

Water Networks in the U.S.

Organization, issues, responses

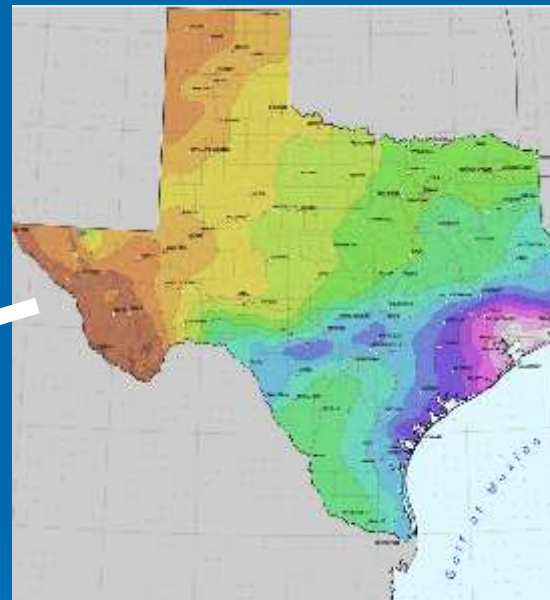


La nouvelle dynamique des industries de réseaux
Neil S. Grigg, Professor

Colorado State University

The context:

Algeria is ~ 3x size of Texas



Texas
695,622 km²
29 million population



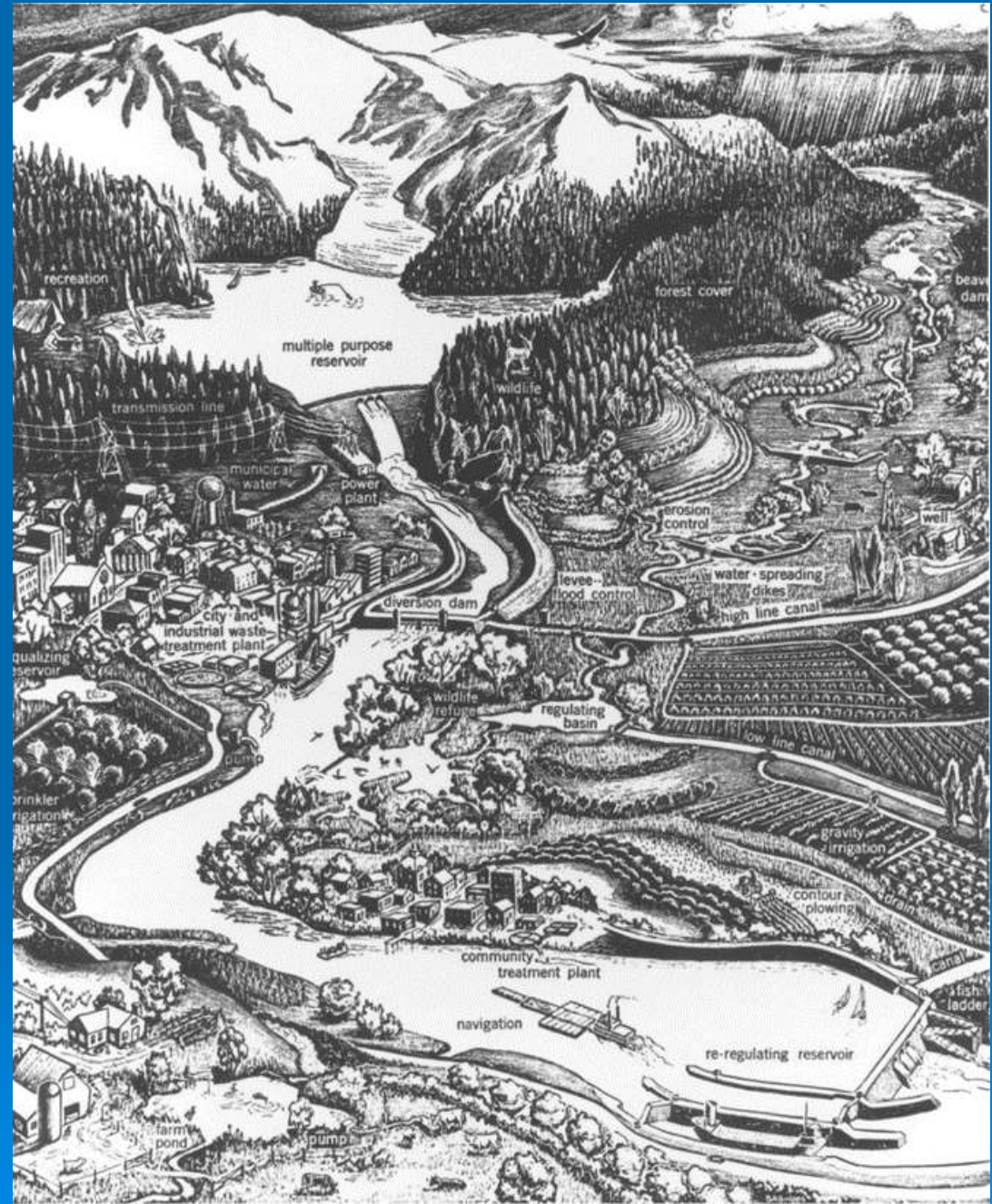
Algeria
2,381,741 km²
44 million population

Water networks

Multiple systems

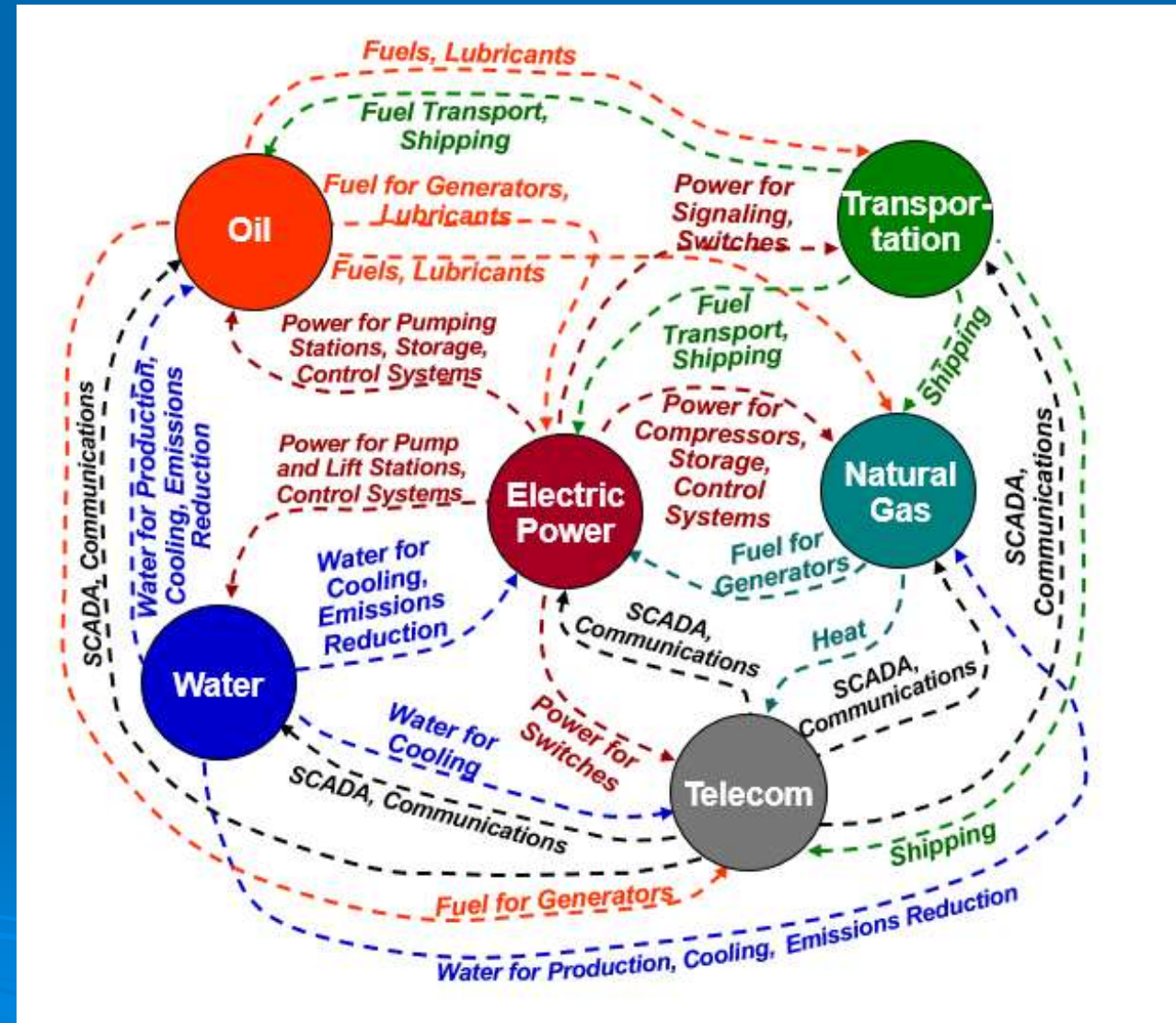
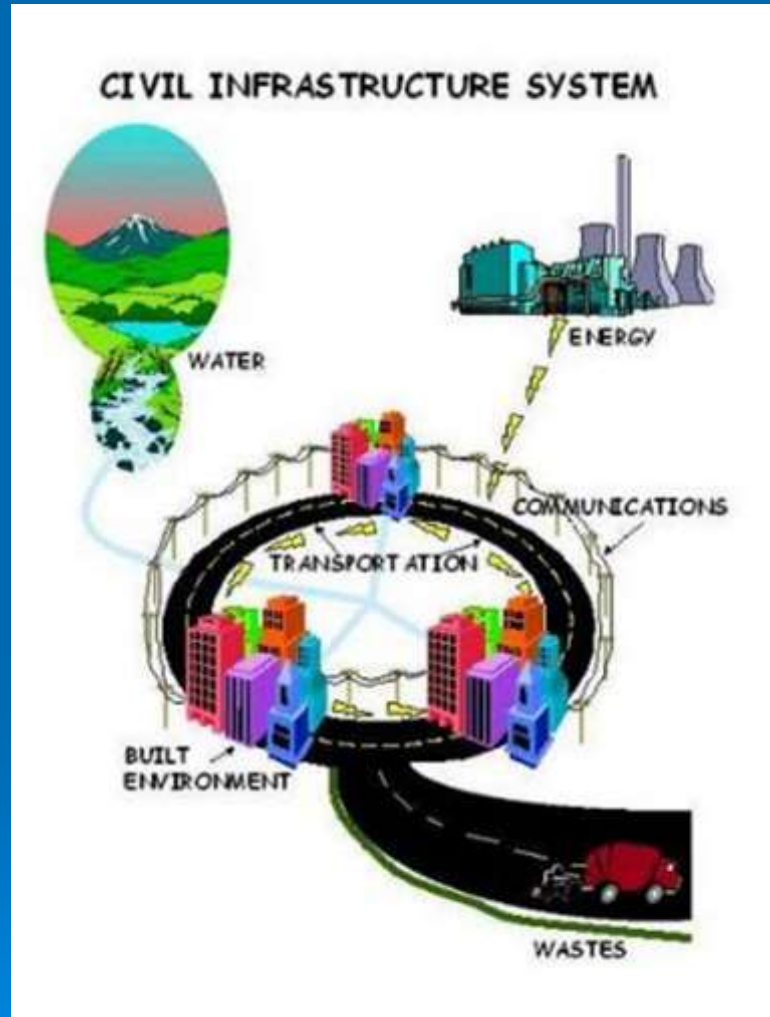
Multiple services

- Watershed
- Reservoir
- Hydropower
- Water supply
- Wastewater
- Irrigation
- Aquifers



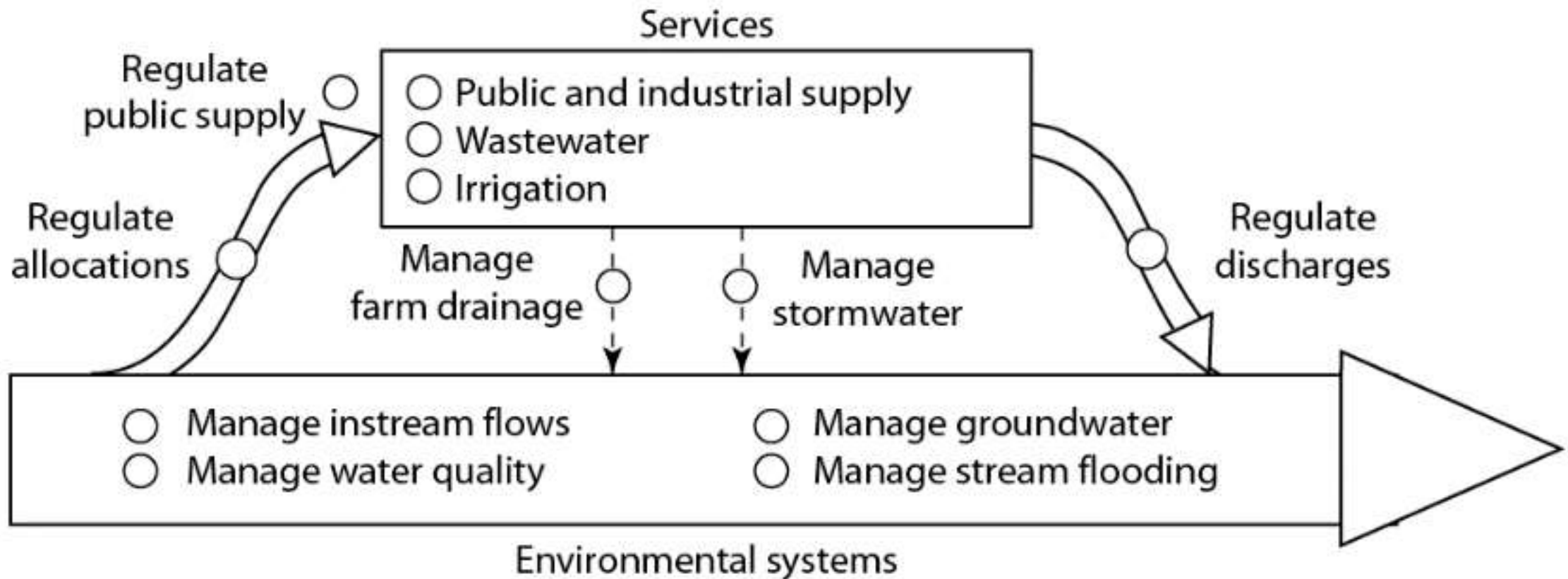
Water networks and other networks

Electricity
Natural gas
Water
Telecom
Transport



How the water industry works

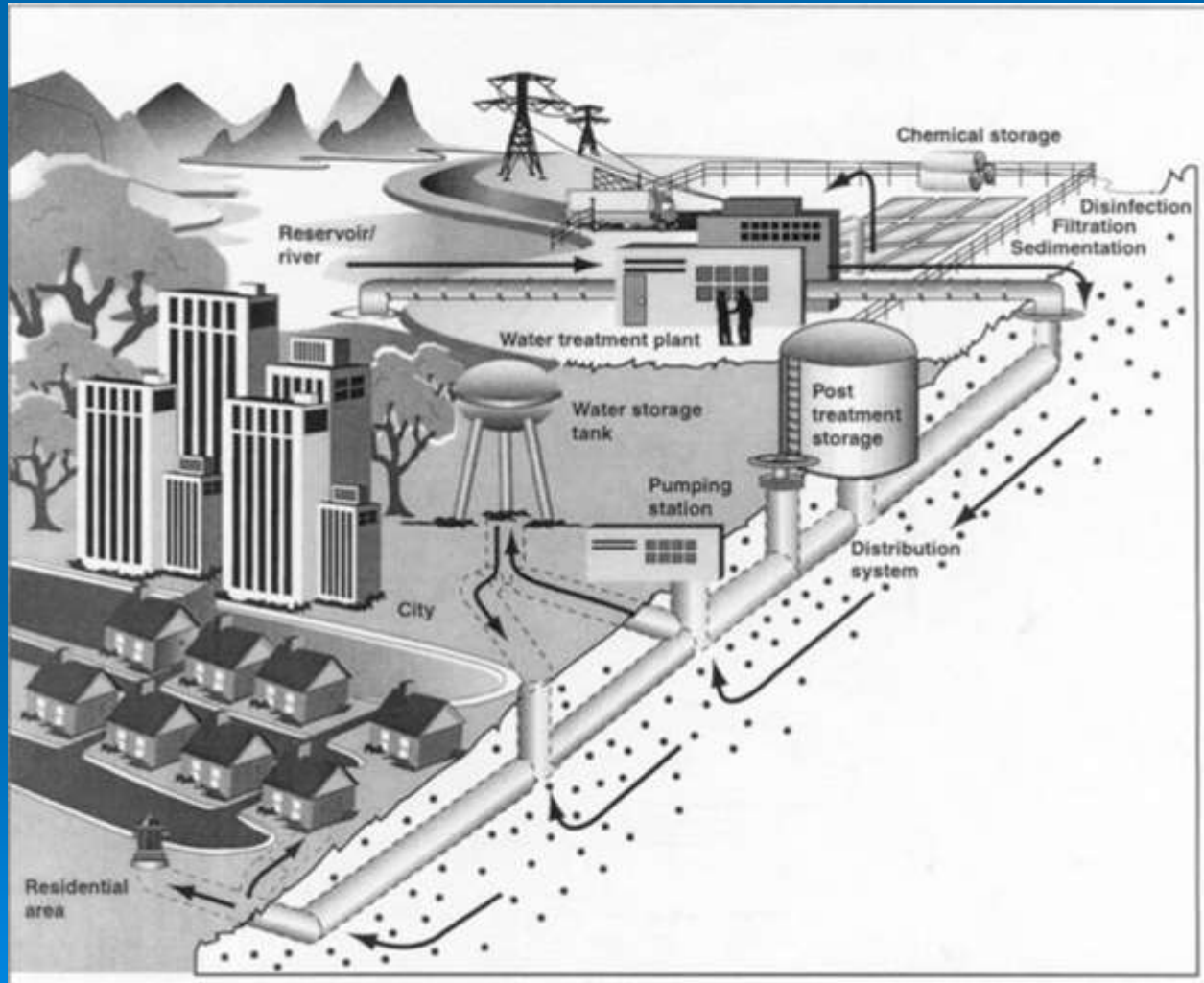
○ Areawide, river basin, and other multipurpose organizations



U.S water networks: Watersheds and rivers



U.S water networks: Water supply



- 50,000 suppliers
- Public and private
- USEPA regulation
- Service and safety
- Issues:
 - Climate change
 - Safety
 - Infrastructure
 - Affordability
 - Innovation

U.S water networks: Wastewater



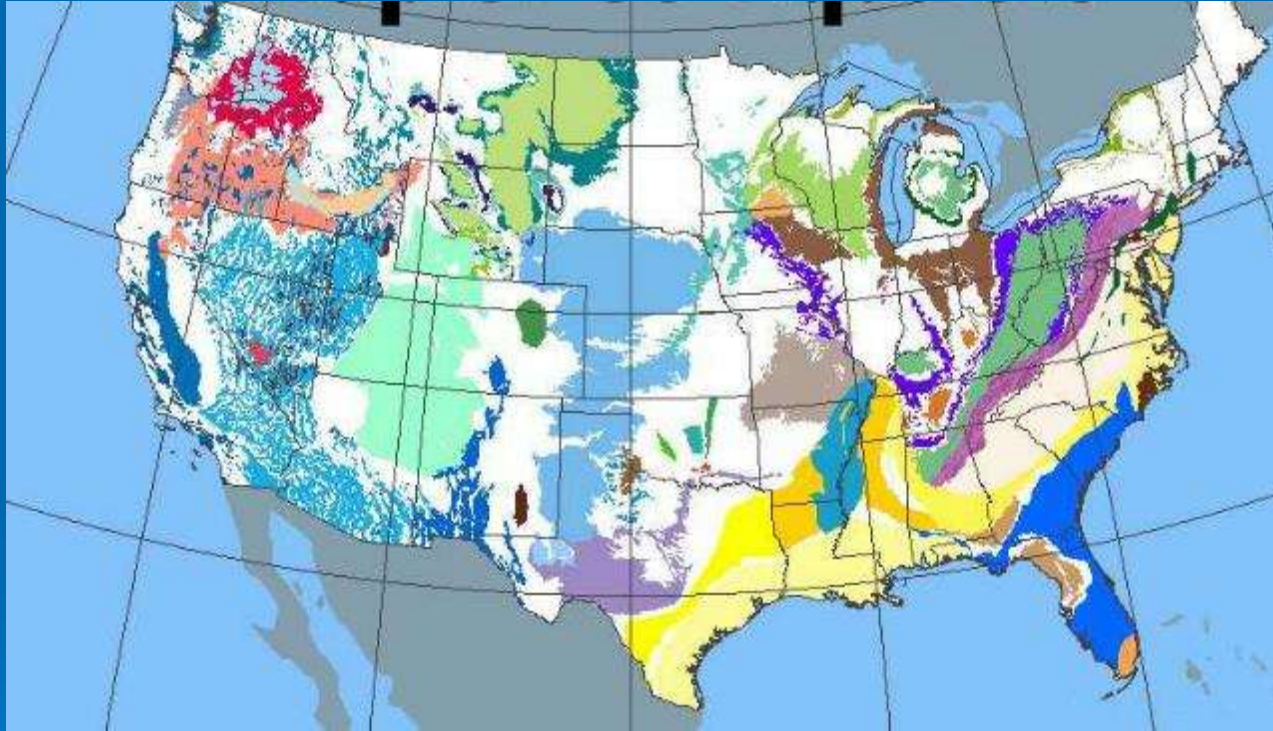
- 16,000 WWTPs
- Public and private
- USEPA regulation
- Water quality
- Issues:
 - Infrastructure
 - CSOs/SSOs
 - Performance
 - Affordability
 - Innovation

U.S water networks: irrigation



- **Districts**
- **WQ regulation**
- **Issues:**
 - **Climate change**
 - **Conservation**
 - **Farm issues**
 - **Innovation**

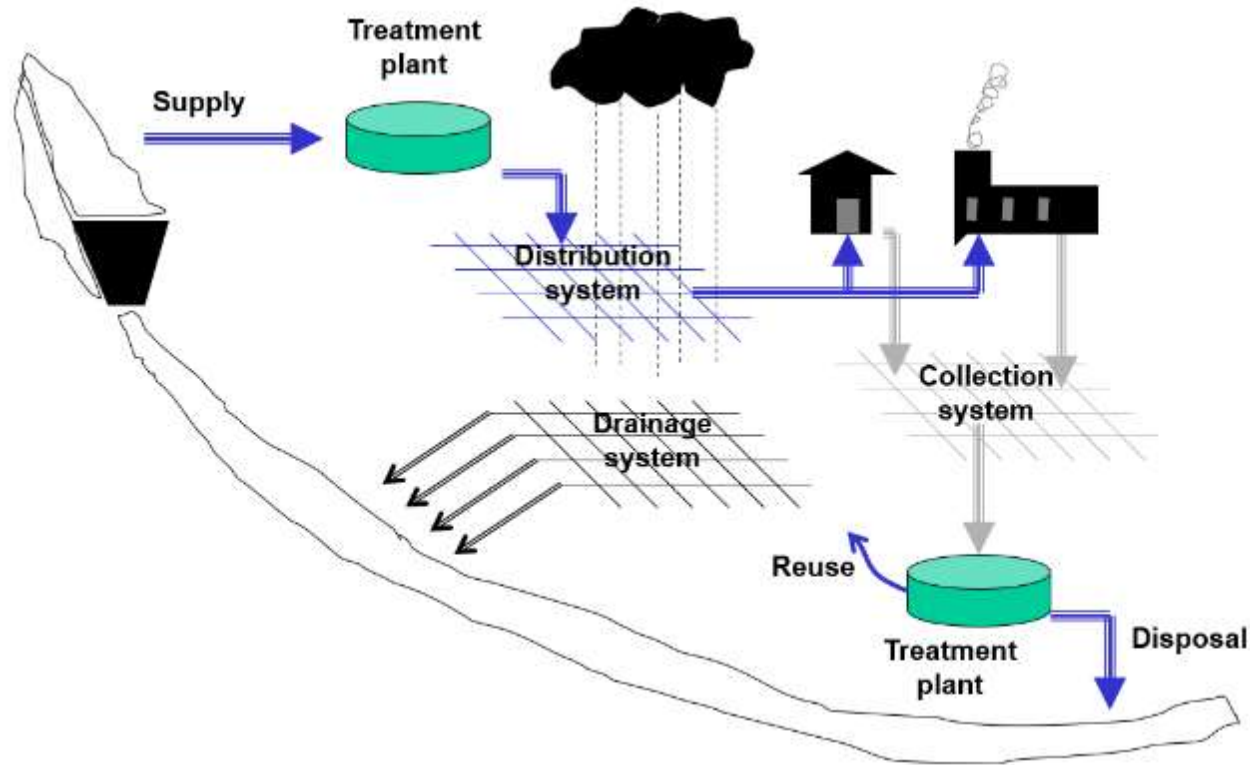
U.S water networks: aquifers




- Local management
- Q&Q regulation
- Issues:
 - Rising demands
 - Depletion
 - Competition
 - Innovation

Urban water systems


- One Water
- IWRM




Global water issues: How U.S. compares

- Water supply safety and service are tenuous
 - Drought and climate change
 - Billions lack safe drinking water
 - Water service is unaffordable
 - Wastewater treatment and water quality are poor
 - Stormwater and flooding problems
 - Water scarcity for irrigation
- 
- A decorative graphic at the bottom of the slide features several concentric circles representing ripples on water, rendered in a lighter blue shade against the dark blue background.

Focus on water supply in the U.S.

- Safe drinking water is universal
 - Multiple types of organizations
 - Emphasis on efficient utilities
 - Public and private, not state companies
 - Small water systems and rural issues require attention
 - Affordability is a continuing problem
 - Various subsidies, such as DWSRF
- 
- The bottom right portion of the slide features a decorative graphic of several concentric circles, resembling ripples on water, rendered in a lighter shade of blue against the main background.

U.S. experience: Governance

- Large nation: federal-state-local shared roles
 - Policy through national legislation (focus on safety/health)
 - Transparency is essential (CCRs)
 - Local governance through boards/cities
 - Many special districts
- 

U.S. experience: Public/private

- Private and public utilities are interchangeable
- Privatization may work for smaller utilities
- Privatization is divisive in many cases
- Municipalization is rare



U.S. experience: Service levels

- 24/7 safe and dependable service
- No customer outages
- Boil water notices



U.S. experience: Regulation

- SDWA and enforcement are essential for health/safety
- Private utilities regulated by state PSCs
- Public utilities not regulated for financial performance
- Justice system oversight (Flint example)



U.S. experience: Finance

- Utilities operate on enterprise basis
- Rate studies are done
- Cross-subsidies are minimal
- Affordability is an issue



U.S. experience: Capacity

- Local capacity and training with incentives are key
- Workforce capacity is critical, challenges to retain
- Robust private sector to support water industry



U.S. experience: Partnerships/NGOs

- Associations and other NGOs are helpful
- American Water Works Association is lead



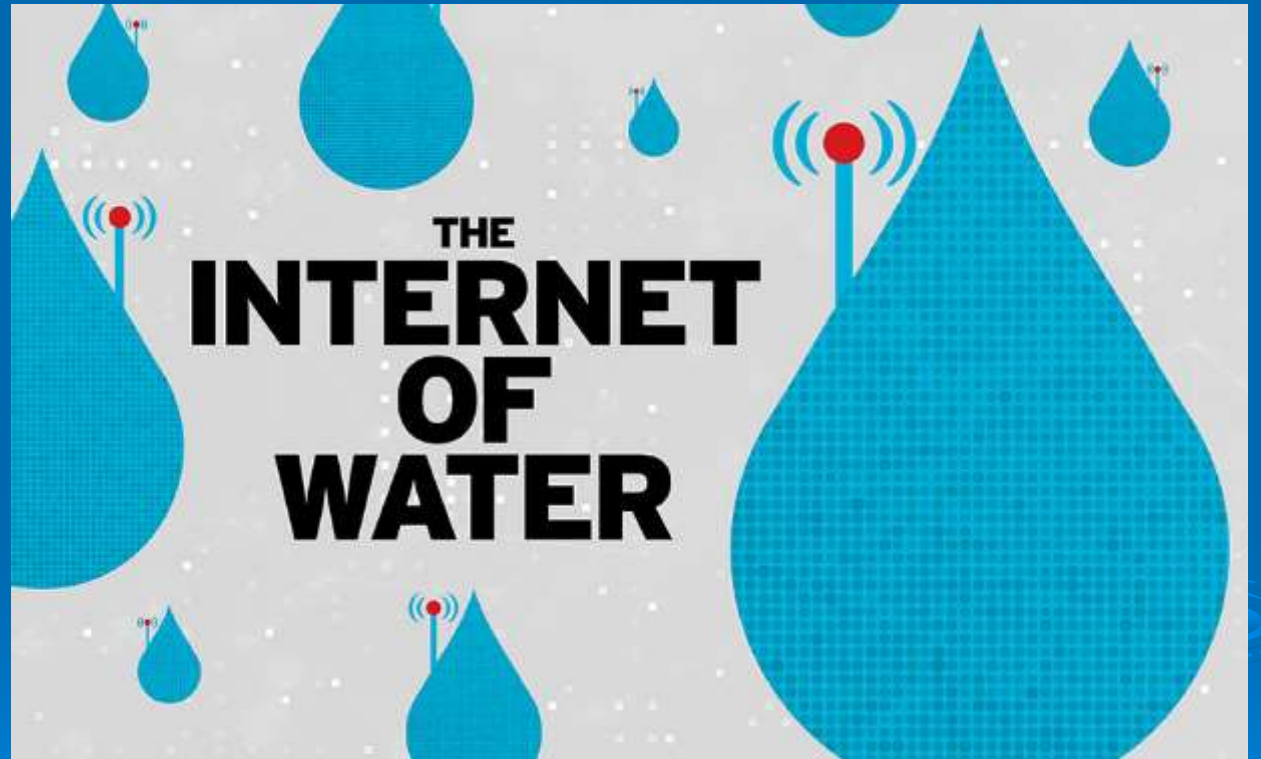
U.S. experience: Infrastructure

- Infrastructure problems are long term, expensive



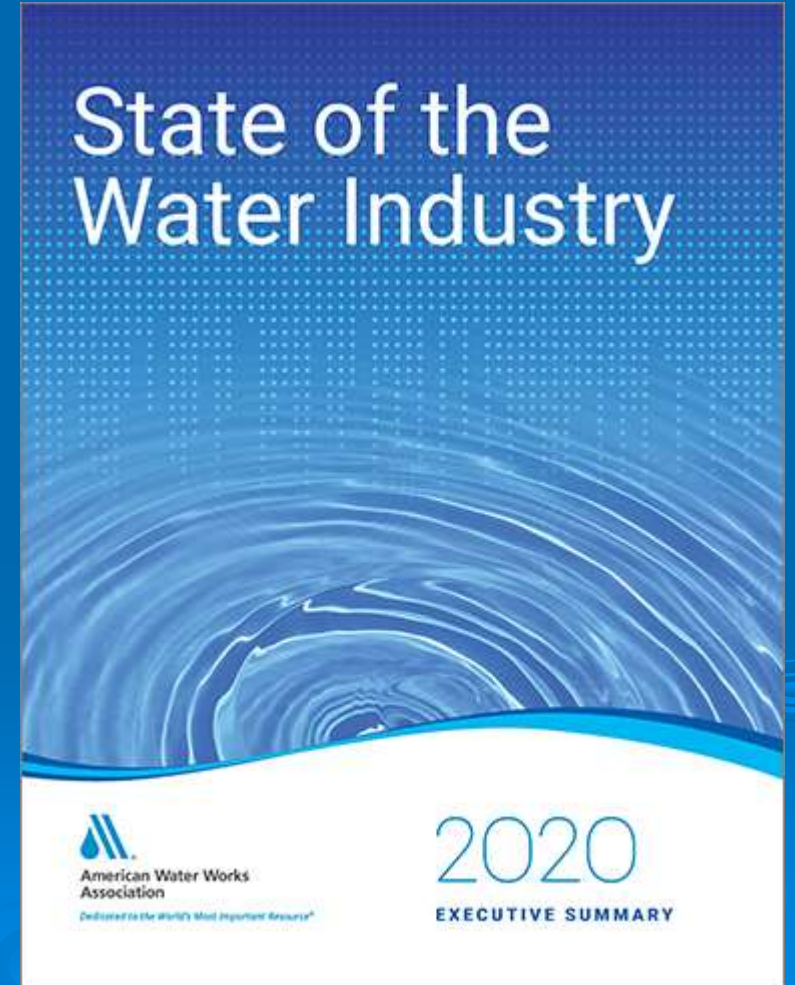
U.S. experience: Innovation

- AMI/AMR
- Digitalization
- Asset management



AWWA

1. Renewal and replacement of aging water and wastewater **infrastructure**
2. **Financing** for capital improvements
3. Long-term **water supply availability**
4. **Public understanding** of the value of water systems and services
5. **Watershed/source** water protection



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Thank you!

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