

Safe and Sustainable Water Resources

Science Advisory Board Presentation

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40 Years of Progress in Protecting Aquatic Resources



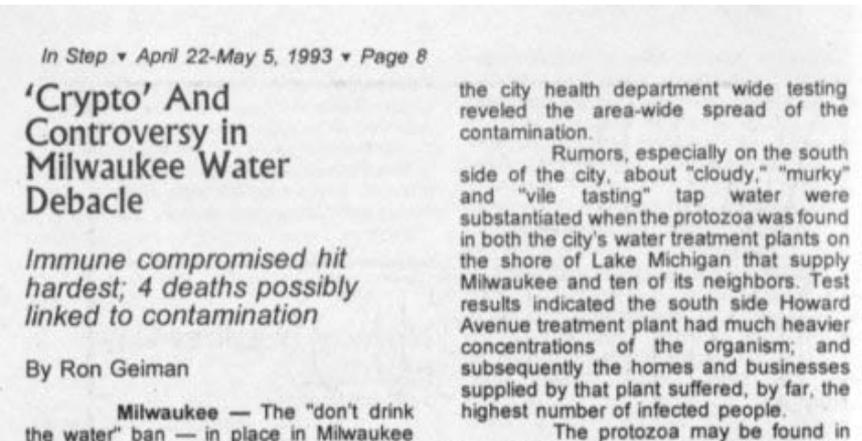
Cuyahoga River, 1969



Love Canal, 1978



1 Acid Rain impacts to water quality



1993 Cryptosporidium outbreak

National Problem

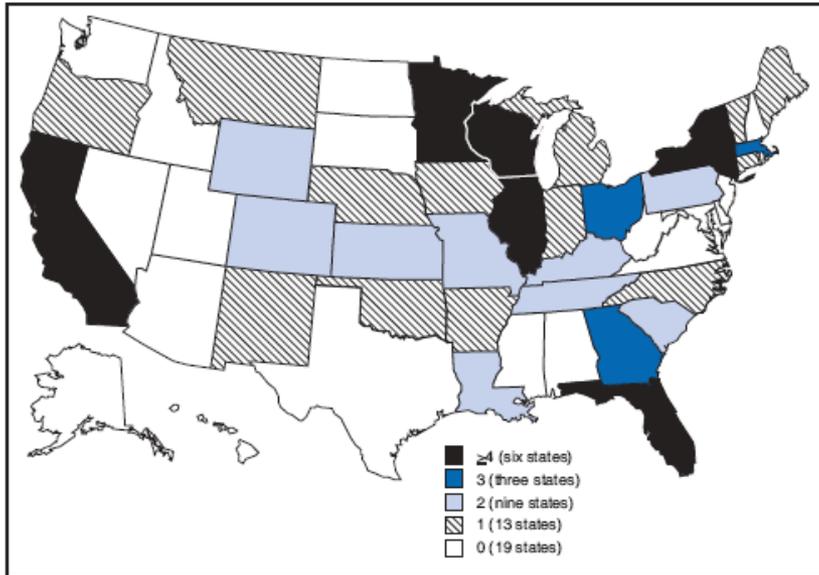
- Wastewater and drinking water systems rated **D-** by the American Society of Civil Engineers (2009).
- 240,000 water main breaks per year in the U.S.
- Up to 75,000 Sanitary Sewer Overflows per year resulting in the discharge of 3-10 billion gallons of untreated wastewater.
- 5,500 annual illnesses due to exposures to contaminated recreational waters.
- 5-20% of energy expenditures on a state level are to transport water from sources to users, and back to treatment and discharge facilities.
- The U.S. geological survey estimates that water lost from water distribution systems is 1.7 trillion gallons per year at a national cost of \$2.6 billion per year.



Water main break on River Road

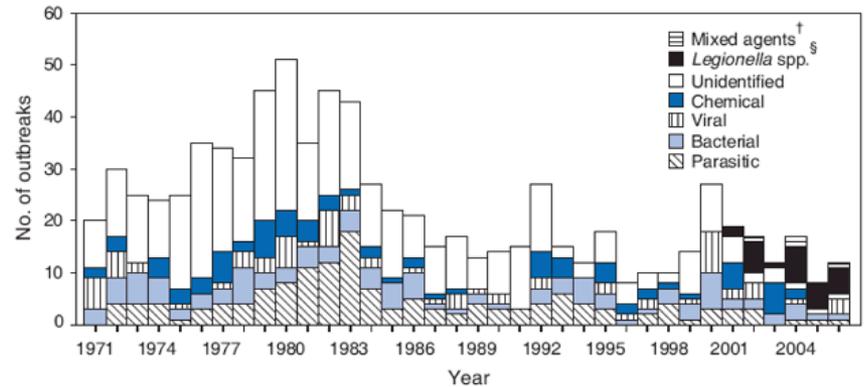


Number of waterborne disease outbreaks associated with recreational waters, 2005-2006; and drinking water, 1971-2006



* **Note:** These numbers are largely dependent on reporting and surveillance activities in individual states and do not necessarily indicate the true incidence in a given state.

FIGURE 3. Number of waterborne-disease outbreaks associated with drinking water (n = 814),* by year and etiologic agent — United States, 1971–2006



* Single cases of disease related to drinking water (n = 16) have been removed from this figure; therefore, it is not comparable to figures in previous *Surveillance Summaries*.

[†] Beginning in 2003, mixed agents of more than one etiologic agent type were included in the surveillance system. However, the first observation is a previously unreported outbreak in 2002.

[§] Beginning in 2001, Legionnaires' disease was added to the surveillance system, and *Legionella* species were classified separately in this figure.

MMWR Surveillance Summary (Vol. 57, No. SS-9), "[Surveillance for Waterborne Disease and Outbreaks Associated with Drinking Water and Water not Intended for Drinking---United States, 2005--2006.](#)"

Nutrient Pollution

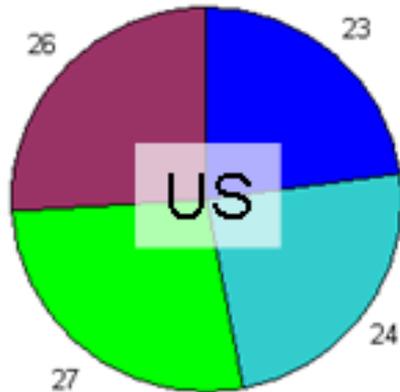


National Lakes Survey, 2007-2009



HyperEut

Oligo

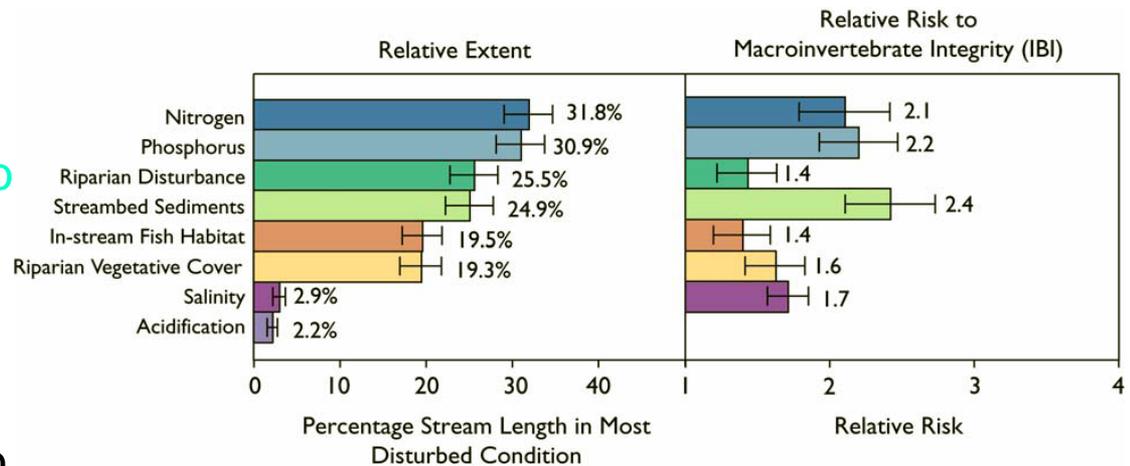


Meso

Eutro

Indicator: Chlorophyll a
% Lakes in trophic condition

Wadeable Streams Assessment, 2006

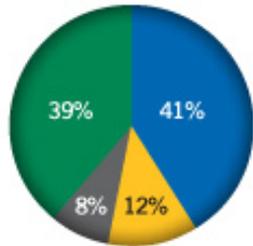


USGS Estimated Water Use, 2008

UNITED STATES WATER WITHDRAWAL VS. CONSUMPTION

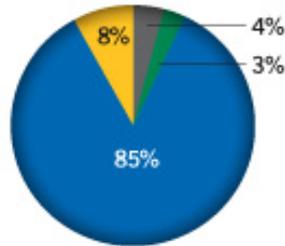
Water Withdrawal

340.7 billion gallons/day



Water Consumption

100 billion gallons/day

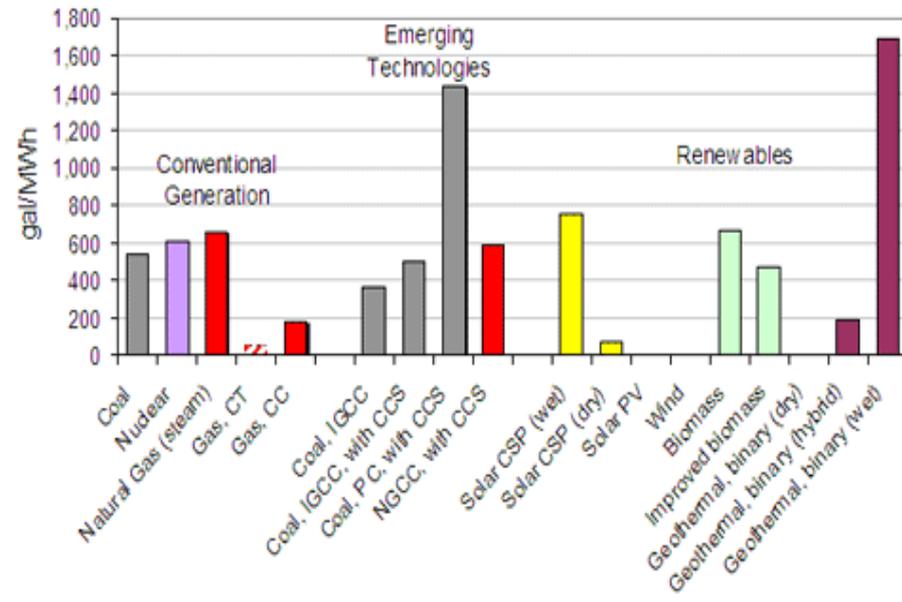


- Thermal Electric Power
- Irrigation & Livestock
- Domestic & Commercial
- Industrial & Mining

Source: United States Geological Survey, Cambridge Energy Research Associates.

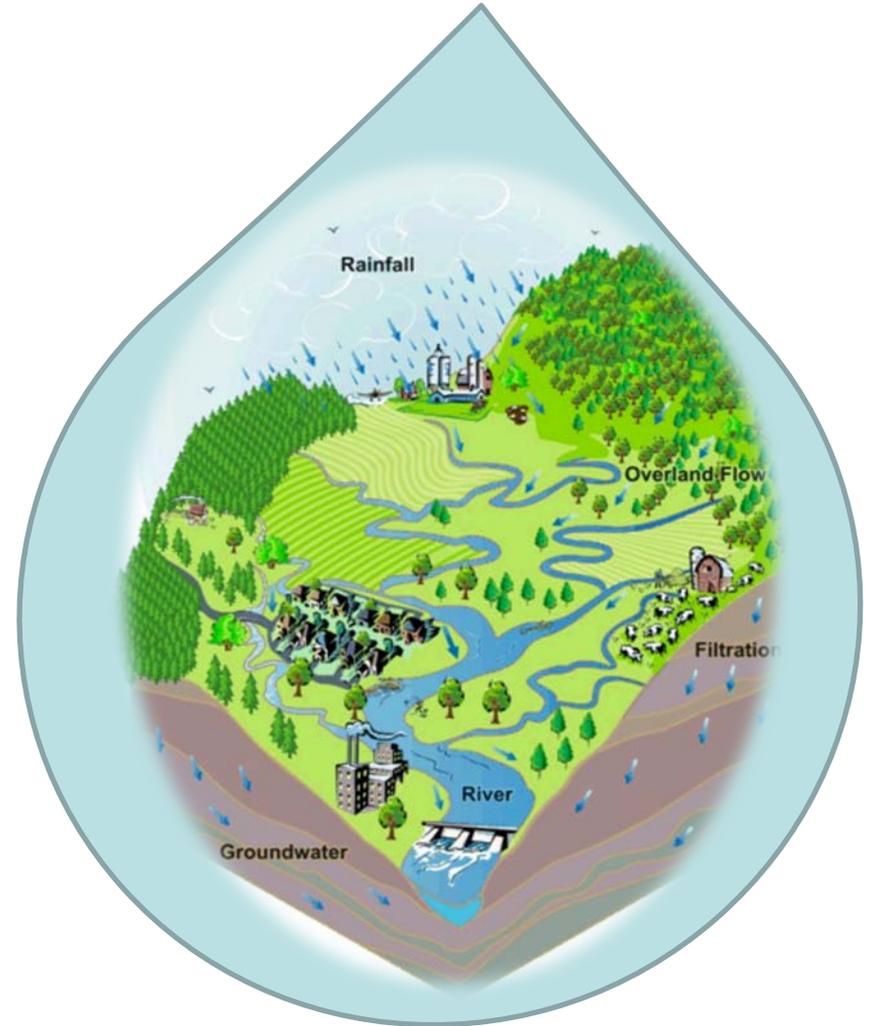
- Freshwater withdrawals were 85 percent of the total
- Surface water supplied 80 percent of all withdrawals

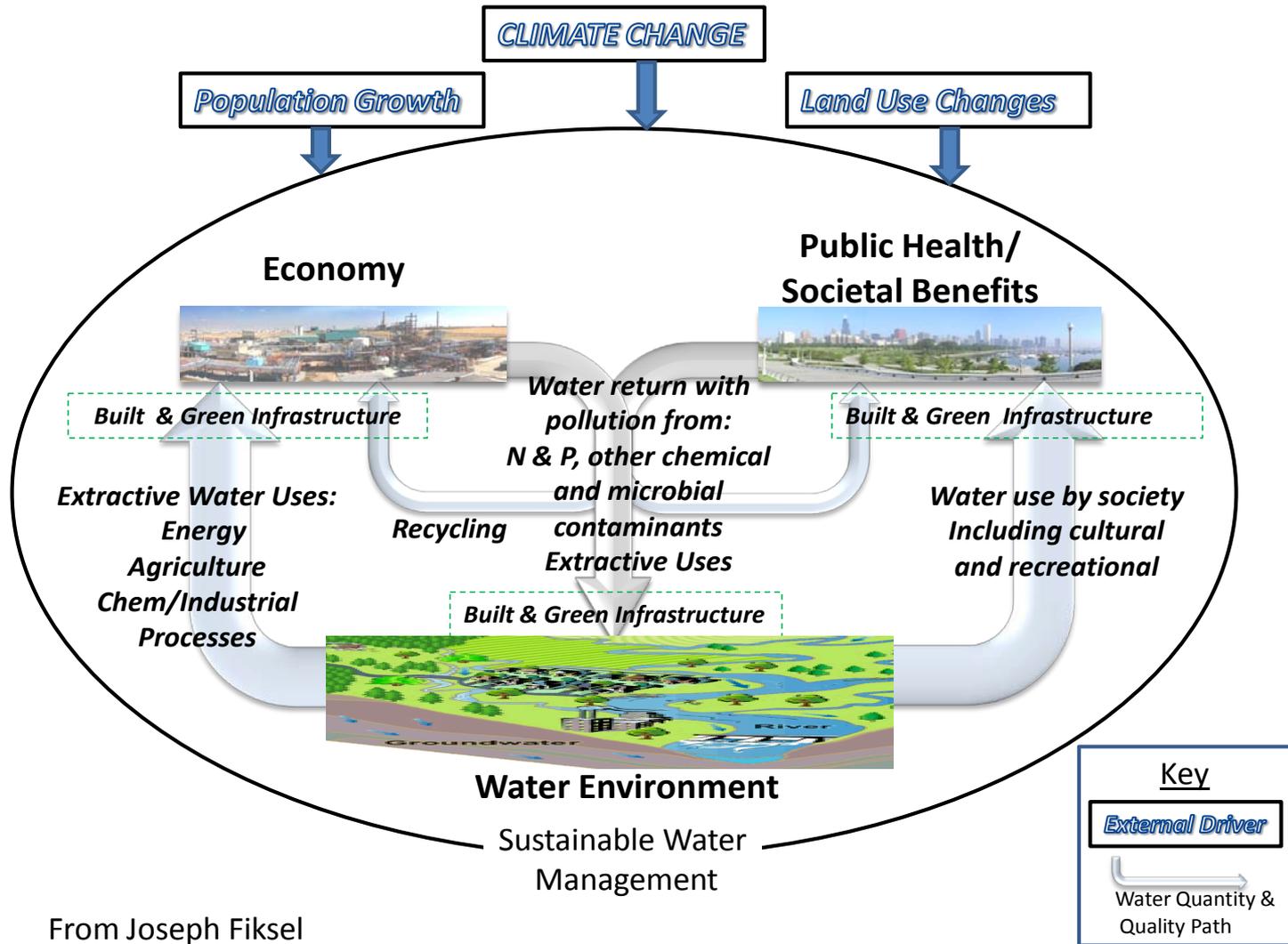
Water Intensity of Electricity Generation



Goal of EPA Safe and Sustainable Water Resources (SSWR) Research Program:

- Seek sustainable solutions to 21st century problems facing our Nation's water resources
 - Integrate the existing Drinking Water and Water Quality research programs into one holistic program





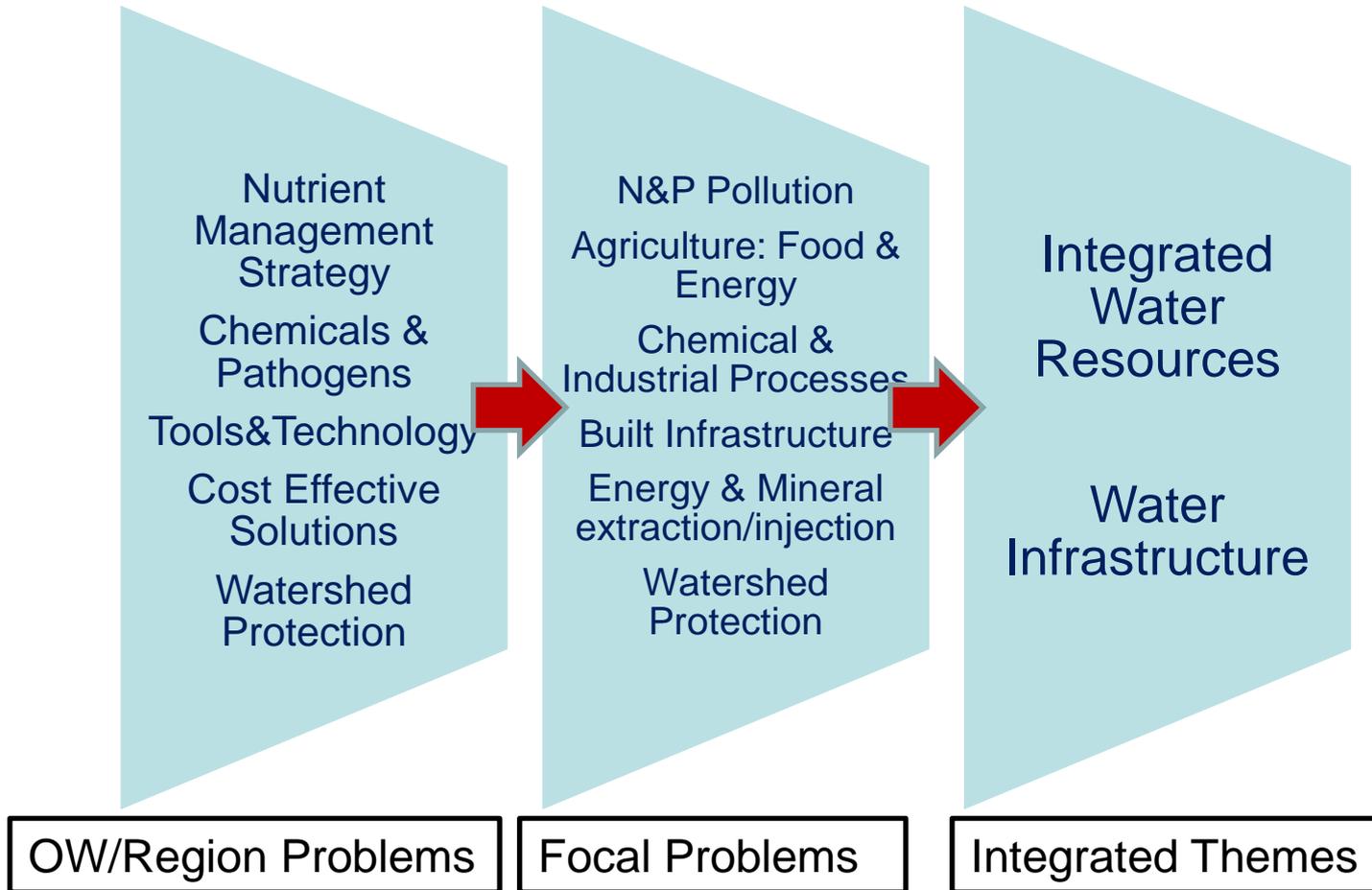
From Joseph Fiksel

Problem Statement

Increasing demands for sources of clean water combined with changing land use practices, growth, aging infrastructure, and climate change and variability, pose significant threats to our Nation's water resources. Failure to manage our Nation's waters in an integrated, sustainable manner will limit economic prosperity and jeopardize both human and aquatic ecosystem health.

Vision

SSWR uses an integrated, systems approach to research for the identification and development of the scientific, technological and behavioral innovations needed to ensure clean and adequate and equitable supplies of water that support human well-being and resilient aquatic ecosystems.



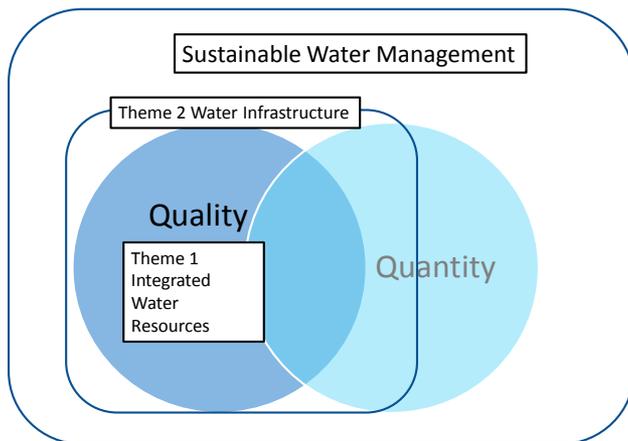
SSWR Research Themes

Theme 1: *Integrated Water Resources*

- *Ensure safe and sustainable water quality by protecting and restoring water sources necessary for human uses, including drinking water, industry and ecosystem health.*

Theme 2: *Water Infrastructure*

- *Ensure that water infrastructure is capable of producing, storing and delivering safe and high-quality drinking water, that it provides transport and use-specific treatment of wastewater and stormwater in manners that sustainably manage these critical water resources.*



SSWR 2012 Program

- Implement Hydraulic Fracturing Study Plan
- Support of criteria development and implementation guidance for Recreational Waters
- Wrap up tool development to assess water infrastructure condition assessment, repair, replacement, and rehabilitation
- Carbon sequestration monitoring and model development
- Support for Drinking Water Strategy



SSWR Expected Accomplishments over next 5 Years

- Complete Hydraulic Fracturing Case Studies
- Complete National Wetlands Condition Assessment
- Develop innovative, sustainable solutions to aging water infrastructure
- Develop new approaches for evaluating and managing groups of chemicals and pathogens
- Develop new innovative approaches for reducing and managing N and P pollution

FY 2012 Budget Highlights

Safe and Sustainable Water Resources (SSWR)

(FY 2010 Enacted \$111.1M, FY 2012 PB \$118.8M, Change +\$7.7M)

- EPA will continue to support sustainable water infrastructure to deliver safe drinking water, manage stormwater, and remove and treat wastewater. In 2012, we are requesting \$6.0M to develop innovative new tools and information to aid decision-makers to confidently select and apply green water infrastructure options.
- EPA will continue to protect watersheds to provide safe and sustainable water quality. In 2012, we are requesting \$4.2M to provide adequate assessment of the potential public health and environmental risks posed by hydraulic fracturing.
- Research to support the 2012 criteria development identified in the beaches lawsuit will be completed. Therefore, funding for Beaches is being reduced by \$2.0M.

Questions?

