Water Round Up

June 2010

Specialists in Recovery of Non Revenue Water and Lost Revenue

In This Issue

The NRW Problem:

Millions of Gallons of Non Revenue Water

Millions of Dollars Spent On Treating a Symptom Rather than Solving the Problem!

Not all Meter Replacement Programs are Cost Effective!

Not All Leak Detection Programs Are Successful!

JBS Offers Cost Effective, Long Term Solutions!

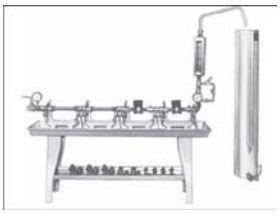
Reporting Meter Accuracy

Many water utilities are having difficulty identifying or assessing the volume of water lost due to meter inaccuracies as required in the state water audit report forms. The problem is complicated due to many factors such as meter size, class usage, meter types, climatic conditions (wet year-dry year), water pressure, testing methods (in-place vs. bench testing), and quantity of meters to be tested. In addition, lack of testing equipment and manpower constraints handicap some utilities from developing this information.

METER SIZE AND CLASS CODES

When meters are tested under AWWA testing standards, each meter is tested at a high, medium, and low flow rate (pre-determined based on meter size). The required flow rates change for each meter size. The combined results of these tests need to be weighted in order to develop a combined overall accuracy. 5/8x3/4 inch meters seem to be the easiest to develop weighted parameters for, while usage for larger meters varies considerably. Therein lies part of the problem - developing an accurate weighted average that satisfies each meter size/class/demographic group.

BENCH TESTING VERSUS FIELD TESTING



Bench testing offers accuracy and volume controls that can't be obtained in the field. Field testing (using bib cocks, volumetric buckets, or garden hose/test meter) may offer speed advantages, but there are factors such as small internal leaks (toilet, faucet, etc.), unplanned customer usage and required time to test adequate volumes at low flow that hinder and may skew the test results.

Many utilities test meters during the meter replacement process. After the old meter is taken out of the ground, the meter is taken to the shop and tested for accuracy. Meter accuracy information along with meter age, total metered usage, meter brand, meter type, and demographic data should be placed in a database or spreadsheet and can provide invaluable guidance when considering future change out programs.

On average, residential consumption varies considerably from one utility to another in this country. In Texas alone, averages range from 4,500 gallons to 13,000 gallons/Mo./Account (based on JBS Audited water systems). Taking those ranges into consideration the following weighted numbers may reflect usage for residential small meters.

Low flow (less than 1/2 gpm): 5-10% (does not include leakage)
Intermediate flow (1-6 gpm): 80-85%
High Flow (>6 gpm): 10-20%

Common sense suggests that the majority of domestic usage will fall in the intermediate to higher flow ranges. Showers, toilets, dishwashers, washing machines, and outside irrigation make up a large percentage of domestic water use and in most cases exceed 1 gpm. AWWA Class C Meter Standards set the lower accuracy limits of 5/8x3/4 inch meters at ¼ gpm at 95% (when the meter is new). The industry understands that domestic water use does not take place at that low of a flow rate. Everyday functions such as filling a glass of water or washing out a toothbrush is far above 1/4 gpm. Internal

JBS ASSOCIATES

Water Round Up

June 2010

Specialists in Recovery of Non Revenue Water and Lost Revenue

Is a Meter Sizing Problem contributing to lost Revenue?

leakage is another matter. As a meter ages, or inaccuracies show up in a water meter, it is the low flow recording ability of the meter that fails first, which means that most small leaks will go undetected. The following is a list of suggestions or considerations:

1. Meter accuracy weighting factors should be made with the same meter size and class code.
2. Commercial 5/8-inch accounts should not be compared to residential 5/8-inch.
3. When considering residential 5/8-inch accounts, demographics play a huge role and will influence the weighted value.
4. In areas where excessive outside irrigation water exists, separate profiles need to be developed since the weighting may be skewed.

However the weighting process is derived, exceptions will be the rule. The weighting factors need to be used for guideline purposes only.

METERED CONSUMPTION ANALYSIS

Random small meter testing is useful and can provide good information in resolving customer complaints or provide simple "yes/no" answers regarding meter accuracy or performance. On a large scale, a detailed metered consumption analysis reviewing several years of data of each metered account is more cost effective and will provide long term guidance in meter selection and replacement programs. Meter size, age, brand, type, customer class and demographics can be easily grouped and cross referenced to find non-revenue water issues including theft of water. Testing of meters will not show loss of water through theft. A consumption analysis has a better chance of identifying low use accounts that do not "fit" the norm. The following pictures are of several methods that people have used to cheat on their water bill using magnets and bypass connections. The end result is not just "unaccounted-for water" but truly "non-revenue water".

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>  </td><td>The first three pictures show magnets placed around the meter to stop or slow down the register. The 4th picture is a bypass line that was found fitted to a meter and the 5th picture shows a register that was taken off once the meter reader left.</td></tr>
</table>

Contact Us:
4715 Strack Road
Suite 114
Houston, Texas 77069
(281) 435-2780

www.jbswater.com
jbsmith@jbswater.com
jaschiele@jbswater.com

Water Round Up

June 2010

Specialists in Recovery of Non Revenue Water and Lost Revenue

Utilities should implement an in-depth water audit and not just a "paper" audit.

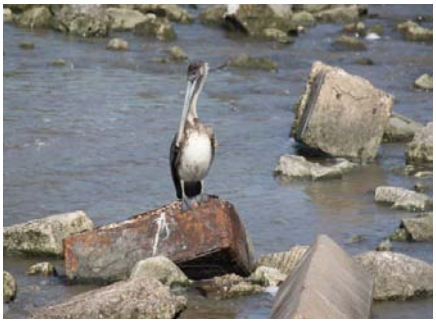
In this time of fiscal concerns, the cost benefits and revenue enhancements derived by conducting a full system Water Audit are more crucial than ever.

JBS Associates
4715 Strack Road
Suite 114
Houston, Texas 77069
(281) 435-2780

www.jbswater.com
jbsmith@jbswater.com
jaschiele@jbswater.com

The following are a few pictures taken in the Corpus Christi/Rockport area.








Water Round Up

June 2010

Specialists in Recovery of Non Revenue Water and Lost Revenue

JBS Does Not Sell Products or Participate in Revenue Sharing Programs.

We have nothing to gain from our recommendations, but their successful implementation by our clients.

JBS Associates
4715 Strack Road
Suite 114
Houston, Texas 77069
(281) 435-2780

www.jbswater.com
jbsmith@jbswater.com
jaschiele@jbswater.com

Water droplet pictures taken by John Breitenstein

JBS Associates offers a no-fee cost analysis for utilities. This review establishes the cost benefits of conducting a full Water Audit and Meter Management Analysis. Contact us for further information by calling (281) 435-2780 or emailing at jbsmith@jbswater.com.