Water Research Foundation
Past, Present, and Future Support for IWRM

John Whitler
Research Manager

2014 Colorado Water Reuse Conference
Golden, Colorado, August 14, 2014
Outline

Who is WRF?

IWRM or “One Water”

Past Efforts to Support One Water

Present One Water Projects

Future One Water Research
WRF Mission

To advance the science of water to improve the quality of life
What does WRF do?

Sponsor research
funded primarily by drinking water utilities
~1,000 subscribers

Promote collaboration

Produce knowledge
world’s most extensive drinking water knowledge source
IWRM or “One Water”

Water from all sources must be holistically managed holistically to meet economic, social, and environmental needs.
Past Support for IWRM

Source Water Protection

Safe Drinking Water Act/Clean Water Act Synergies

Reservoir Management
Source Water Protection

• **Vision**
  By 2025, every public community water supply will be protected by an active SWP program.

• **Roadmap**
  - Raise Awareness
  - Enhance Coordination
  - Provide Support
  - Increase Recognition
SDWA/CWA Synergies

*Drinking Water Source Protection Through Effective Use of the TMDL Process* (Project 4007)

- Get involved and share data – rarely are water suppliers at the table when discussing TMDLs
- Maintain reasonable expectations – water suppliers are among several stakeholders

CWA/SDWA demonstrate well the challenge of research vs. advocacy
Best practice guidance for defining water supply safe yields in multi-use, multi-reservoir systems

Defined approach for integrating impacts of climate change on future safe yield estimates

Strategies for increasing safe yield from similar reservoir systems

Quantitative and qualitative review of the financial, environmental, and public impacts of selected strategies

Project 4304
Present Support for IWRM

Institutional Challenges

Graywater reuse

Potable Reuse

WRF Research Focus Areas

Water Supply Diversification Knowledge Portal
Institutional issues for green-grey infrastructure based on "One Water" management and resource recovery

Project Team

Dr. Pierre Mukheibir, Dr. Cynthia Mitchell, Institute for Sustainable Futures
Carol Howe, ForEvaSolutions
Danielle Gallet & Harriet Festing, Center for Neighborhood Technologies

Scope

Literature Review
Framework for Institutional Change
Documentation of Case Studies
Final Report

Peer Alliance Feedback

Project 4487
"Institutions" and "Institutional Transitioning?"

<table>
<thead>
<tr>
<th>Hard</th>
<th>Soft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational structures</td>
<td>Social relations</td>
</tr>
<tr>
<td>Departments</td>
<td>Informal networks</td>
</tr>
<tr>
<td>Committees</td>
<td>Administrative routines</td>
</tr>
<tr>
<td>Laws</td>
<td>Professional cultures</td>
</tr>
<tr>
<td>Regulations</td>
<td></td>
</tr>
<tr>
<td>Taxes &amp; subsidies</td>
<td></td>
</tr>
</tbody>
</table>
Case studies

10-20 “snapshot” examples from energy and urban planning

Detailed case studies illustrate transition to “one water” emphasis

- **internal drivers/approaches** that led to successful transition
- **external institutional drivers/incentives** that created the change
- **constraints and challenges** in making the transition
- **benefits** of adopting a “One Water” approach

Final report available late 2014

Project 4487
On-Site Reuse of Graywater and Stormwater

National Research Council

Key Issues
Quantity and Suitability
Treatment and Storage
Assessing Risks
Assessing Costs and Benefits
Implementation

Complete late 2014/early 2015

Project 4521

NRC 2012
10 Steps for Developing a Local Program

- Convene a Working Group
- Select the Types of Alternate Water Sources
- Identify End Uses
- Develop Water Quality Standards
- Identify and Supplement Local Building Practices
- Develop Monitoring and Reporting Requirements
- Prepare an Operating Permitting Process
- Develop Guidelines and Implement the Program
- Monitor and Evaluate the Program
- Grow the Program
Potable Reuse

Assessment of Techniques for Evaluating and Demonstrating Safety of DPR Product Water (4508)

Blending Requirements for Water from DPR Treatment Facilities (4536)

Collaboration with WateReuse CA DPR Initiative
WRF Project #4508 - Assessment of Techniques for Evaluating and Demonstrating Safety of Direct Potable Reuse Product Water

- Identify key criteria for water providers and regulators to assess the safety of DPR water
- Identify techniques and methodologies to assess DPR water safety
- Evaluate DPR treatment train effectiveness
WRF Project #4536 - Blending Requirements for Water from Direct Potable Reuse Treatment Facilities

- Develop requirements and guidelines for integrating potable reuse water with existing water supplies to meet water quality and operational performance goals.
  - Evaluate and Demonstrate Blending Impacts
  - Evaluate Benefits of Engineered Storage Buffer
  - Develop Conditioning Strategies
Published in 2013

Provides inventory of dual systems including 37 case studies

Describes qualitative performance results

- water safety/public health
- effectiveness in meeting system goals
- risk/reliability
- total cost
- implementation/operations

Project 4333
WRF Research Focus Area Program

Holistic Strategies to Manage Contaminants of Emerging Concern in Water
• By 2015, evaluate and support... “holistic control strategies for managing contaminants of emerging concern (CECs) in water.”

NDMA and other Nitrosamines
• By 2017... “understand the occurrence, precursor formation, treatment and control, and fate of nitrosamines...”

Finance
• By 2017... “determine impacts of utility governance and ownership on financial sustainability

Integrated Water/Energy Planning
• By 2016... “develop strategies for multi-sector, regional, integrated water-energy planning...”
New Focus Area - Integrated Water Management: Planning for Future Water Supplies

- Utilities are facing water supply challenges

- Drinking water and public health perspective is needed as part of IWRM discussion
# TAC Composition

<table>
<thead>
<tr>
<th>Organization Type</th>
<th>Representatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Utility</td>
<td>Marsi Steirer – San Diego, California</td>
</tr>
<tr>
<td></td>
<td>Bruce Whiteberry - GCWW</td>
</tr>
<tr>
<td>State Regulator</td>
<td>Robert Mace – Texas Water Development Board</td>
</tr>
<tr>
<td></td>
<td>Shanin Speas-Frost – FL DEP</td>
</tr>
<tr>
<td>Federal Gov’t Rep</td>
<td>Bob Bastian – USEPA – Office of Water</td>
</tr>
<tr>
<td>Water Associations</td>
<td>Julie Minton – WateReuse Research Foundation</td>
</tr>
<tr>
<td></td>
<td>Michael Campana – Oregon St/AWRA</td>
</tr>
<tr>
<td>Researchers</td>
<td>David Sedlak – ReNuwIt/UC-Berkeley</td>
</tr>
</tbody>
</table>
Water Supply Diversification Knowledge Portal

- Topics include:
  - Water Supply Planning
  - Potable Reuse
  - Managed underground storage
  - Desalination

- Will include:
  - Topic overviews
  - Project directory
  - Presentations
  - Fact sheets
  - Multimedia content

- Finalize during Summer of 2014
Summary

• Potable Reuse is happening now and will grow
• Site specific conditions are important
• Connecting the research with implementation
Questions
John Whitler - 303-347-6105
jwhitler@waterrf.org