



Water Conservation and Energy Efficiency as Pollution Prevention

The View from a Drinking Water Utility

Cultural Change & Cost Savings

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**“When the well’s dry, we know
the worth of water.”**

Benjamin Franklin

Poor Richard’s Almanac, 1746





Overview

Department of Waterworks

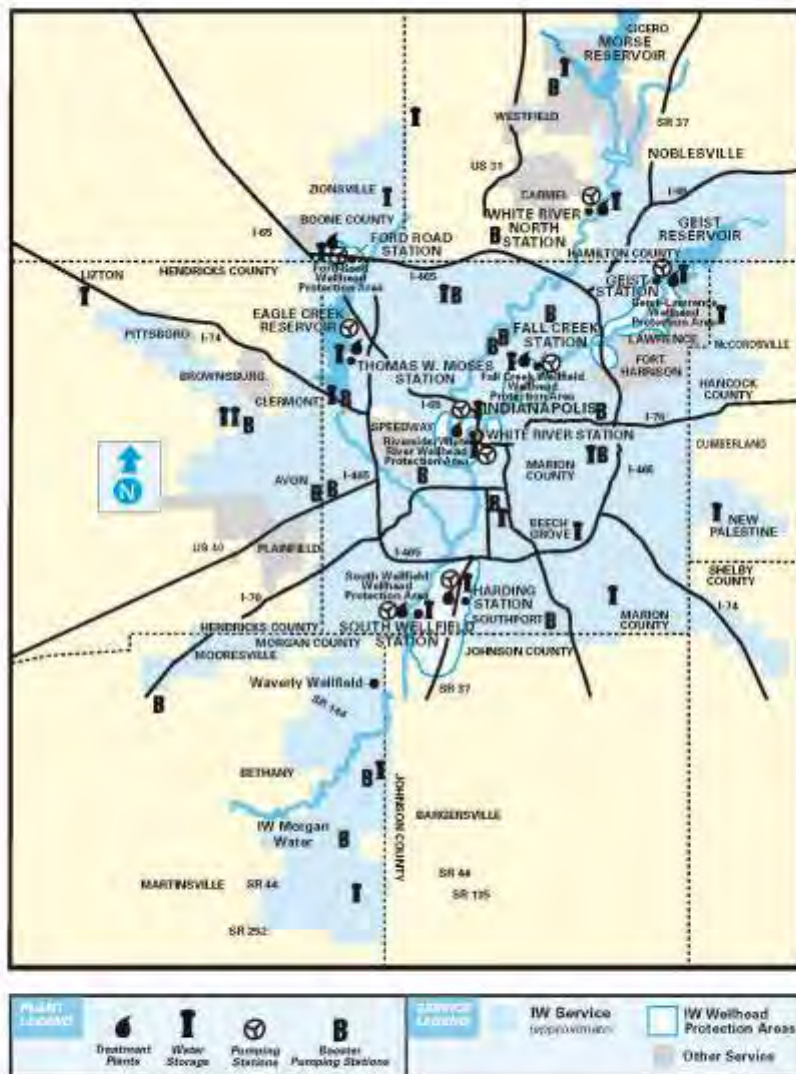


Department of Waterworks

- **Owns** and manages Indianapolis Water.
- Bi-partisan seven-member Board of Directors oversees department policy, finances, capital projects, and the Management Agreement with the contract operator.
- Department currently has five employees.
- System is **operated** by Veolia Water Indianapolis, LLC comprised of approximately 350 employees.

Waterworks System - Overview

- Indianapolis Water serves nearly 1 million people in 8 counties.
- 83% of customers and 89% of revenues are within Marion County.
- Service is also provided to portions of Hamilton, Boone, Hendricks, Morgan, Shelby and Hancock Counties
- 77% of the supply is from surface water sources.
- The source of supply is supplemented with ground water wells. Currently, there are 68 groundwater wells.
- The current average daily production rate of finished water is 140 million gallons per day.
- A peak average day production rate was recorded on June 13, 2007 (dry summer) and 228 million gallons was treated and pumped.
- Total rated capacity of the treatment system is 260 MGD.
- Largest Municipal Water Utility in the State of Indiana: 10 treatment facilities
29 storage tanks, 31 pump stations; 4,300 miles of pipe;
32,000 valves; 36,500 hydrants.



Morse Reservoir



White River North Treatment Plant



Strategic Plan – Needs

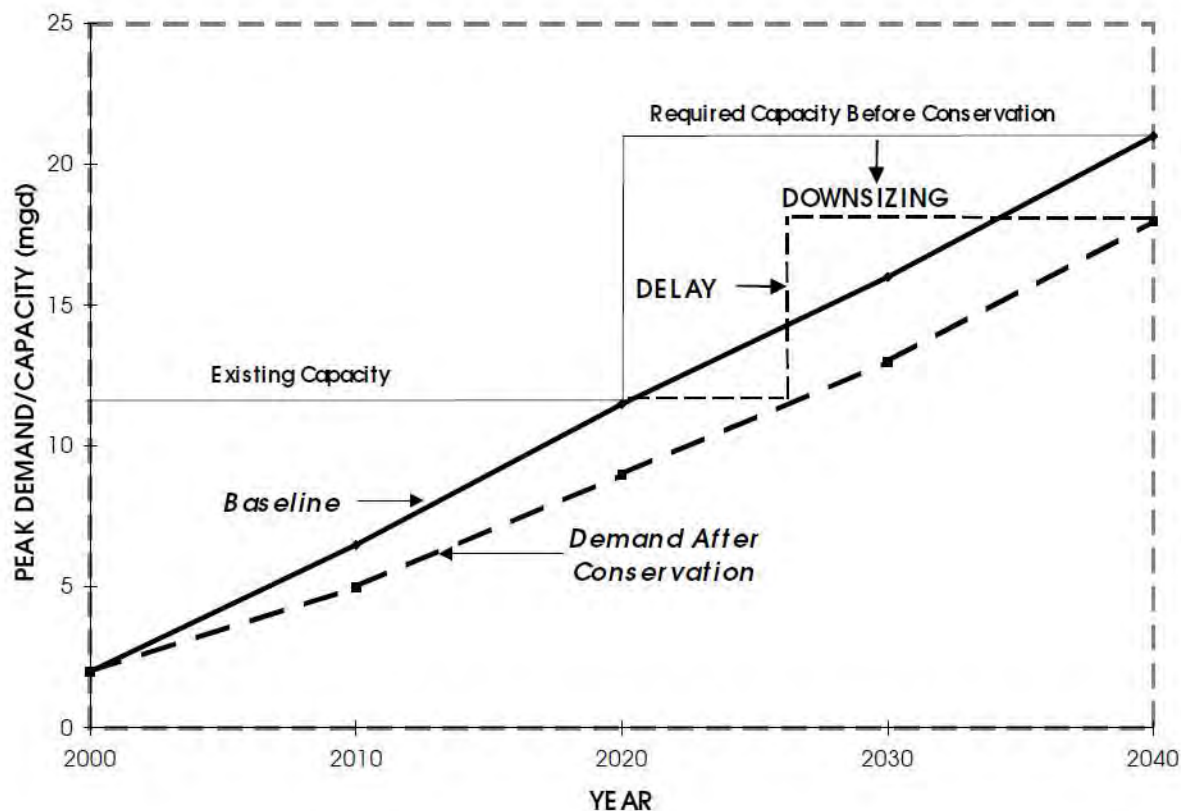
- Regulatory Compliance
 - Next phase of the Safe Drinking Water Act regulations require monitoring and treatment process modifications to all surface water treatment plants by April 2012
- Future Growth of Community and Surrounding Areas
- Aging Infrastructure
- Technology Enhancements
- Safety & Security Concerns (Homeland Security)
- To meet these needs, it's estimated that \$600 million will be required over the next 15 years
- Over \$111 million in capital work is planned for 2011-2012

Strategic Plan – Needs

- *Problem: How to meet the system needs?*
 - Option A: Increase capacity and treatment methods with new systems at existing facilities.
 - Option B: Increase capacity and treatment with new treatment plants to meet demand
 - Option C: Seek out water conservation measures to maximize current system capacity.
- *Solution: A combination of all three, with an emphasis on Option C.*

Strategic Plan – Needs

Example of Conservation Impacts on Capacity Improvements

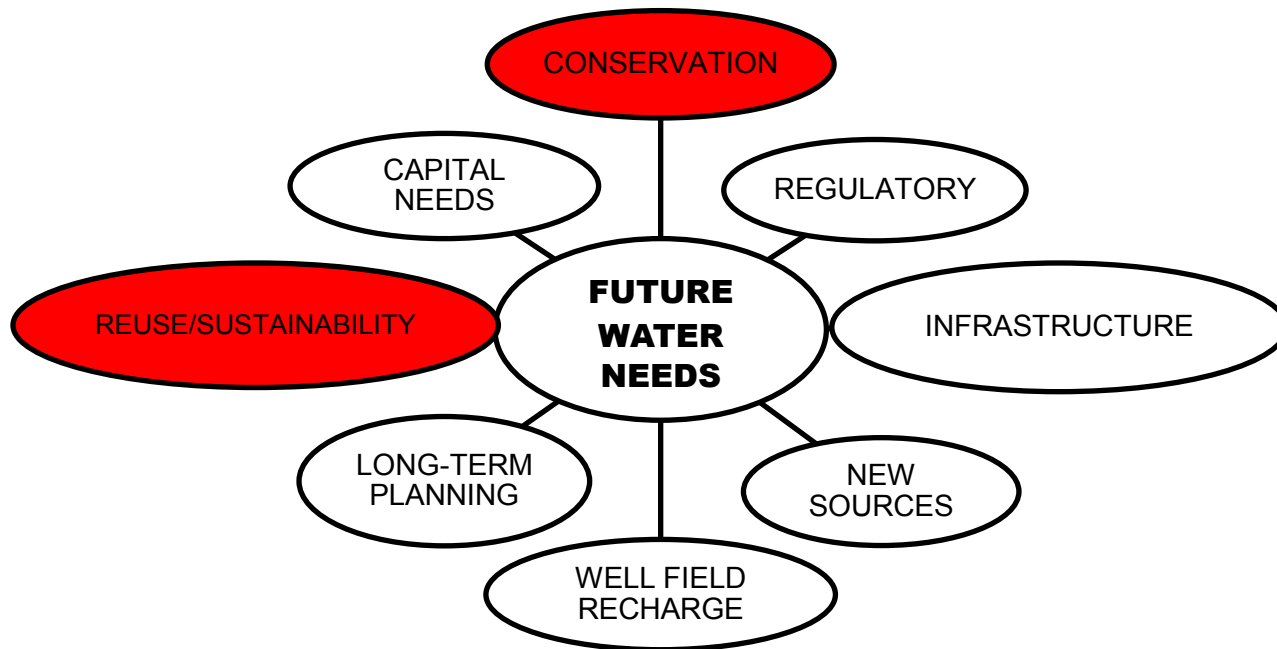


Strategic Plan – Goals

- Employ Innovative Strategies To Meet the Future Water Needs of the Region (10-50 year horizon)
- Maintain Quality of Life while Supporting Proper Infrastructure Investments
- Encourage Proper Use but Discourage Waste
- Practically Maintain the Financial Stability of Utility

How to Plan for Future Water Needs

Components of Strategic Planning



Additional 50 million gallons per day needed in the year 2025

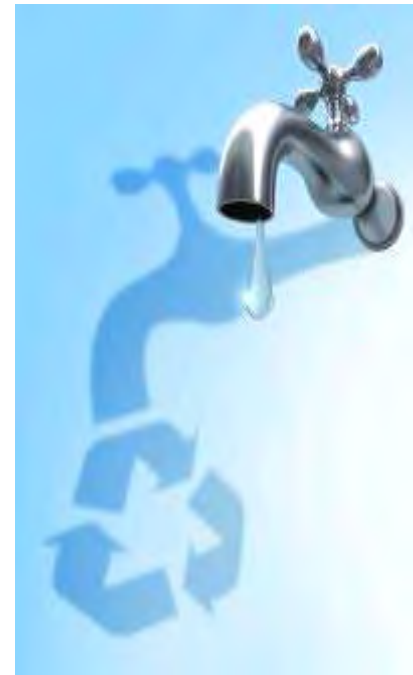
Conservation Measures Broad Perspective

- Water Conservation Ordinance (G.O. 15-2009)
 - Passed by Indianapolis City-County Council and other jurisdictions where DOW supplies water
 - Based on issued warnings and emergency declarations due to severe conditions
 - Low surface water flow conditions
 - Severely limited sources of supply
 - Other extreme water shortage issues



Conservation Measures Broad Perspective

- Board of Waterworks Resolution No. 8, 2008 for Wise Water Use Policy
 - Recommends customers voluntarily employ efficient water use practices during normal conditions
 - Employs Water Use Advisories which focus on notifications to customers about high water usage and recommendations on temporary limitations



Conservation Measures

Broad Perspective

■ Irrigation Technology

- Average day demand during dry summers can increase by as much as 60 million gallons per day to meet irrigation loading.
- DOW is drafting lawn irrigation standards and specifications for approval by the Indiana Utility Regulatory Commission



Conservation Measures

Broad Perspective

■ Irrigation Technology Standards

- Includes weather-based smart controllers which utilize current climatological data as a basis for scheduling irrigation.
- Requires professionally certified individuals to design, inspect, and install irrigation systems.
- Avoids wasteful overspray (sprinkling the pavement), which can result in discharges into storm and combined sewer systems and reduces pollution runoff.

Conservation Measures Broad Perspective

- Board of Waterworks Resolution No. 45, 2009 for High Performance Green Building Standards
 - Affects newly constructed utility buildings
 - Designs qualified for Silver LEED-rating and/or two (2) Globes under the Green Globe rating system
 - Opportunities to increase energy efficiency, cost effectiveness, and sets an example for resource conservation



Conservation Measures Broad Perspective

■ Building Fixtures – Plumbing Retrofit Program

- Developing a pilot program with Delta Faucet Company to partner on improved plumbing fixtures
- Installing improved fixtures in DOW facilities
- Improves water use efficiency, reduces water production energy requirements



Conservation Measures Broad Perspective

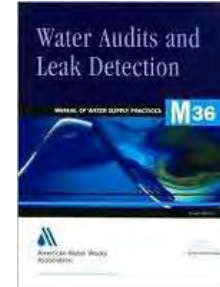
- Beneficial Re-use of Groundwater
 - Studying the possibility of beneficial reuse of ground water from various sources that can reduce flows into existing Indianapolis combined sewers.
 - Potential of re-using 3-5 MGD that is currently discharged into downtown storm and combined sewers from dewatering wells and sump pumps.



Conservation Measures Broad Perspective

■ Improve Leak Detection through Technological Advancements

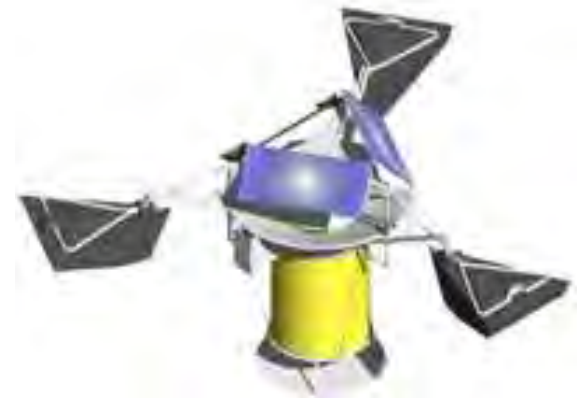
- Use new AWWA water audit methodology to track and fix leaks
- Reduce losses within the water system
- Measure Indianapolis with benchmarking utility standards nationwide, worldwide



Conservation Targeted Achievements

■ Sustainability Practices

- Conduct energy reviews and audits
- Use specialized equipment to optimize power consumption
- Examine alternative energy sources
- Increase the use of solar powered equipment such as “SolarBee” mixing units



Conservation Targeted Achievements

- Installation of Variable Frequency Drives (VFD's) on high-service pumping equipment
 - Reduce inefficient power peaks, stabilize electrical loadings, reduce overall “carbon footprint”, eliminate water hammer
- Update construction standards to improve water pipe sterilization guidelines to reduce flushing water needed for new construction

Conservation Targeted Achievements

- Use improved storage tank cleaning methods – for example, employ robotic cleaning equipment to avoid wasting and draining water storage tanks for maintenance activities



- On-Site Solids Residuals Treatment

- Use of filter presses to treat water treatment facility solids to reduce discharges to city sewer system



Conservation Future

- Community Water Outreach
 - Rain Barrels
 - Rain Gardens
 - Community Watershed Alliances

Use Water Wisely!

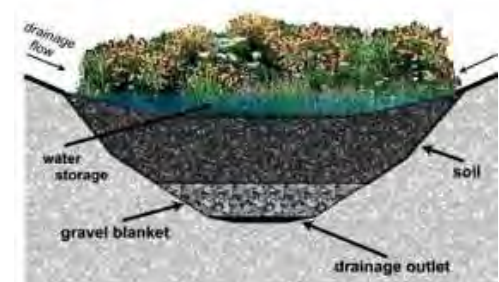
Reduce your water usage by up to 40% using one of these water conservation products...

	Hydro-Rain Rain Sensor	\$19.95
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	Base-Line Moisture Sensor	\$159.99

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Cross-section of typical rain garden



Conservation Future

- Improved use of “gray” water solutions
 - Reuse/recycle water for non-potable use
 - Irrigation of landscaping
 - Boiler makeup water
 - Industrial process water
 - Steam/chiller system water



Conservation Future

■ Aquifer Recharge

- Use wastewater treatment plant effluent that currently discharges into White River to recharge confined water treatment plant aquifers
- Can provide 200+MGD of additional water influence



Summary

- Water System Goals and Needs Drive More Efficient Water Usage Policies
- Current Conservation Successes are Providing Customers with Diverse Alternatives
- Future Conservation Measures will Improve Options and Further Reduce Water Pollution Impacts

Questions?

