Implementation of DRBC’s Water Loss Accountability Rule

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Water Service area in the Delaware River Basin

- Approx. 21% of Basin covered by service area
- 80% of basin residents (6.7 million customers)
- Approx. 750 systems
- 2nd largest water use sector in the Basin
- Total PWS withdrawals:

  875 MGD

  (plus exports)
Water Conservation in the Delaware River Basin

- Tocks Island Dam Project deauthorized (1975)
- Need to look at managing supply AND demand:
  - Good Faith Agreement (1983)
- Ground Water Advisory Committee
- Southeastern PA Groundwater Protected Area (GWPA)
- Water Conservation Advisory Committee
- Water Conservation Regulations adopted late 1980’s and early 90’s...
History of DRBC Water Conservation Regs

1986: Source & Service Metering
1987: Leak Detection & Repair (UFW)
1988: Conservation Plumbing Standards
1992: Water Conservation Pricing
2006-9: Water Loss Accountability (WMAC)
2009-11: Outreach / Voluntary Implementation
2012: First year for new audit format
2013: First reports due
Aggregated Withdrawals of 40 Public Water Supply Systems in the DRB (Million Gallons / Month)

Trendlines 1990 - 2007: Approximately **15% decline** in withdrawals
Approximately **13% increase** in population
New York City Water Use Trends

So, what’s next?

Water Loss Accountability
Why should systems be accountable?

• Water losses are significant - USGS estimates 6 Billion gallons/day
• Lost Water is Out of Sight & Out of Mind
• Lost Revenues estimated at >$1 Billion/year
• Conserve valuable natural resources
• Control Indirect Costs
  – Business disruption
  – Emergency Repair more expensive than proactive maintenance
  – Catastrophic Failures: property damage
Catastrophic System Failure

Water Main Break:

Manhattan, 5th Avenue and 19th Street  January 2, 1998
Why We Need to Manage Water System Losses

• Water taken that doesn’t reach the customer is better left at the source.

• An estimated 150 million gallons per day is physically lost from public water supply distribution systems in the Delaware River Basin.

• Water purveyors need to operate an efficient system, cost savings.

• Public Perception: water suppliers need to be good stewards of the resource.
What prompted DRBC rule change?

- Reporting inconsistencies
- Range of reported “Unaccounted for Water”:
  - High: 51%
  - Low: -12% (yes, that’s a negative)
- UFW = vague / inadequate definition
- Inadequate metric: UFW as % of distribution input is a poor indicator
- Time to update regulations (20+ yrs)
DRBC Rule change

Unaccounted for Water

IWA/AWWA Water Audit Methodology
IWA/AWWA Water Audit Components

- **Own Sources**
  - Total System Input (allow for known errors)
  - Water Supplied
  - Authorized Consumption
  - Water Exported
  - Billed Authorized Consumption
  - Unbilled Authorized Consumption
  - Apparent Losses
  - Real Losses
  - Water Losses

- **Water Imported**
  - Total System Input (allow for known errors)
  - Water Supplied
  - Authorized Consumption
  - Water Exported
  - Billed Authorized Consumption
  - Unbilled Authorized Consumption
  - Apparent Losses
  - Real Losses
  - Water Losses

- **Revenue Water**
  - Billed Water Exported
  - Billed Metered Consumption
  - Billed Unmetered Consumption
  - Unbilled Metered Consumption
  - Unbilled Unmetered Consumption
  - Unauthorized Consumption
  - Customer Metering Inaccuracies
  - Systematic Data Handling Error
  - Leakage on Mains
  - Leakage on Service Lines
  - Leakage & Overflows at Storage

- **Non-Revenue Water**
  - Real Losses
  - Apparent Losses
  - Authorized Consumption
  - Billed Water Exported
  - Billed Metered Consumption
  - Billed Unmetered Consumption
  - Unbilled Metered Consumption
  - Unbilled Unmetered Consumption
  - Unauthorized Consumption
  - Customer Metering Inaccuracies
  - Systematic Data Handling Error
  - Leakage on Mains
  - Leakage on Service Lines
  - Leakage & Overflows at Storage
AWWA Resources

- Recent Water Audit manual published
- Free interactive audit tool available
- DRBC member of AWWA Water Loss Control Committee
- Data grading capability assesses the validity of the input data
- Instructions, definitions provided in software

www.awwa.org
Benefits of the IWA/AWWA Water Audit Methodology

• Industry standardized definitions and terminology
• Software outputs meaningful indicators:
  - gpd / mile mains
  - gpd / connection
  - ILI (infrastructure leakage index)
• Better indicators lead to better water management decisions
Leaders in Water Loss Accountability:

States / Agencies Advancing AWWA Water Audit Approach

- DRBC
- Texas
- New Mexico
- Virginia
- Georgia
- California
- North Carolina
- Tennessee
- Pennsylvania PUC
- Calgari, Alberta, Canada

July 2010 AWWA Opflow Article
Outreach Efforts

- Two targeted mailings to water users
- 2010: AWRA National Conference Panel
- 2011: NJ & PA regional presentations
- Publications / newsletters
- 2011: DRBC Workshop (April) (Partnered with PWD, NJ American, Aqua PA)
- Includes workshop materials
Implementation Summary

• 2012: First mandatory audit; annual thereafter
• DRBC will have primacy for reporting, until States adopt similar programs
• Electronic reporting required (AWWA audit format)
• Tools already developed for audit data management
Conclusion

- DRBC has been a leader in water conservation programs that show proven results
- DRBC Rule change will help meet goals of minimizing water withdrawals and increasing system efficiency
- New audit method outputs more meaningful indicators:
  - targeting real losses
  - identifying financial costs of losses
- New approach will enable better water management decisions
- Water Loss Accountability Program continues DRBC leadership in water conservation