

Under the Patronage of the Minister of Environment Water & Agriculture
Eng. Abdulrahman bin Abdulmohsen Al Fadhili

منتدى المياه السعودي
saudi water forum SWF



"Sustainable Water.. for Sustainable Development"

وزارة البيئة والمياه والزراعة
Ministry of Environment Water & Agriculture
Kingdom of Saudi Arabia المملكة العربية السعودية



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Helping to Shape Our Water Future – Research and Educational Products to Aid Reuse Implementation

Melissa L. Meeker, Water Innovation Center Director, Gwinnett County, Georgia, USA

Reuse Implementation

Depends upon deepening the understanding of water's use and reuse...

Enabling informed discussions before negative views take root in the mind.



RECYCLED WATER COAST-TO-COAST

6.5 Billion

Gallons of Recycled Water
Used for Idaho Agriculture

92% of the recycled water
Idaho produces is used to irrigate
crops, a beneficial use that keeps
**2000 tons of nitrogen and 500
tons of phosphorus** out of Idaho
rivers and streams.



GM Saves

\$2 Million with Stormwater Reuse

General Motors captures
and reuses stormwater for
cooling towers at its Detroit-
Hamtramck assembly plant,
saving **\$2 million a year.**



It's Patriotic to Generate

\$4 Million in Massachusetts

But for on-site, decentralized
water recycling, Foxboro could
not meet water demands for
Gillette Stadium, home to the
New England Patriots. This
NFL team generates **\$4 million
annually** for the local economy.



850,000 Taps

Served Daily in California

Orange County annually
recycles enough to supply
drinking water for **one-third**
of its homes and businesses.



Driving

20,000 Jobs in Nevada's Desert

A planned 13-mile pipeline
will provide **1.3 billion gallons**
of recycled water annually to
Tahoe Reno Industrial Center,
home of Tesla, Switch, and
Google...and **20,000 new jobs.**



Supporting 70% of Global Internet Traffic through Virginia

Recycled water cools Loudoun
County's "Data Center Alley"
which processes more than
two-thirds of the world's
Internet traffic.



\$35 Million

for Ski Slopes in Arizona

The Snowbowl, a ski resort in
Arizona's San Francisco Peaks,
uses recycled water for its slopes—
sustaining a **\$35 million** tourism industry.



2,000 Acres of Wetlands and Reuse in Texas

Recycled water replenishes the Upper Trinity River
and man-made wetlands—restoring a natural habitat
for migratory birds and **supplying drinking water
for the Dallas/Ft. Worth area.**



\$600 Million

Hole-In-One in South Carolina

Hilton Head recycles water to
irrigate eleven destination golf
courses—sustaining **\$600 million
annually** in recreational tourism.



100,000 Homes

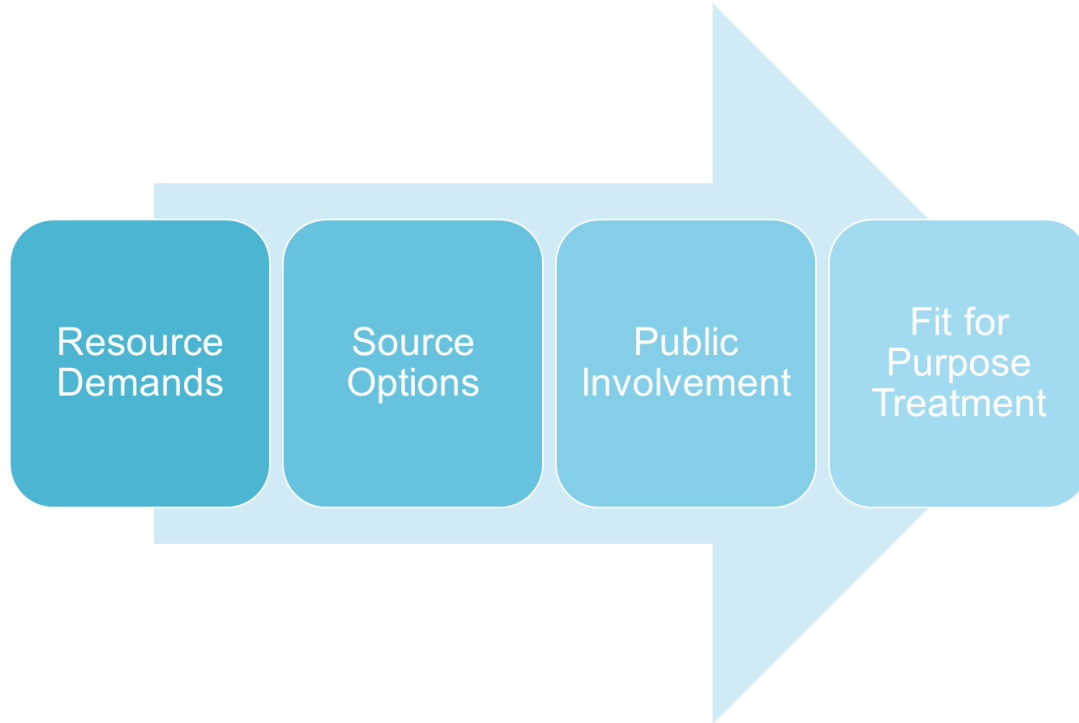
Powered in Florida

Tampa Electric uses recycled water
to cool a power plant and generate
electricity for **100,000 homes.**



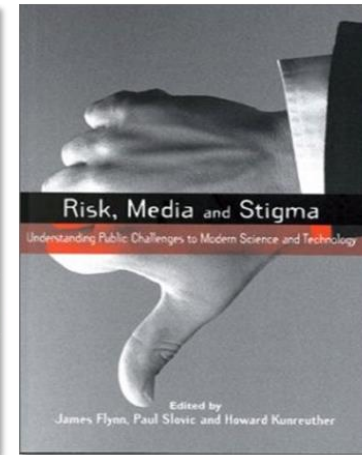
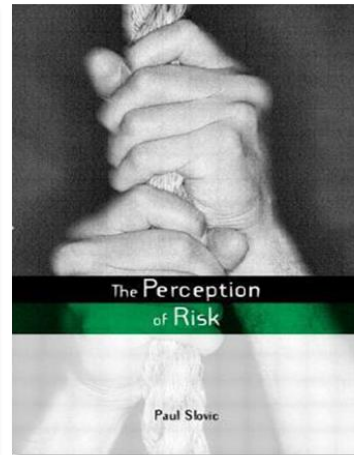
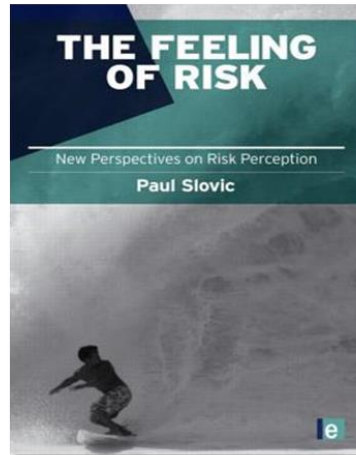
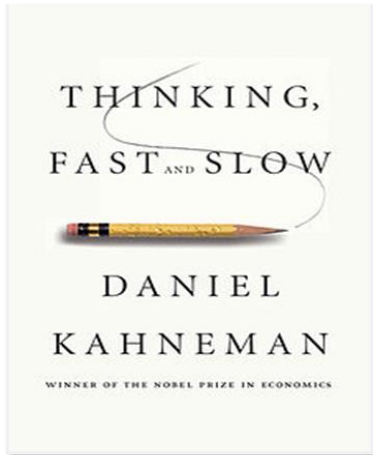
Let's Invest in Water Reuse for
a Strong American Economy

Water Supply Resiliency

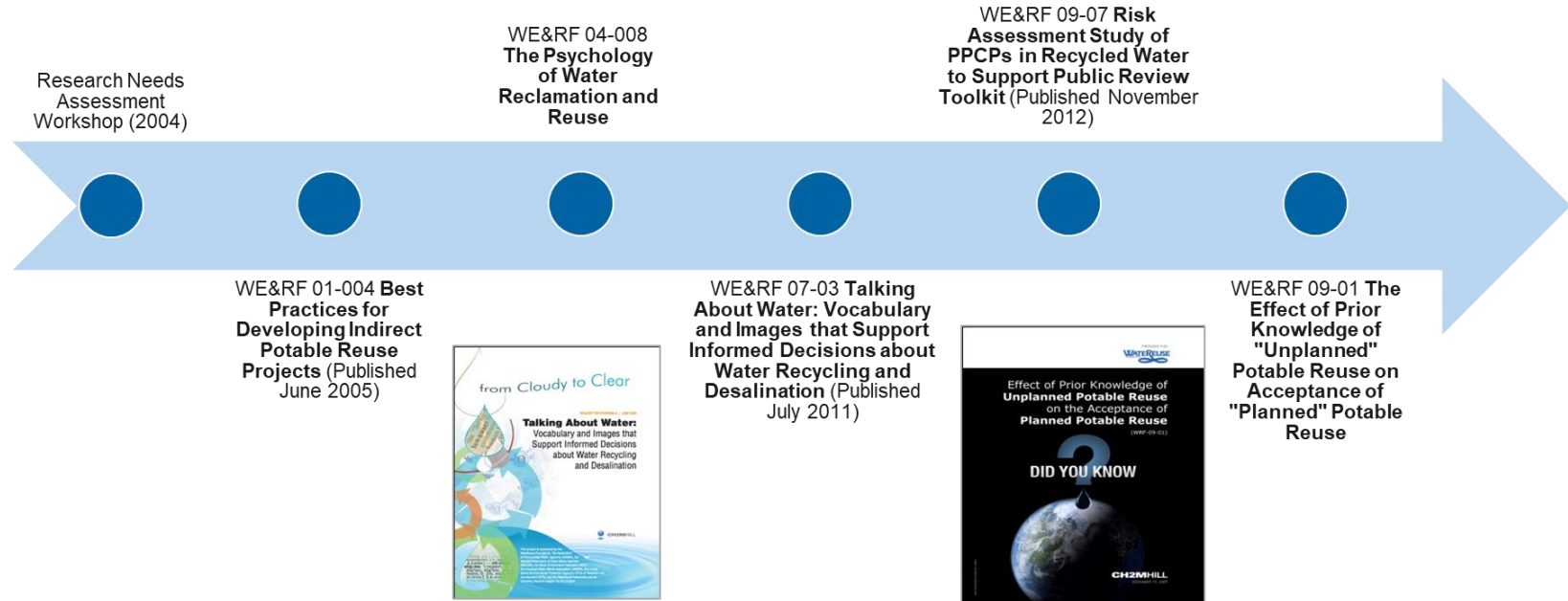


Research Overview

- Could the pace of adoption of reuse be hastened by social research?
- 15 years of research looking at risk perception.



Investment in Social and Policy Research to Address Acceptance



And the Research Journey Continues

WE&RF 08-09 **Value of Water Supply Reliability in Residential Sector**

WE&RF 11-10 **Evaluation of Risk Reduction Principles for Direct Potable Reuse**

WE&RF 13-02 **Model Communication Plans for Increasing Awareness and Fostering Acceptance of Direct Potable Reuse**

WE&RF 09-04 **The Value of Water Supply Reliability in the CII Sector**

WE&RF 12-06 **Public Perception related to Engineered Storage**

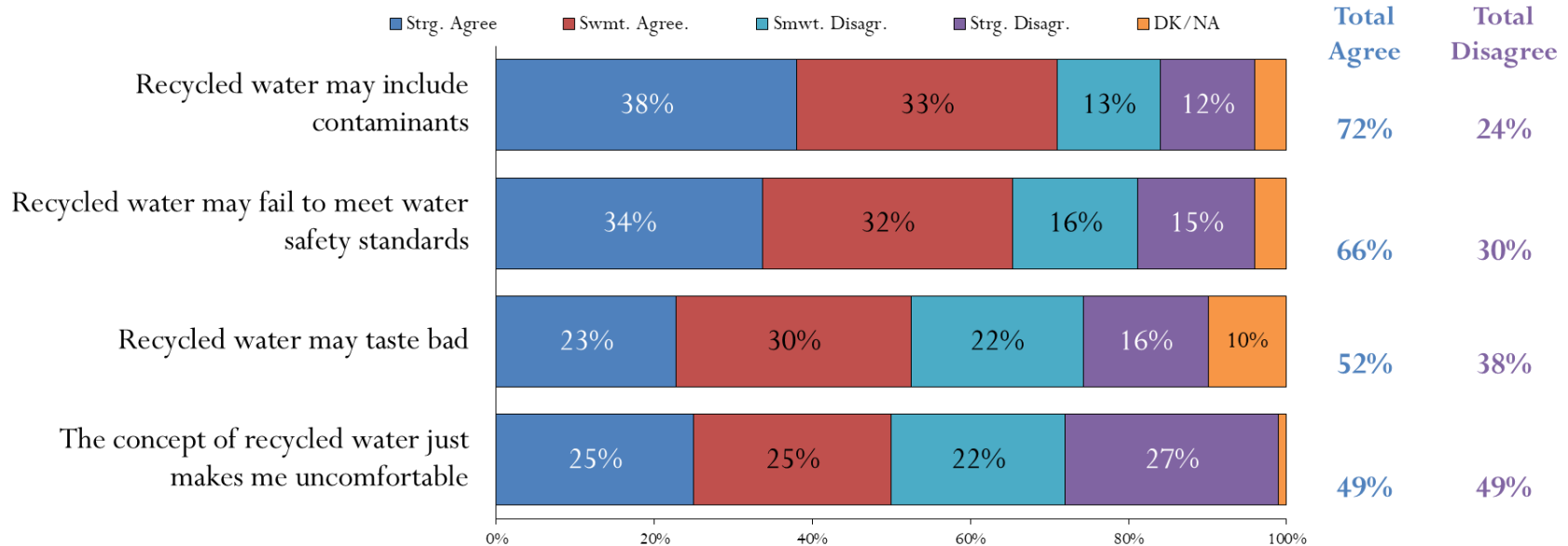
WRF 2019 RFP expected



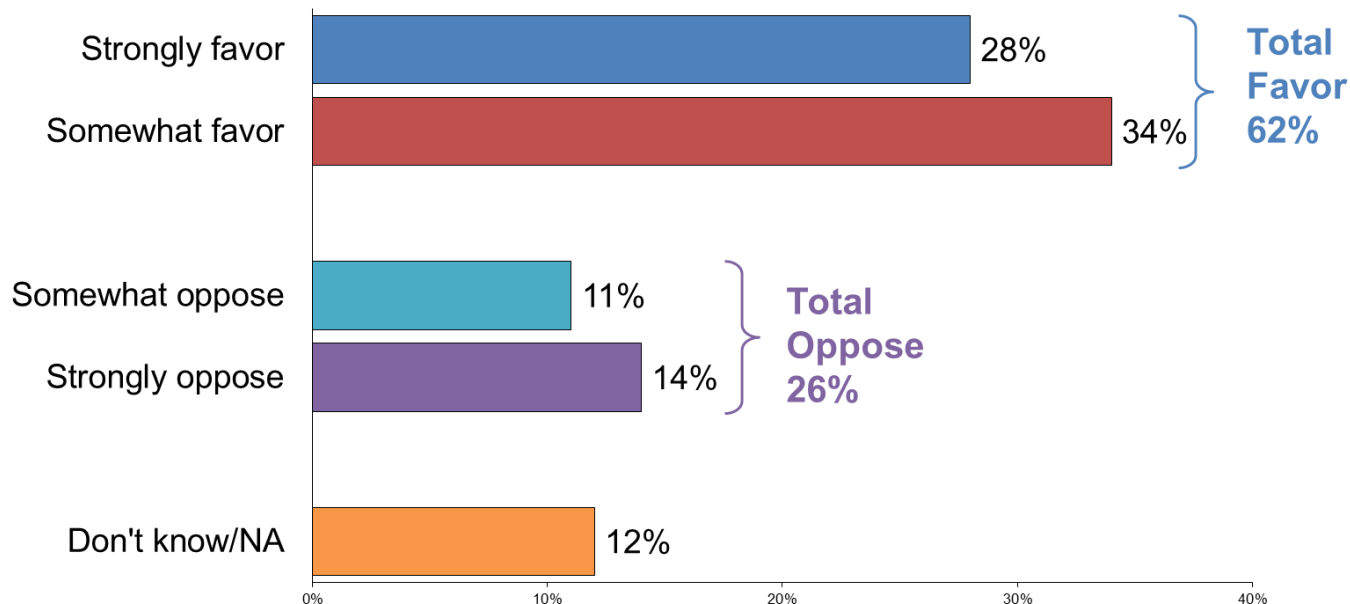
<https://www.youtube.com/watch?v=RwrYFJEJSQ0>



Research survey: pre-engagement

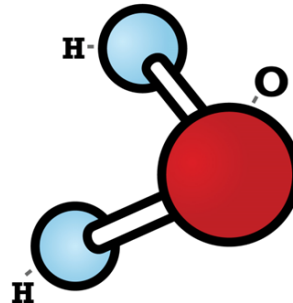


Research survey: post-engagement



Research Take-aways

- Acceptance of water reuse is greatly enhanced when people understand that all water is recycled.
- Creative educational materials enhance acceptance.
 - The water molecule never changes
 - Technology exists to isolate the water molecule
 - You are not the first!



Tools to Share

DOWNSTREAM

All water is used and reused

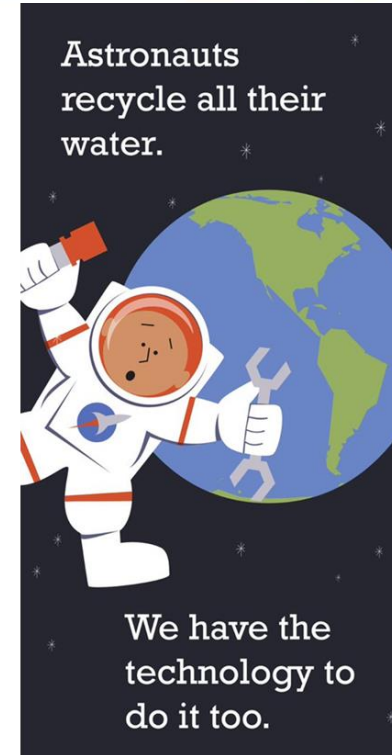


THE WAYS OF WATER

Reuse without confusing terminology



<https://watereuse.org/educate/water-reuse-101/watereuse-videos/>



Global Connections Map

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Global Connections Map

Use this interactive map to learn about places around the world that are using recycled water for drinking. The map includes case studies and videos for the profiled projects.

WATER REUSE FOR DRINKING | AROUND THE WORLD

Map Satellite

Global Water Connections Map

What is Water360?

Water360 is a digital repository which provides water professionals with access to hundreds of digital community education and customer engagement items. Videos, animations, guides and interactive maps can be accessed for presentations, websites, displays, e-learning, workshops, forums, and social media.

Water360 has been developed by the Australian government, and the water industry partners in Australia and the United States.

Start your Water360 journey by exploring some innovative water supply and purification projects around the world.

[EXPLORE](#)



Global Connection Map – Science and Safety

- 23 sites at present
- Over 100 short videos
- Over 30 FAQs answered by global experts



http://www.werf.org/c/KnowledgeAreas/WaterReuse/ProductsTools/onWERF/Global_Connections_Map_Reuse_101.aspx

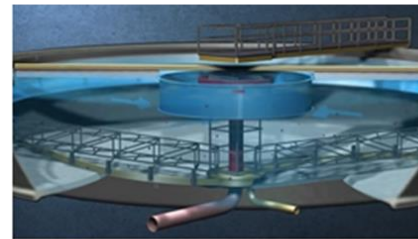
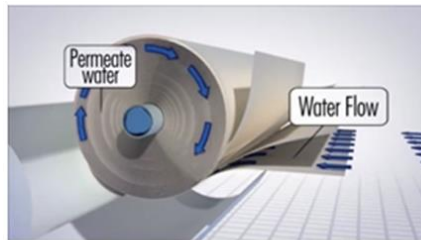
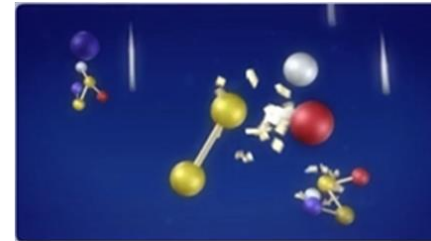
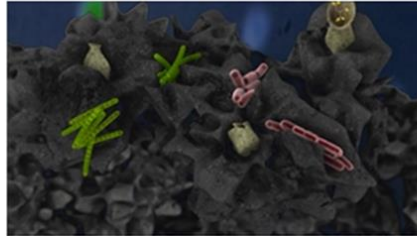
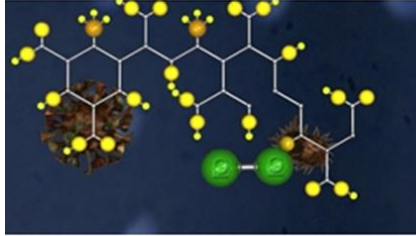


Water Replenishment District of So CA

- New educational facility adjacent treatment facility
- Projecting global connections map on touch screen globe
- Albert Robles Center For Water Recycling & Environmental Learning



Science Animations



<https://watereuse.org/educate/water-reuse-101/videos/how-reuse-works/>

City of Ventura, CA

CITY OF VENTURA

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Tour the Facility

VenturaWaterPure Demonstration Facility

Take a Virtual Tour

The schematic below is a representation of the actual facility. Learn about the advanced treatment technologies at our VenturaWaterPure demonstration plant by clicking on the numbers to see details about each part of the process.

EXISTING PROCESSES:

1. Tertiary Pressure Filters

DEMONSTRATION PROCESSES:

2. Pastuerization
3. Ultrafiltration
4. Reverse Osmosis
5. Ultraviolet Light/Advanced Oxidation

5. Ultraviolet (UV) Light/Advanced Oxidation

Print

Barrier 3

Ultraviolet (UV) light is high intensity light that disinfects by breaking apart cell walls and DNA. For Advanced Oxidation process (AOP), a reacting agent such as hydrogen peroxide is injected into the water. These reactants are activated by the UV light to breakdown pollutants. The final "product water" is monitored after UV/AOP to compare to drinking water standards. In other places such as Orange County, the water has been found to meet or even exceed drinking water standards, but we want to test this in Ventura.

Did you know?

Hydrogen peroxide is used in homes and hospitals to disinfect wounds. UV disinfection is widely used globally to disinfect tap water.

UV Disinfection

All Events

Hot Topics

- Water Savings Report
- Water Conservation Survey
- Water: Take 1 Contest Voting
- Customer Assistance Program
- Water Shortage Emergency

Stay Connected

- Water: Take 1 e-Newsletter
- Water: Take 1
- Water: Take 1
- Pipeline e-Newsletter
- Ventura Water Blog
- Ventura Water
- Ventura Water

Online Services

Engagement – Early and Often



Water Innovation Center

Research/Demo
Facility

Workforce
Training Center

Public
Education



JACOBS

WATER'S WORTH IT.
YOU NEED WATER. WATER NEEDS YOU.

CONCEPTUAL DESIGN - OPTION 1