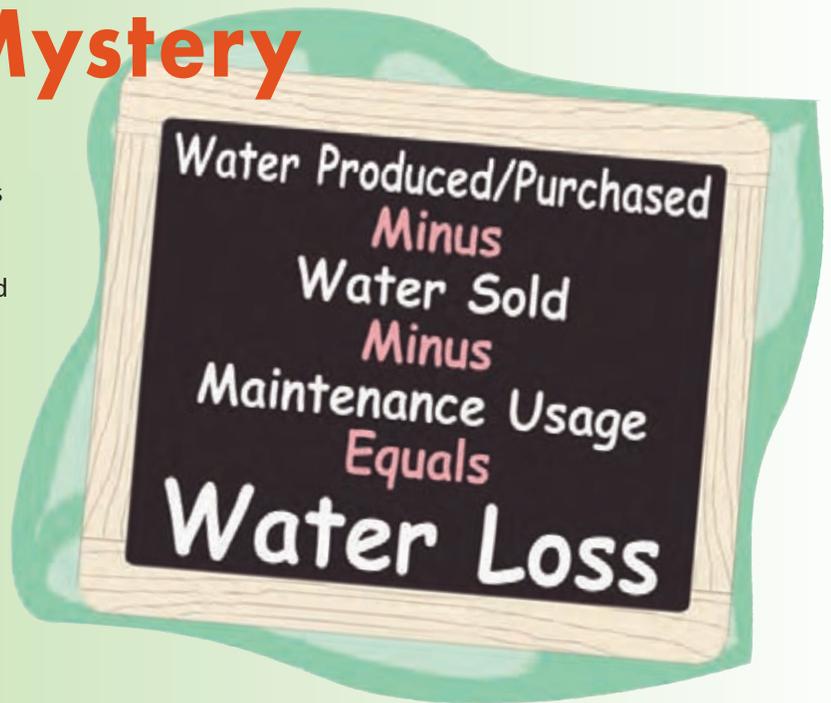
Calculating Water Loss Doesn't Have To Be a Mystery

Q: It is my understanding that figuring water loss is as simple as subtracting the gallons sold for a month from the water pumped for that month.

Our maintenance man reads our customer's meters and the master meter and takes care of creating the water loss report. What I don't understand is how he can do that if he never asks for the report from the computer of water sold. I've offered him reports from the computer but he says he doesn't need that.

A: You are right. Calculating water loss is the total gallons used/sold subtracted from the total gallons pumped. The word "used" is included with the word "sold" as a reminder that it is important to read all meters and report all usage. This includes water that may not be billed for, like that used by the water office or city hall. Any water used for flushing for maintenance purposes is also subtracted. The remaining figure is the water that is pumped or purchased but not accounted for, or commonly referred to as "unaccounted for water loss."

You are correct that an accurate figure cannot be achieved without these elements. It is possible that your meter reader, rather than garnering the water used number from the office, is adding up each customer's usages from the meter reading worksheet or book or whatever he uses and then subtracting that number from the water pumped. He may be doing this by hand or he may have created a spreadsheet for himself and be entering data in for each customer. Either way he is duplicating work the billing clerk is already doing each month in creating customer's bills.



While it isn't an overly efficient use of his time there is nothing wrong with doing it, however, it is not a good idea to leave it at that. Even if he does use a total of water sold that he produces by adding up the customer's usages written on the meter reading worksheet, he should also be comparing that total to the water usage generated by the software that billed the customer. Sometimes, the system operator performs the water loss calculation in the absence of or isolated from the totals the billing software generates. In such cases, then the operator is denying the clerk or bookkeeper of the opportunity to guard against inaccuracies in meter reading entries. When water loss calculation is made using the figures produced by the computer in a timely fashion, the clerk has the opportunity to catch entry errors and correct them immediately.

The person or persons responsible for billing customers should be provided with the master meter reading(s) taken each month at the time customers readings are taken, along with gallons used for maintenance. By subtracting the total water used as reported by the billing software from the water pumped or purchased, if any drastic discrepancies exist, they can serve as an alarm that the meter reader may have misread a meter or the meter reading was entered incorrectly.

One example of huge mistakes this is likely to catch is the error of entering readings in the wrong register, i.e. entering other customers' readings in one unit such as single gallon or tens of gallons or hundreds, etc., and entering other customer readings in a different register. In other words creating figures that are produced with the decimal in the wrong place compared to all others. This mistake on a single commercial customer might create a financial loss in the thousands of dollars in no time. A huge discrepancy in water sold and water pumped, more than water leaks should account for, should send a clerk scurrying to find the cause, and if necessary, immediately seeking technical troubleshooting support.

Another example of how disastrous not comparing total usage to water pumped can be was with a city clerk, new to the job. She didn't understand how to handle meter switch outs or rollovers. She would enter the readings just as they were taken down by the meter reader even though the new meter readings from these newly installed meters and older meters rolled were low numbers compared to last month's reading. Even though the billing software would pop-up with a warning that a data entry error was likely, the clerk just ignored the warnings and forged on. This created huge, negative usages for each of the twenty or so customers that were treated in this way.

Even though she ignored the warnings, if she had paid any attention to the city's normal water sold amounts by simply comparing water sold in earlier months, she would have known something was incorrect. Likewise had she used the water loss portion of her software, comparing the water pumped to the water sold, this too would have shown that there was something terribly amiss. Instead, customers that had large usages were only billed a minimum fee for zero (in fact much less than zero, large negative numbers) water usage.

For these and other errors, it is always important to remember that the totals produced by computer software represent the sum of their parts. Inaccurate totals, whether usage of charges or payments, etc, can be tracked back to mistakes made on individual customers and corrected. In the case of payments, totals should match

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bank deposits to the penny, but in the case of usage, though one does not expect water sold to perfectly match water pumped, if the discrepancy is large, in addition to the possibility of serious leaks the possibility of meter reading entry mistakes should also be considered. If the water sold exceeds the water pumped there may be numbers being applied that are in error. It is impossible to sell more water than what is pumped!

While it is not possible to sell more water than what is pumped, self-read water districts, i.e. water districts whose customers are on the honor system to report their own readings and usage, sometimes produce just such results on their reports. Unfortunately, those systems sometimes have customers that simply make up readings rather than go to the bother of actually reading their meter. Usually, however, those customers estimate lower rather than higher usages in order to pay less. Self-read systems that are lax about charging late fees and shutting off meters may have a number of customers who are allowed many months of grace period with no readings or payments provided to the system. Tracking water loss in such an environment is not possible.

If the water system has sub-master meters that track the water used by different sections of the community or RWD, and the software used for billing has the ability to use water loss coding, it is possible to narrow the general areas to check for leaks.

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