



Conservation in the Water Industry


Sam L. McElroy, P.E.
 Engineering Superintendent
 Huntsville Utilities Water Department
 Chair, AL MS AWWA
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Overview – Water Conservation

- Introduction
 - Define Water Conservation
- Topics
 - The Environment
 - Supply/Demand
 - Water Cost
 - Leak Detection
- Summary/Questions





Introduction

- Webster defines Conservation as the act or process of conserving.
 Conserving is defined by Webster as
 1. To protect from loss or harm; preserve.
 2. To use carefully or sparingly; avoiding waste.
- What does Water Conservation mean to a Water System?
 - **Conservation of Energy** - Principle that the total energy of an isolated system remains constant
 - **Conservation of Mass** – Principle that the total mass of an isolated system is unchanged by interaction of its parts.
 - **Conservation of Momentum** – Principle that the total linear momentum of an isolated system remains constant regardless of changes within the system.
 - **Conservation of Water** - Principle that the total water produced or sold by public utilities will eventually return to nature and the water systems will not create or destroy water.
 - Unlike Electricity, Gas



The Environment

Assuming that water is not ultimately lost, destroyed or created by a water system, can we ignore the idea of water conservation?

Should we simply establish a source water or well head protection policy and not be concerned with conservation?

We have a **limited** amount of available water

Consider redirection

- Water from the river may become ground water.
- Unnecessary changes in water sources may have detrimental impacts on the environment.



Environment (cont)

- Consider the water problems of Metro Atlanta...
 - Lake Lanier-Atlanta by 7/12
- Gwinnett County is currently permitted to withdraw 70 mgd potable and return 40 mgd wastewater. This daily cycle will ultimately lead to up to 30 mgd being redistributed from Lake Lanier to other sources.
- The average annual daily supply for Metro Atlanta is 888 mgd from the Chattahoochee basin, according to MNGWPD latest water plan. (73%). This is 22% of the lakes capacity.



Don't wait for laws



- In response to the water woes, Georgia passed a statewide water conservation law which requires public water systems with more than 3300 people to perform International Water Association level water-loss audit.

- As responsible public water systems, we are obligated to maintain a conservation program which encourages the best use of our available water resource – with our without laws.



Water Conservation or Protection

- Water conservation and water resource management or protection go hand in hand, but conservation dives into water demand from the public and how a Utility came influence that demand to provide the **best use of a limited water supply.**




Water Supply/Demand

Efforts of Water Conservation are typically linked to two important aspects of a public water system
 Water Resources/Supply - Utility
 Water Demand - Public.




Water Supply

- Do you have adequate sources of water?
 - Ground/Surface Water
 - Re-used/Industrial Water
- How much water can your system produce each day?
- Do drought conditions influence your production capabilities – system reliability?
- What would happen if you lost the source of your primary water supply?
- What can be done to add additional water sources?




Water Demand

- How much water do your customers require each day?
 - Summer Demand
 - Irrigation Water
 - Winter Demand
- Are your conservation efforts different in the summer vs. winter?
- What' the best method to encourage customers to conserve water use and minimize waste?



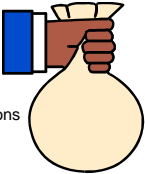
Water Cost and Conservation

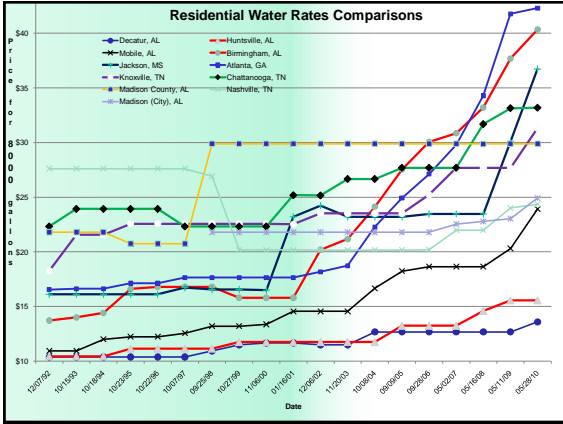
The most effective influence on water conservation involves water cost.




Public Water Cost

- A Utility has many methods of cost leveraging to courage conservation of water.
 - Consider summer vs. winter water rates
 - Irrigation water rates with separate meters
 - Include cost of plant expansions and future water needs
 - Minimize base fees/ water cost with Allowable usages
- Review the cost of water for your utility
 - The cost of water can vary for different applications









The Cost of Water


- By setting effective water rates, customers are encourage to use water in an efficient manner.
- Many systems are implementing irrigation meter pricing at 200 percent of the base water cost.
- New car washes are required to recycle water.
- Sub-meters are required on new multi-family buildings.




Conservation in Action


- Minimize Waste
- Leak Detection
 - Each Utility should implement a leak detection crew or program and work to minimize unnecessary water loss.

 **Huntsville Utilities repairs leak**




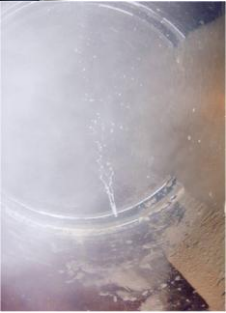
- A leak was discovered in a difficult to repair location underneath the Flint River.
- The exact size of the leak was difficult to determine







- After removal of pressure and draining the pipe, water from the Flint River was able to flow in the the 36" water main.






- Rubber tub is installed and pressure tested before the tie-in





- The damaged section and 5 other joints were repaired with a rubber gasket and the main was returned to service.




Repair Rationale

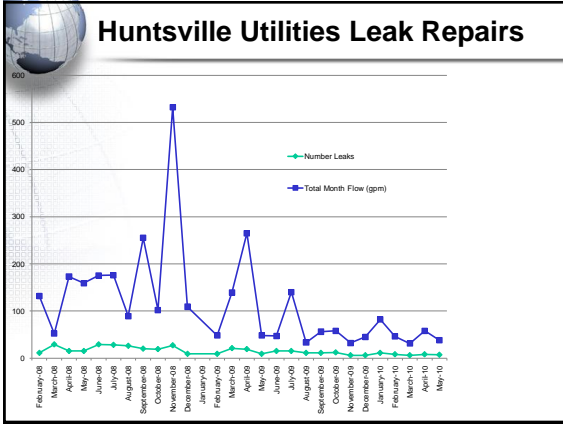
- Installed 6 WEKO SEAL w 304 SS Bands
- Cost of the project - \$ 42,168.55
- System Down Time – 4 days
- Estimated Size of the leak – 1.5" diameter at 150 psi -- 3.9 mg month
- Annual Cost of the Leak – estimated at 90 gpm with a 1.5 inch opening and water cost of \$ 1.05 per thousand gallons - \$ 48,988.80
- Environmental Concerns – 46.8 mg year into river.



Unaccounted for Water Loss

- Each water system should actively look for ways to minimize waste and similar water losses.
 - Establish leak detection crews
 - Track the water produced vs water sold
 - Review/check meter calibrations for accuracy
 - Maintain a meter change out program
 - Review meter sizes
 - Review low/high flow ranges
 - Review system flow velocity
 - Review system pressure ranges





In Short

- There's a part that we all play in water conservation.
- Each water system is different - Customers, neighborhoods, and communities are different. Tailor your conservation efforts to your specific situation.

There are steps all of us can take...

Encourage Household Conservation

- Low flow shower head
- Low flush toilets
- Faucet aerators
- Rainwater harvesting
- High efficiency clothes washers
- Weather based irrigation controllers



Summary

- We are all responsible for conserving water and protecting the environment and this valuable resource.
