

# Developing a Vision and Roadmap for Source Water Protection for U.S. Drinking Water Utilities

Water Research Foundation Project 4176

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# Project's Goal

*To identify critical elements of a unified source water protection roadmap and define steps that should be taken to set this roadmap in motion*



# Participating Utilities



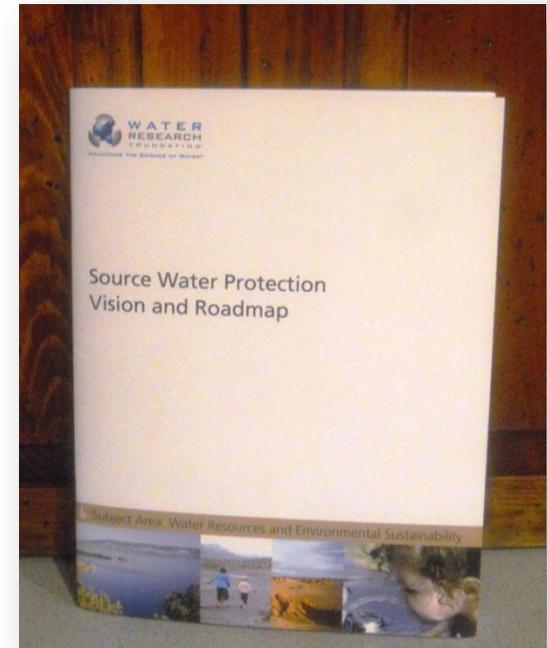
# Project 4176 Elements

- Literature/background review
- Water utility interviews
- Utility case studies
- Workshop

4176a Full Report (Electronic copy only)

4176b Shorter Version with Roadmap

<http://www.waterrf.org/Pages/Projects.aspx?PID=4176>



# Water Utility Interviews

- 60 community water systems interviewed (30 surface water, 30 ground water)
- Broad spectrum of sizes and locations across U.S.
- All interviews used same form

# Water Utility Interviews

12 of 30 surface water utility respondents indicated they had a SWP program, although it may not be formalized or fully developed.

29 of 30 ground water utilities have a SWP program or wellhead protection program (24 have wellhead protection programs).

# Reasons for NOT having SWP program (18 surface water systems)

- Utility has no authority to do anything to protect source water (9 utilities)
- Resources are too restricted to implement a SWP program (9 utilities)
  - time and funding cited
- Utility believes someone else is responsible for SWP (7 utilities)
  - 3 said government agencies had control over lakes/reservoirs they are using
- Threat to source water is low (8 utilities)
- Source is too large to implement a SWP program (4 utilities)
- SWP program is not required so utility does not feel it's necessary (3 utilities)

# Ground Water Utility Interviews

- Confusion between “source water assessment” and “source water protection program”
- States seem to play a larger role in motivating GW systems to protect their source water than SW systems.
- Many identified their local rural water association as providing technical assistance.

# Utility Case Studies

Utility	City, State	Source of Supply	Population Served
Beaver Water District	Lowell, AR	Surface - lake	250,000
Central Arkansas Water	Little Rock, AR	Surface - lakes	398,000
Greater Cincinnati Water Works	Cincinnati, OH	Ground water and surface (river)	314,000
Columbus Division of Power and Water	Columbus, OH	Surface - river, reservoirs	1,083,100
East Bay Municipal Utility District (EBMUD)	Oakland, CA	Surface - reservoirs	1,200,000
East Greenville Borough Water District	East Greenville, PA	Surface - creek/river	3,200
Massachusetts Water Resources Authority (MWRA) and the Massachusetts Department of Conservation	Boston, MA	Surface - reservoirs	2,200,000
Meredith Water Department	Meredith, NH	Surface - reservoir	1,367
New York City Department of Environmental Protection	New York, NY	Surface - reservoirs	8,000,000
Regional Water Authority	New Haven, CT	Primarily surface water	400,000
Salt Lake City Department of Public Utilities	Salt Lake City, UT	Surface (rivers) and groundwater	400,000
San Antonio Water System	San Antonio, TX	Groundwater	1,000,000
Washington Aqueduct	Washington, DC	Surface - river	1,000,000

# Workshop

- 1½ day workshop held in Boulder, CO March 2010
- Most workshop participants represented water utilities
- Patrick Field, facilitator, CBI
- Group had been prepped with webinar and homework

# Additional Workshop Participants

- Elaine Dilley, City of Redmond, WA
- John Duggan, Colorado Dept. of Public Health and Environment (representing ASDWA)
- Mike Muse, U.S. EPA
- Bill O'Connell, NRWA

# Products of Workshop

- Articulate a SWP vision for U.S. water utilities
- Define goals for attaining vision
- Identify benchmarks reflecting attainment of goals
- Develop strategies for achieving benchmarks
- Organize into a roadmap for SWP for U.S. utilities

# Source Water Protection Vision:

*“Source water protection is essential for providing a reliable supply of high-quality drinking water. By 2025, every public community water supply will be protected by an active source water protection program.”*



# Roadmap Themes

- Raise Awareness
- Enhance Coordination
- Provide Support
- Increase Recognition



# Raise Awareness

Need to *raise awareness* of importance and value of source water protection. Greater awareness is needed

- *By utilities*, of the role SWP plays in the multi-barrier approach to providing reliable, high quality water at reasonable rates
- *By utilities and their management*, of the value of SWP
- *By consumers*, of the benefits and value of SWP
- *By stakeholders*, of the importance of protecting drinking water sources and the priority that should be given to drinking water concerns in SWP

# Enhance Coordination

Programs, efforts, and regulations affecting SWP can be conflicting, redundant, or lacking in focus. Need to *enhance coordination*

- *Overall (across all relevant operational and stakeholder groups), so that SWP efforts and programs are better integrated and work together synergistically*
- *Among CWA and SDWA regulators, both at the state and federal levels, for more effective implementation of existing CWA regulations so that drinking water interests are more immediately and completely addressed*

# Provide Support

There is a need for greater *support*. Specifically, water utilities would benefit most from support provided by

- *Experienced water industry peers*, for fellow drinking water professionals trying to plan and implement source water protection programs; and
- *State and federal funding agencies*, so that source water protection needs are sufficiently addressed (for high quality water sources as well as impaired water bodies).
- *Municipal officials*, who can influence public support of regulatory and financial measures to implement source water protection; and
- *Customers*, through water rates.

# Increase Recognition

Issues and efforts related to SWP should be acknowledged more publicly. Successful efforts should be praised more frequently. Regulatory inconsistencies hampering SWP should also be addressed. In these ways, there should be *increased recognition*

- *By the public and the drinking water community*, of successful SWP efforts made by water utilities
- *By state and federal regulators*, of inconsistencies and shortcomings of existing regulations that should more effectively ensure the protection of drinking water sources.

# Roadmap Themes

- Raise Awareness
- Enhance Coordination
- Provide Support
- Increase Recognition



## Raise Awareness

**Obstacle:** *Among water utilities, there is often a lack of awareness of the need for action regarding source water protection.*

**Action:**

1. Increase the use of regional and statewide organization for increasing awareness of source water protection for water utilities.
2. Perform knowledge gap analyses for individual water utilities and stakeholder groups.

## Raise Awareness

***Obstacle: There is a broad lack of awareness of the importance of source water protection among stakeholders outside of the water utilities.***

***Action:***

- 1. Develop a system for raising awareness, providing outreach, and promoting education to key decision-makers regarding the importance and benefits of source water protection.***
- 2. Work with local schools on educational programs.***
- 3. A more proactive approach should be taken with the media.***

## Raise Awareness

***Obstacle: It is difficult to ascribe a value to source water protection.***

***Action:***

- 1. Recognize and educate utility management on approaches to quantifying the monetary benefits of source water protection.**
- 2. Utilities can develop descriptions of the potential impacts and costs of not undertaking source water protection (e.g., cost of replacing a contaminated groundwater supply).**
- 3. Re-package available information on the “true value of water”.**

# Roadmap Themes

- Raise Awareness
- Enhance Coordination
- Provide Support
- Increase Recognition



## Enhance Coordination

***Obstacle: The existing regulatory framework (federal, state and local) is not effectively protecting water supplies from current and future threats.***

- The water supply industry has not fully utilized federal and state programs to address source water issues.
- Priority of existing programs and funding is generally directed at impaired water bodies; there is need for protection of high-quality drinking water sources.
- Programs to address water quality impacts of land use change have not caught up with understanding of importance of this relationship, nor with advances in development techniques (e.g., low impact development).

## Enhance Coordination

### Action:

#### **Fix gaps to improve integration of CWA regulation and source water protection**

- Drinking water representatives (AWWA, NRWA, etc.) should be actively engaged in U.S. EPA's upcoming review and revision of NPDES Stormwater program
- States should establish water quality standards that effectively prevent degradation of water supply sources; water suppliers should urge states to do this

## Enhance Coordination

### Action:

**Fix gaps to improve integration of CWA regulation and source water protection (*continued*)**

- AWWA, States and EPA should initiate a process to reconcile CWA water quality standards with NPDWR to adequately protect drinking water sources. This process should address current gaps in the CWA's water quality standards (e.g., *Cryptosporidium*, *Giardia*).
- A process should be recommended for emerging contaminants that establishes water quality standards prior to implementing standards for water suppliers.

## Enhance Coordination

### Action:

Identify ways the CWA can do a better job at protecting high quality drinking water sources.

- Conduct study to review extent to which federal and state anti-degradation and other regulations under CWA and related guidance protect high quality drinking water sources.
- Use findings to perform a gap analysis to identify what is needed to protect high quality drinking water sources (e.g., reluctance and restrictions on using CWA Section 319 funding to support protection efforts in high quality watersheds).

## Enhance Coordination

### Action:

The water industry needs to leverage CWA and other state and federal regulations and programs more effectively to improve protection of drinking water sources.

- State AWWA sections and local rural water associations should educate and train utilities on how to leverage various CWA programs for funding and regulation.
- There should be greater water utility participation in NRCS state programs. AWWA should work with NRCS at the national level to encourage their states to do this.

## Enhance Coordination

### Action:

**There has been a failure to build upon Source Water Assessments completed in the early 2000's. A plan needs to be developed for how to move from assessments to protection.**

- There should be a high level dialogue among representatives of ASDWA, GWPC, AWWA and EPA on how to proceed. The Source Water Collaborative could be an appropriate venue for this discussion.
- As part of the dialogue, the issue of increasingly outdated assessment information gathered for the SWAP should be addressed.
- While there was support of the Source Water assessments, most of them have rested on shelves rather than becoming guidance for actions and priorities of utilities, both staff and boards.

# Roadmap Themes

- Raise Awareness
- Enhance Coordination
- Provide Support
- Increase Recognition



## Provide Support

**Obstacle:** *There is no organized mechanism for water utilities to teach and support one another in their source water protection efforts.*

**Action:**

- 1.** Create a two-part voluntary, on-site, individual source water protection education and training program for water utilities composed of a brief mentoring program and a more comprehensive training and audit program.

## Provide Support

***Obstacle: Water utility personnel do not sufficiently understand the potential impacts of several contaminants/actions on source water quality and how to protect source water to minimize those impacts.***

***Action:***

- 1. USEPA, State, and ASDWA, AWWA, NRWA, NRCS and other appropriate organizations should provide more information, education and guidance on how to manage watersheds and aquifers regarding various contaminants.**

# Roadmap Themes - *Example*

- Raise Awareness
- Enhance Coordination
- Provide Support
- Increase Recognition



## Increase Recognition

***Obstacle: There is insufficient acknowledgement and recognition of the efforts being made by water utilities and their partners who are actively pursuing source water protection.***

***Action:***

- 1.** A plan should be developed by 2012 for an award program to recognize and acknowledge successful, high-quality source water protection programs.

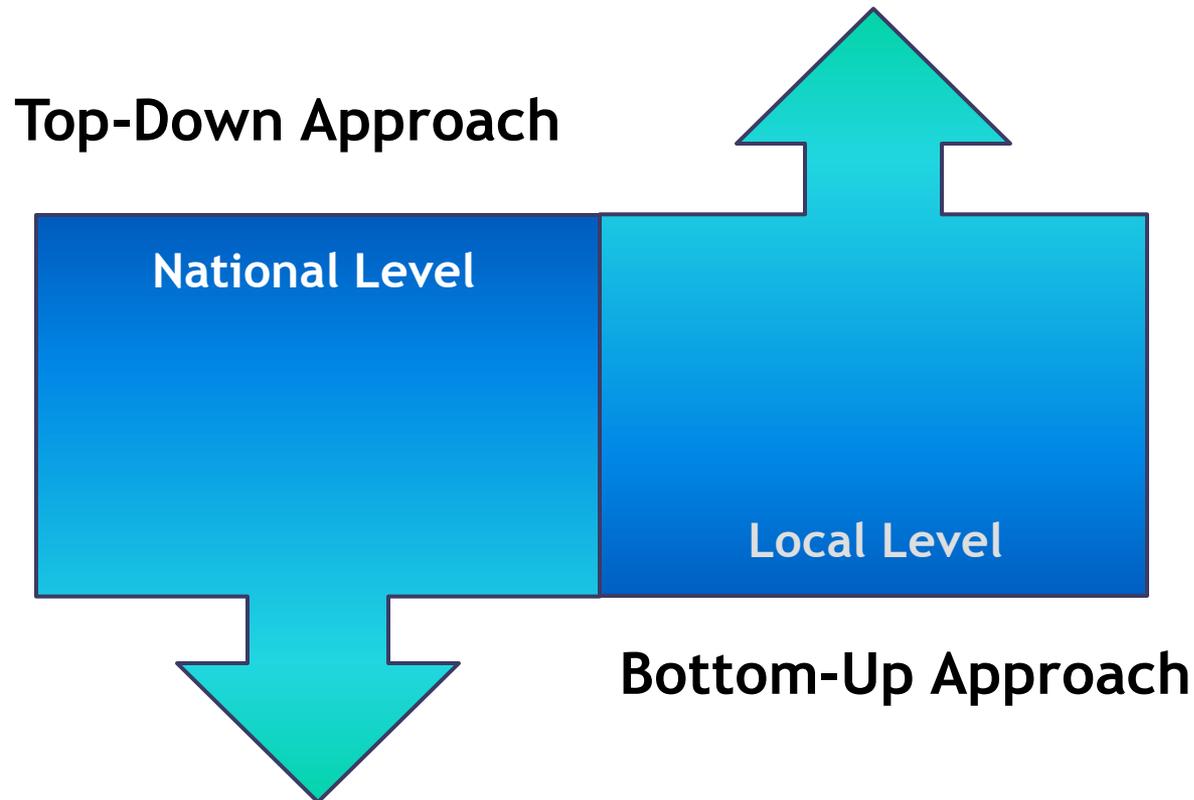
## Increase Recognition

***Obstacle: There is no consistent recognition of source water protection as an important element in regional/state/local planning and land management decision-making.***

***Action:***

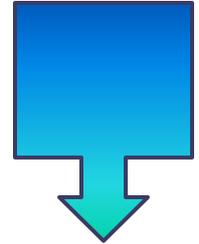
- 1. On the National Scale: Obtain nationwide awareness among key land use planning and management organizations.***
- 2. On a Watershed/Aquifer Scale: Develop watershed/aquifer councils of governments and/or partner with non-governmental organizations to facilitate natural-system based land and source water planning efforts.***
- 3. On the Interstate Scale: Develop interstate and trans-boundary waterway commissions to facilitate land and source water protection across state boundaries.***
- 4. Water utilities should encourage local and state legislative bodies to pass a resolution recognizing that source water protection is important.***

# *Recommendations for How to Proceed*



## *Recommendations for How to Proceed*

### Top-Down Approach

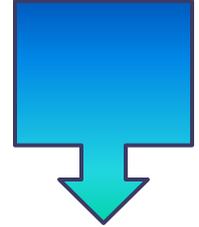


#### *At the national level*

- Develop system for providing awareness, outreach and education to key decision-makers and the general public (including schools) as to importance and values/benefits of SWP
- Fix gaps to improve integration of CWA regulation and source water protection
- Create a national source water protection coordination organization

## *Recommendations for How to Proceed*

### Top-Down Approach

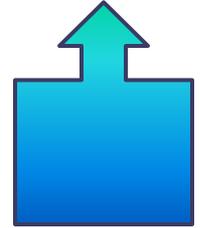


#### *At the national level (continued)*

- Achieve nationwide recognition of SWP efforts among key land use planning and management organizations
- U.S. EPA, states and ASDWA, AWWA, NRWA, NRCS and other appropriate organizations should provide more information, education and guidance on how to manage watersheds and aquifers regarding emerging issues and other SWP issues specific to drinking water
- Develop interstate and trans-boundary waterway commissions to facilitate SWP across state boundaries

## *Recommendations for How to Proceed*

### **Bottom-Up Approach**

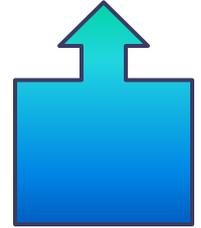


#### *At the local level*

- Create an on-site, individual SWP mentoring program for water utilities
- Update and build upon existing SW assessments to move forward to protection
- Leverage current CWA and other state and federal regulations and programs more effectively

## *Recommendations for How to Proceed*

### **Bottom-Up Approach**



#### *At the local level (continued)*

- Water utilities should encourage local and state legislative bodies to pass resolutions recognizing that SWP is important
- Develop watershed/aquifer councils of governments and/or partner with NGOs as watershed associations to facilitate natural system-based land and source water planning efforts

# Various Efforts on SWP

- AWWA - G300 Standard for SWP (with guidebook); OpFlow article
- AWWA - Survey of large water systems regarding SWP
- AWWA - Exemplary SWP Awards
- EFCN - SWP IQ
- NALMS - workshop of SWP and special sessions; LakeLine article
- Source Water Collaborative - pilot projects (Salmon Falls, ME/NH)
- Source Water Collaborative - working with USDA
- Source Water Collaborative - CWA and SDWA integration
- State Source Water Collaborative - NC SWC
- U.S. Endowment for Forestry & Communities - SWP coordinator
- USEPA - State SWP workshops (targeted)
- USFS - Forest to Faucet
- UGSG - National Water-Quality Assessment Program - Circular 1385
- WaterRF - TMDL and SWP; impacts from wildfires

# Questions?

