



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

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**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



Knowledge Portals: Climate Change

- Asset Management
- Climate Change
- Disinfection By-Products
- Energy Management
- Utility Finance

Projects & Reports (27) | Webcasts (0) | Case Studies (5) | Web Tools (0)

While it is safe to say that the impacts of climate change on water resources will vary widely by region, it is also relatively certain that no area will be untouched by these impacts. Potential climate change impacts on water utilities have been widely reported in publications by the Water Research Foundation.

Executive Tool Kit

Topic Overview

Media Library

Fact Sheets

Vulnerability Assessment

Adaptation

Mitigation

Communication

Quarterly Magazine



Knowledge Portals

www.WaterRF.org

Monthly e-Newsletter

WATER CURRENT

Water Research Foundation E-Newsletter

Important News From WRF

Initial Findings from Source Water Protection Workshop
A project funded under WRF's Emerging Opportunities program recently brought together 24 utility representatives and five water regulators from across the United States to explore and develop potential frameworks to help utilities and their regulating authorities evaluate source water protection programs. [\[Read More\]](#)

1,4-dioxane State of the Science
1,4-dioxane is a synthetic industrial chemical sometimes found in source water through wastewater discharges, unintended spills, leaks, and historical disposal practices of its host solvent. The ongoing EPA UCMR3 monitoring results indicate that 3.9% of samples exceed 0.35 ug/L (EPA's reference concentration for 10-6 cancer risk) for 1,4-dioxane. In order to provide more information to the water community, WRF prepared a [white paper](#) summarizing the current state of knowledge on 1,4-dioxane.

New Partnership Hastens Uptake of New Technologies
WRF has established a new partnership with Isle Inc., an independent technology and innovation consultancy specializing in water technologies, to develop and conduct demonstration studies for selected technologies. WRF and Isle are currently developing technology demonstrations for (1) an innovative UV treatment reactor design that promises significant energy savings over conventional UV reactors, and (2) a wastewater treatment technology that uses cavitation-based pre-treatment of sludge to increase methane yield from anaerobic digestion and to reduce sludge volume. [\[Read More\]](#)

May 2014

See You at ACE14!
WRF staff is looking forward to connecting with subscribers and other water community partners and sharing new research results and resources at ACE14. As usual, [WRF research will be well-represented throughout the conference](#). Also, don't forget to stop by our booth (#2149) to explore our new publications and videos, visit with staff, and pick up your subscriber gift.

RFPs for WRF Projects Now Available Online
[Requests for Proposals \(RFPs\)](#) are now available on the WRF website for 11 new WRF research projects. Specific questions about any of the RFPs should be directed to the WRF staff contact included on each RFP. Questions about the proposal process or WRF's research programs should be directed to Traci Case, Research Services Manager, at 303.347.6120 or tcase@waterf.org.

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Visit Our Website
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IWRM or “One Water”

Water *from all sources* must be holistically *managed holistically* to meet *economic, social, and environmental* needs.

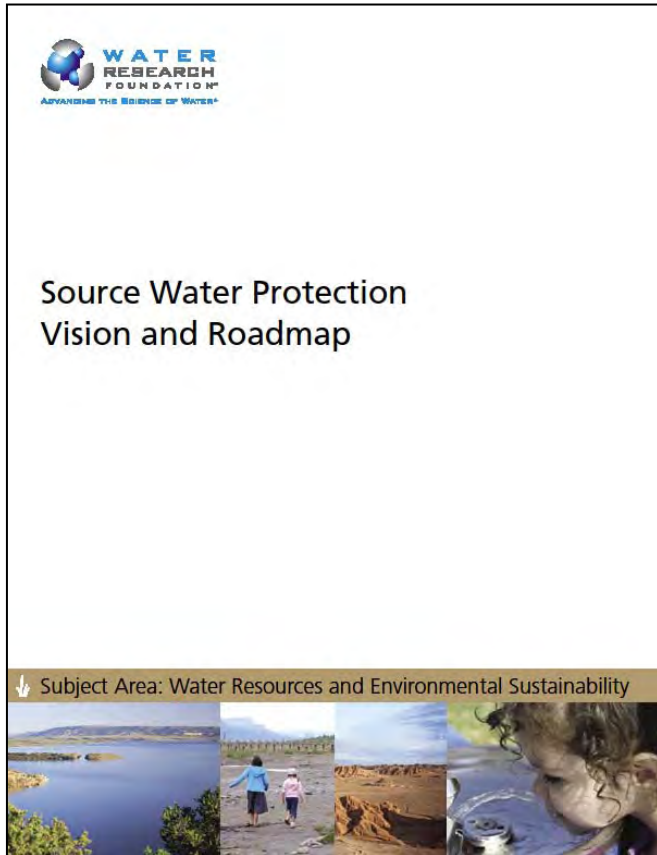
Past Support for IWRM

Source Water Protection

Safe Drinking Water Act/Clean Water Act
Synergies

Reservoir Management

Source Water Protection



Project 4176

- 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



Tailored Collaboration

Defining and Enhancing the Safe Yield of a Multi-Use, Multi-Reservoir Water Supply

Web Report #4304

Subject Area: Water Resources and Environmental Sustainability



Project 4304

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

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

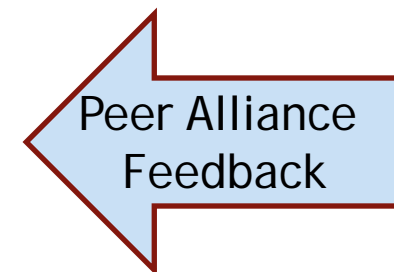
Scope

Literature Review

Framework for Institutional Change

Documentation of Case Studies

Final Report



Project 4487

“Institutions” and “Institutional Transitioning?”

Hard

Organizational structures

Departments

Committees

Laws

Regulations

Taxes & subsidies

Soft

Social relations

Informal networks

Administrative routines

Professional cultures

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

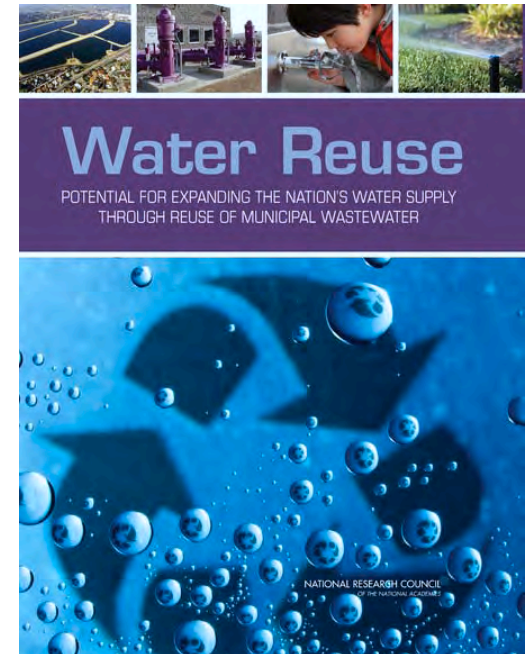
Treatment and Storage

Assessing Risks

Assessing Costs and Benefits

Implementation

Complete late 2014/early 2015



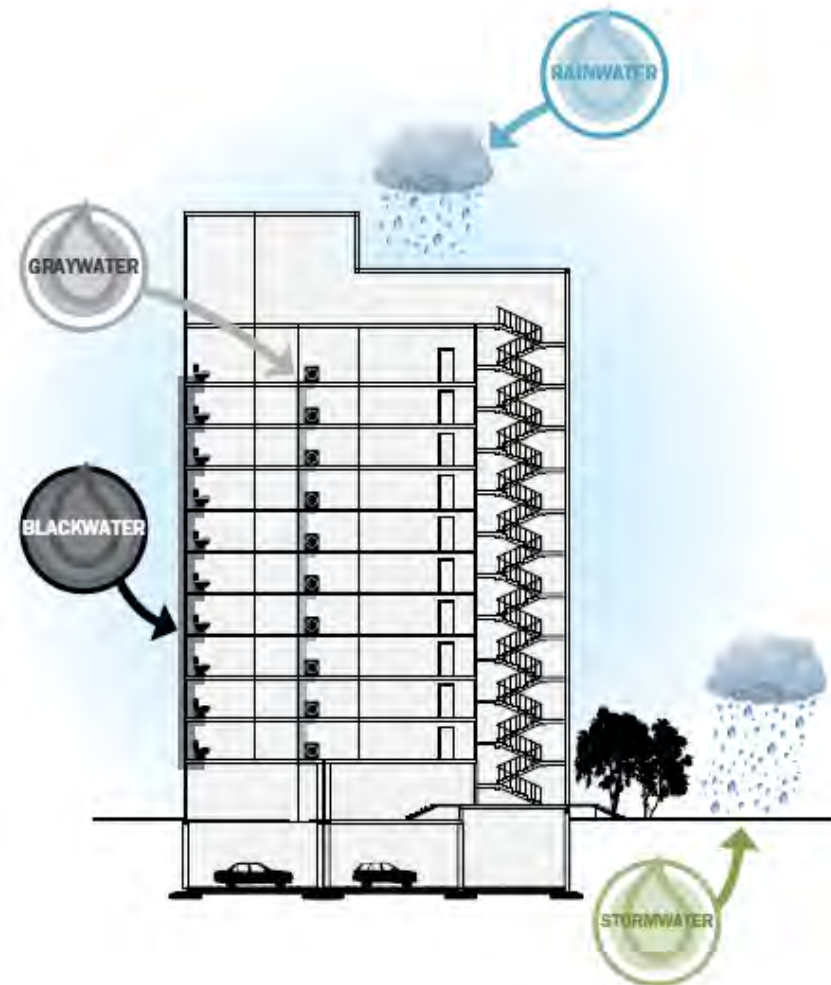
NRC 2012

Project 4521

Blueprint for Onsite Water Systems - A Step-by-Step Guide for Developing a Local Program to Manage Onsite Water Systems

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 WaterReuse 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



Dual Water Systems: Characterization and Performance for Distribution of Reclaimed Water

Web Report #4333

Subject Area: Infrastructure



Project 4333

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

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

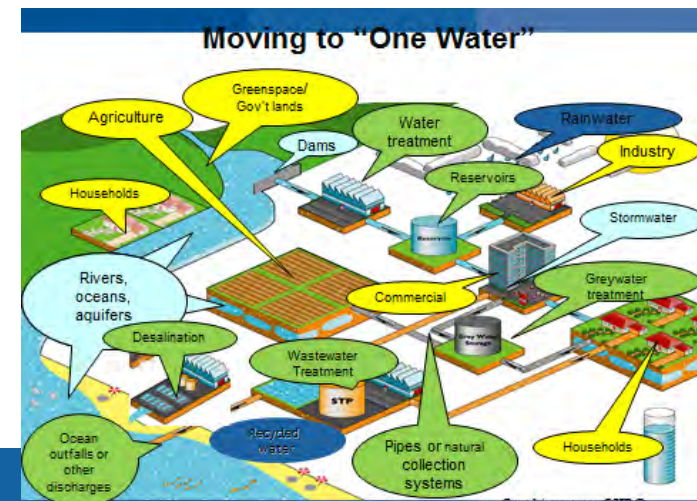


TAC Composition

<u>Organization Type</u>	<u>Representatives</u>
Water Utility	Marsi Steirer – San Diego, California Bruce Whiteberry - GCWW
State Regulator	Robert Mace – Texas Water Development Board Shanin Speas-Frost – FL DEP
Federal Gov't Rep	Bob Bastian – USEPA – Office of Water
Water Associations	Julie Minton – WaterReuse Research Foundation Michael Campana – Oregon St/AWRA
Researchers	David Sedlak – ReNuWlt/UC-Berkeley

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

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