

Distribution Side Conservation Just Do It..



By: Mark Mathis, TWDB
Municipal Conservation Specialist

Texas Water Loss Requirements

- Utilities are mandated to submit second round of data by March 31st, 2011.
- Notification letters were sent out in January 2011
- Online water audit worksheet
- Mail in worksheet
- Had 31 phone calls on January 13th.

AWWA Methodology

- It has consistent, standard terms
- “Unaccounted for water” is discouraged
- AWWA methodology answers the following questions:
 - Where did we lose the water?
 - How much water was actually lost? (VOLUME)
 - How much did the water loss cost the utility?
 - Why did we lose the water?

Why is Water Loss Important?

- Inefficient use of water resources
 - Supply side conservation
- Properly tracking apparent loss
 - Increase revenue
 - Decrease rate increase frequency
- Recovery of real losses
 - Cost-effective compared to new water
 - Diminished need to search for new water
 - Unnecessary investments in new facilities

What is a water audit?

A water audit identifies how much water is lost, where, and how much that loss cost the utility.

Records and system control equipment such as meters are checked for accuracy to ensure a valid result.

The goal is to help the utility select and implement programs to reduce and sustain water losses and manage the utility as an efficient business.

Once started it never stops.

Types of Water Audits

- Top Down
 - Preliminary
 - Administrative
- Component Analysis
 - Breaking down audit
 - Individual components
- Bottom Up
 - Implementation of programs

System Input

- Water Delivery
- Source Meter Adjustment
- Corrected Input Volume
- Wholesale Water Imported
- Wholesale Water Exported

Authorized Consumption

- Billed Metered – All water sold
- Billed Unmetered – Water sold but not metered
- Unbilled Metered – Metered line/fire hydrant flushing
- Unbilled Unmetered – Unmetered line flushing/fire department use

Apparent Loss/Retail Rate Non-revenue water

- Unauthorized Consumption
 - Fire hydrant theft,
 - unauthorized connections
- Meter Inaccuracies
 - Under registering
 - Installed improperly
- Accounting discrepancies
 - Non-billed accounts
 - Billing software inaccuracies
 - Waivers

Real Loss/Production Rate Non-revenue water

- These are the physical losses of leaks, from the pressurized point up to the point of customer metering.
- Reported Leaks
- Un-Reported Loss
- Catch-all Category
- Association with retail cost

Performance Indicators

- Real loss/mile of main/per day – rural
- Real loss/# of connections/per day – urban
- Total Apparent loss/retail cost
- Total Real loss/marginal production cost
- Infrastructure Leakage Index

Validation of data

- First audit is considered preliminary
- Grading system assists in validation
- Confirm preliminary water audit data
- Assessment determines areas of focus

Component Analysis

Apparent loss

- Meter types
- Meter accuracy
- Theft
- Billing challenges

Apparent Loss/Meter Accuracy

- Meter types
 - Turbine
 - Compound
 - PD and Multi Jet
- Age/volume
- Meter application
 - Schools
 - Commercial applications
 - Residential

Automatic Meter Readers AMR – Which one is right for you

- Fixed Network vs. Drive by
 - Cost analysis
 - Do your homework
 - Payback period
 - Many manufactures
 - One way vs. two way

AMR – Automatic Meter Readers

- Fixed Network
 - Instant gratification
 - Way too much data
 - Do you really need this
 - Do the math

AMR – Automatic Meter Readers

- Drive-by Technology
 - Interrogate the meters
 - Less expensive than fixed
 - Saves time

Can Real Loss be Diminished?

- Leak detection programs
- High pressure zones?
- Proactive vs Reactive
- Repair times
- Own equipment/outsource
- TWDB

Pressure Management

- Diminish pressure at night
- Higher loss at higher pressure
- Higher pressure encourages leaks/breaks
- Lessens pressure exerted on infrastructure
- Booster pumps

Asset/Infrastructure Management

- Maintain valves
- Rehabilitation vs. Replacement
- Maintain fire hydrants
- Valve survey
- Scada
- Meter accuracy/revenue

How can the audit help the utility?

- The worksheet application is designed for the utility.
- Utility can select year and input data.
- Compare volume data audit to audit.
- Shows the need to implement the use of benchmarks or performance indicators.
- Where in the system are we losing water?
- How can we prevent the losses?
- Can increase financial standing.

Recommendations

- Utilities should review audit worksheet and single out low assessment numbers.
- Begin to address those items using a priority system.
- Design programs and timetables to address identified low validity categories.
- Ensure that goals and objectives are achievable.

Water Loss Resources

- The Manual
- The online worksheet
- Water loss webpage
- “Free” consultation services
- Workshops
- “Free” equipment

Friendly, Helpful Government???

Mark Mathis, TWDB
Municipal Water Division
512.463.0987
mark.mathis@twdb.state.tx.us