**WATER SYSTEM AUDITS AND WATER LOSS CONTROL**
**WORKSHOP ABSTRACTS**

## MODULE 1: DRBC's Water Loss Accountability Requirements and Water Audits

### Part 1: Overview of the Delaware River Basin and the DRBC

A review of water resource management in the Delaware River Basin includes an overview of the geographic, hydrologic, and demographic aspects of the 330 mile Delaware River and its 13,500 sq. mile drainage basin. The establishment of the Delaware River Basin Commission (DRBC) will be discussed, focusing on its role in managing the drinking water supply to 15 million people, including half of the New York City water supply.

### Part 2: DRBC Water Conservation Program and Water Loss Accountability Rules

The DRBC is one of only a handful of regulatory agencies in the US that has embraced the new water loss control approach that recognizes the benefits of controlling water losses in water resources management. This presentation will explain the evolution of the DRBC's water loss management programs and regulatory changes. A review of the most recent regulations passed in 2009 will be discussed, focusing on new annual data reporting methodologies using the new AWWA format that will be required in 2012.

### Part 3: Basis and Development of Water Audit Methodology

Water scarcity is a growing worldwide problem with many parts of the U.S. suffering from dry conditions and dwindling water resources. Thus, many communities are developing water conservation and efficiency programs to encourage prudent use by consumers. Water Loss Control represents the efforts of drinking water utilities to provide accountability in their operations by reliably auditing their supplies, and by implementing controls to keep system losses to reasonable minimal levels. Water and revenue losses occur in all water utilities – only the nature and extent of the losses varies.

Utilities not only provide us the water we need, but they also move and consume large volumes of water and, without proper controls, can waste or lose track of huge amounts of water. With pressures mounting on our limited water resources, water utilities need to regularly audit their supplies, contain losses and recoup needed revenues. Utilities incur *real losses* from pipeline

leakage and *apparent losses* when customer water consumption is not properly measured or billed, costing utilities needed revenue. AWWA advocates the water audit method as the best management practice for water utilities to efficiently manage their supplies.

## MODULE 2: Conducting the Water Audit and Analyzing Water Audit Data

### Part 1: Water Auditing Resources and Tools

The American Water Works Association (AWWA) and the Water Research Foundation (WRF) have created a number of tools and resources for drinking water utilities to employ to both audit their water supplies and control excessive losses of water and revenue. This session will identify and describe the primary tools (AWWA's M36 Manual Water Audits and Loss Control Programs, AWWA Free Water Audit Software©), several pertinent research reports from WRF, and a variety of information from various state regulatory agencies and other sources. Website references will be provided and attendees will gain a wealth of information on resources to employ in conducting a water audit and managing losses.

### Part 2: Overview of the AWWA Free Water Audit Software© & Complier

The AWWA Free Water Audit Software© is available from AWWA at no charge and serves as a basic tool for water utilities conducting a preliminary water audit. This session will walk attendees through the software; emphasizing the use and features of this innovative tool. The complimentary "Compiler" software is a new product being developed by AWWA to allow data from more than one water audit to be quickly and easily compiled into a single spreadsheet, and this tool will also be described. These tools give water utilities effective capabilities to audit their supplies, track their performance and benchmark with other water utilities. Attendees will gain knowledge and skills in the full use of these software packages.

### Part 3: Demonstration of the AWWA Free Water Audit Software©

Participants will have the opportunity have a hands-on introduction to the AWWA Free Water Audit Software© in small group tutorials. Fundamental software organization, methods and elements will be reviewed using authentic water system scenarios familiar to water operators, with special attention to small water delivery systems. The demonstration will allow for analysis

of data that can simulate discovering solutions to system and management challenges in the real world.

**Part 4: Organizing the Water Audit Data Collection Process in your Water Utility**

The water audit process involves data collection and interpretation from all reaches of water utility operations. Data and information is needed on water withdrawal/treatment volumes, customer metering and billing, leakage management, asset management, water rates and charges, and other areas. Since the water audit should be compiled annually as a routine business practice, an orderly structure of data collection and management is necessary to make this process effective and efficient. This session will give attendees guidance on water audit data collection gathering so they can quickly establish a process for this important endeavor.

## MODULE 3: Managing Water Loss

**Part 1: Controlling Real Losses: Leakage Management**

Leakage represents inefficiencies in a water delivery system. Economically controlling leakage losses requires effective management strategies and technical expertise. Developing an effective and efficient leakage management program requires a four-pillar approach to control the volume of current annual real losses. This approach identifies the types and volumes of leakage losses within a utility's distribution system, the cost of the water in the utility, and the costs of the appropriate techniques to reduce specific components of leakage.

**Part 2: Controlling Apparent Losses: Recouping Lost Revenue**

Apparent losses occur when water volumes reaching customer consumption are under-stated or omitted. These losses result in 1) the collective volume of customer water usage is under-stated, and 2) the water utility fails to collect a portion of the revenue to which it is entitled. Customer metering error, unauthorized consumption and billing system data handling errors are all common causes of apparent losses. This session will give attendees an overview of the nature of such losses and the means to control them. Information on tools and resources for apparent loss control will be provided to the attendees to allow them to further explore the capabilities that they can develop in their utility practices.

Part 3: **Considerations for Small Systems**

Smaller systems have different considerations in gathering data and interpreting the results of a water audit. This session will discuss some of the challenges and experiences in data compilation and population of the water audit tool for systems with less than 500 customers. In smaller systems some data points can significantly weight audit results in comparison to larger systems where the effects are not as apparent.