WSO

## *San Francisco, USA*

# San Francisco Standard Water Balance and Audit FY03/04

Client: **San Francisco Public Utilities Commission**

SFPUC is ensuring accountability and benchmarking their efficiency as a water utility operator, by engaging WSO to carry out a water audit using the new AWWA approved technologies. SFPUC is a proactive member of California Urban Water Conservation Council (CUWCC) and they wanted to participate in a review of the new AWWA audit technology from a Californian perspective. This work will then assist CUWCC in their evaluation of the new technology prior to rewriting the regional benchmark parameter (BMP3) around these methods. SFPUC also needed to have a full water audit and annual component based analysis of real losses, and have identified the economic level of leakage, in order to participate as a 'full-scope level-two' study participant in the AWWARF 2928 project.

A top-down water audit is an exercise in which documentation is collected reviewed and verified if necessary to determine each component of water use and loss. The scope of work for this project is designed to follow the IWA/AWWA standardized water audit methodology as detailed in the 2003 AWWA Water Loss Control Committee Report The project will include the following components:

- Analysis of system input volumes, export volumes & source and export meter testing. One of the most important tasks in a water balance is to ensure a verified system input volume is used as any error in this component will likely have more impact on the final result than any other error in the water balance procedure.
- Identification and confirmation of consumption volumes. All relevant components of consumption will be broken out into categories as defined by AWWA standard methodology.
- Identification and classification of apparent and real losses. Apparent losses can result from meter malfunctions, meter reading errors, data transcription errors, customer accountability problems, inaccurate consumption estimates and theft. In most utilities the majority of the apparent loss volumes are created by meter malfunctions. Once the apparent losses have been accurately assessed the remaining annual loss volume is attributed to real losses.
- Calculation of confidence limits for each component of the water balance. Using industry standard methods of statistical evaluation, WSO will calculate the accuracy of each component of the water balance to 95% confidence limits.
- Identification and allocation of appropriate performance indicators. The IWA/AWWA recommended best practice has established technical performance indicators for water loss management and control. After a careful evaluation of the operational characteristics of the SFPUC system, WSO will recommend the best of these indicators for SFPUC to use, both for describing the current situation (base lining) and for setting targets for reducing water loss.
- Calculation of the Economic Level of Leakage (ELL). The ELL represents the most effective level of leakage given current valuation of resources.

The project is due to complete at end of May 2006.