



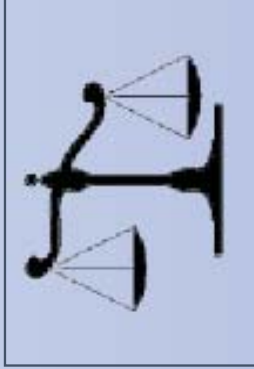
Real Loss Real Money

Full Cost Accounting for Water System Leakage

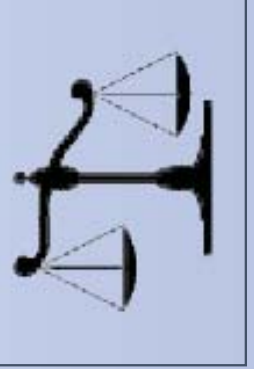


INTRODUCTION:

In performing water audits for most water utilities, real loss (or leakage) is by far the greatest portion of water loss, by volume. The cost impact of leakage, however is typically stated as only a fraction of the costs impacts of apparent (non-physical losses).



This is because current practice in the AWWA M36 Manual (M36) Limit valuation of **real loss** to those direct costs which incrementally increase with each additional unit of finished water that is delivered.



A Case Study- The Macon Water Authority

- Produces on average 9.5 billion gallons/year
- 7 elevated storage tanks
- 10 ground storage tanks
- A new elevated storage tank (Hartley) has been recently constructed
- 5 hydraulically-independent pressure zones
- A sixth one to be constructed
- Average pressures within zones currently range from 83 psi to 112 psi
- Average pressure for the entire system is approx. 93 psi

WATER AUDITING – IMPROVED METHODOLOGY

- True cost impacts of real losses in a water system go beyond direct costs
- Presents basis for allocating indirect costs of Operation & Maintenance, equipment replacement, supply capacity and drought resistance.
- Full cost accounting and proactive leakage management efforts are necessary to properly budget and evaluate the true, long term impacts of real loss.



Item	FY10 Costs	Source	Notes	Calculation
1. Chemicals	\$ 538,862	budget 1000-40-9999 budget 0500-	Direct: material cost of chemicals for treatment	n/a
2. Utilities	\$ 1,368,607	30/35/40-2200	Direct: power to treat and distribute	n/a
3. Biosolids Disposal	\$ 23,501	budget 1000-40-7126	Direct: residuals management disposal fees	n/a
4. MSI - Motorized Operation	\$ 62,183	budget 0900-60-9999	Indirect: residuals management O&M for equipment	n/a
5. Equipment Maintenance	\$ 1,130,282	budget 0900-30/35/40-9999; 1200-30-9999; 1100-40-9999	Indirect: DIST, MAINT, WTP departments - O&M for equipment	n/a
6. Dynamic Asset Depreciation	\$ 781,381	dynamic assets from depreciation schedule 3600	Indirect: depreciation on treatment and distribution equipment (moving parts). Producing extra water due to leakage depletes useful life of these assets.	n/a
7. Constrained Demand (During Drought) Risk Factor	\$ 628,440	calculation	Indirect: future risk of demand restrictions and reduced revenue due to drought. In times of demand restrictions, Real Loss should be valued at the retail rate.	21 \$M water revenue x 15% revenue reduction (primarily outdoor uses) x 20% drought probability
8. Constrained Supply (Capacity Expansion) Factor	\$ 300,000	calculation	Indirect: annual cost of reservoir space required to support current annual demand. Unmanaged leakage accelerates timeframe for capacity expansion.	15 \$M reservoir cost, annualized with i=0%, n=50 yr
Total Direct and Indirect Costs to Produce	\$ 4,833,256			
Total Volume Produced	9,072,840,000	gallons		
Variable Production Cost	\$ 0.53	per 1,000 gal		
Annual Cost of Real Losses (FY10)	\$ 572,872			