



# Wastewater Quality and Challenges Faced

AQUA<sup>SM</sup>

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# Ohio's Aging Infrastructure

## **American Society of Civil Engineers (ASCE)**

The 2009 ASCE Report Card on Ohio's Infrastructure raised several challenges for the state of Ohio's infrastructure.

- Competing Infrastructure Needs
  - Aviation, Bridges, Dams, Drinking Water, Electricity, Railroads, Roads, Schools and Wastewater
- Report addresses current needs only
- Competing demands for funding resources

# Ohio's Aging Infrastructure

## Grade D+ Drinking Water Infrastructure

- 90% of Ohioans receive water from a Public Water System
- Most Ohioans are served by a relatively small number of large water system
- Most of the problems and investment needs are for medium and small water systems

## Grade D+ Wastewater Infrastructure

- Aging wastewater plants
- Aging sewer collection systems
- Prohibition of Sanitary Sewer Overflows (SSOs)
- Combined Sewer Overflow (CSO) requirement to meet water quality standards
- Focus on POTW's "end of pipe" control

# Ohio's Aging Infrastructure

## Projected Costs

ASCE estimated costs for addressing water and wastewater system deficiencies

### Ohio Water Systems

- **\$9.68 Billion**
- To address **existing** infrastructure deficiencies
- Funding burden estimated to be **99% by local government**
- **\$841 per Ohio resident**

### Ohio Wastewater Systems

- **\$11.16 Billion**
- To address **existing** infrastructure deficiencies
- Funding burden estimated to be **95% by local government**
- **\$970 per Ohio resident**

# Challenges for Small Utility Systems

- Affordability
  - Can your customers afford and are they willing to pay for the utility service?
- Financing
  - How do we pay for it?
- Uncertainty (Risk)
  - What are the future unknowns?
- Resources
  - Does the organization have the capacity and capability?
- Vision
  - What is the *short* and *long* term plan?

# Affordability - Can your customers afford and are they willing to pay for the utility service?

- Average US Monthly Utility Expenses (per USEPA)

|                    |     |
|--------------------|-----|
| • Water            | 4%  |
| • Wastewater       | 4%  |
| • Garbage          | 6%  |
| • Cable            | 14% |
| • Electricity      | 19% |
| • Gas              | 20% |
| • Phone & Internet | 33% |

- Does this reflect the value of the service or the willingness to pay for a specific service?

# Affordability - Can your customers afford and are they willing to pay for the utility service?

## Educated Consumers

- Internet – The Good, Bad and Ugly
- Special Interest Groups – What is their agenda?
- Activist Groups – “We are here to help.”

# Affordability - Can your customers afford and are they willing to pay for the utility service?

## Consumers' Service Expectations

- What level of service are they expecting?
- What level of service are they willing to accept?



# Affordability - Can your customers afford and are they willing to pay for the utility service?

## **Detroit Water Shutoffs Bring U.N. Scrutiny (October 20, 2014)**

“Disconnection of water services because of failure to pay due to lack of means constitutes a violation of the human right to water and other international human rights.”

# Affordability - Can your customers afford and are they willing to pay for the utility service?

## **Detroit Water Brigade to protest in Ireland (December 4, 2014)**

Raising money from water charges was a condition imposed on Ireland by the European Union and International Monetary Fund as part of the country's bailout in 2010 following economic collapse.

Until now, water was funded from central and local government taxes - but paying for an essential that seemed to come for free appears to have generated more steam than most austerity cuts.

## Affordability - Can your customers afford and are they willing to pay for the utility service?



# Financing – How do we pay for it?

- Understanding Full Life-Cycle Cost of the Utility
  - Construction, operation and replacement costs
- Operating as Self Sustaining Utility
  - Don't bet on future funding programs
- Establishing Adequate and Predictable Utility Rates
  - Utility rates should cover the Real Cost of the utility service

# Financing – How do we pay for it?

What is the Real Cost of a Wastewater System?

- Capital Costs
  - Cost of planning, construction, financing and debt coverage
- Annual Management, Operations & Maintenance Costs
  - Cost of daily operations
- Replacement / Upgrading Costs
  - Cost to replace the utility asset at the end of its useable life
  - Costs to meet new environmental regulations



## Uncertainty (Risk) - What are the future unknowns?

- Regulatory Environment
- Consumer Behavior
- Economic Environment

# Uncertainty (Risk) - What are the future unknowns?

Regulatory Environment - Existing Regulations

National Pollutant Discharge Elimination System

Sanitary Sewer Overflows

Combined Sewer Overflows

Stormwater Management

Drinking Water Supply Protection

Mercury

Nitrogen

Phosphorus

Total Dissolved Solids

Total Maximum Daily Loading

Sludge Disposal – The tail that wags the dog!



# Uncertainty (Risk) - What are the future unknowns?

Regulatory Environment – Future Regulations

Residential Wastewater Effluent:

- Endocrine Disrupting Compounds
- Pharmaceuticals/personal care products

Do we really want to dump unused or expired pharmaceuticals down the Drain?



# Uncertainty (Risk) - What are the future unknowns?

Regulatory Environment - Future Regulations

*Increasingly we know something is there but we don't know what it's being there, at that level, means*



# Uncertainty (Risk) - What are the future unknowns?

## Regulatory Environment - Future Regulations

Just because we can measure it – do we need to regulate it?

Regulate it at what level?

- 1 part per million (ppm) = 1 inch / 16 miles
- 1 part per billion (ppb) = 1 inch / 16,000 miles
- 1 part per trillion (ppt) = 1 inch / 16,000,000 miles

# Uncertainty (Risk) - What are the future unknowns?

## Consumer Behavior

- What will be the future consumer behavior that will impact the utility's viability?
- Consumers using drains as disposal systems
  - i.e. Disposable wipes, grease, paints, oils, etc.
- Reduction of water use – impact on revenues
  - Rate increases to offset lower usage to maintain required revenue stream

# Uncertainty (Risk) - What are the future unknowns?

## Economic Environment

- **Competition for limited resources** (people, time, money)
- **Population Mobility** – change in size or type of customer base
- **Affordability** of service to the customer
- **Overhead and Management Costs** – higher as a percent of O&M for small systems
- Change in **value of the asset** investment

## Resources - Does the organization have the capacity and capability?

- Capacity
  - Size, bandwidth, flexibility, adaptability
- Capability
  - Knowledge & skill sets

## Resources - Does the organization have the capacity and capability?

### Capacity

- Do you have right personnel for the right function?
  - Management of a utility organization
  - Management of a utility finances
  - Operation of the utility facilities
  - Delivery of utility services



## Resources - Does the organization have the capacity and capability?

### Capability

- The pool of available, technically skilled workers is shrinking and may have different life values
- 45% workforce increase demand expected due to regulations, infrastructure growth, security, and customer demands
- Due to the continual escalation of regulations and technological change, the nature of the work to be performed is increasingly complex

# Vision - What is the *short* and *long* term plan?

Can the utility be a self sustaining with its **current customer** base?

Is the utility's financial viability dependent on **future growth**?

How will reduced water consumption impact **financial viability**?

How will more **stringent treatment** requirements impact the utility?

How will **water reuse** requirements impact the utility?

How will change in **treatment technology** impact the utility?

# Questions?

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