Communicating Source Water Protection Efforts in Consumer Confidence Reports

GUIDANCE DOCUMENT

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American Water Works Association

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Document Overview

Section 1 provides an overview of the importance of talking about source water protection efforts and advice on how to effectively communicate with customers.

Chapter 1. Introduction. This chapter is an introduction to the content in this report.

Chapter 2. The Value of Communicating Source Water Protection Efforts. This chapter reminds utilities that there is value in talking with customers about source water protection. Public opinion research has shown that people do, in fact, care about the quality of their drinking water as well as the health of our lakes, streams, and groundwater. They simply do not know much about these topics.

Chapter 3. Communications Principles. This chapter dives into greater detail about good communications practices and offers specific tips on how to communicate effectively, improve messaging, and catch customers’ attention. These are principles that can be applied to any outreach, education, or marketing effort.

Section 2 is organized by source water protection topics. These are the major aspects of source water protection that are important to share to educate customers, instill confidence in the water provider, and build ratepayer support for source water protection.

Chapter 4. About the Drinking Water Source. This chapter gives suggestions on how utilities can educate customers about the source area, going above and beyond the minimum federally required information.

Chapter 5. Why it Matters to Protect the Source Area. This chapter details five major reasons for pursuing source water protection.

Chapter 6. The Utility’s Commitment to Source Water Protection. This chapter outlines two ways that a utility can demonstrate to customers that it is taking a proactive, organized, and serious approach to source water protection, reflecting the valuable nature of the resource.

Chapter 7. How Customers Can Help Protect Drinking Water. This chapter elaborates on strategies and tactics for encouraging customers to participate in source water protection, from behavior change at the household level to organized stream restoration activities.

Section 3 is a list of additional resources and places to find more in-depth information.

Section 4 lists the references used in this report.
SECTION 1. Introduction and General Guidance

Introduction

Outreach and education are critical components of source water protection but finding the right means to reach customers and deciding what to say may seem like a challenge. This report is designed to help small- and medium-sized utilities more effectively communicate on source water protection in their Consumer Confidence Reports (CCRs).

The CCR presents a unique opportunity to connect with and inform customers since it is sent to everyone each year. This guidance document contains advice on source water protection topics to include in each CCR, why, and successful communication tips. Examples from actual CCRs published around the country are provided for reference.

The content of this report is intended to encourage utilities of all sizes to share source water protection information with customers in their CCRs, above and beyond that information which is required by law. Federal law requires every CCR to include information on the availability of a source water assessment along with the source identification. However, including information about the importance of source water protection and ways customers can protect or restore water quality and supply should be regularly included. Doing so helps to build a broad, educated, and supportive ratepayer base.

Given the diversity of utilities in the country, developing a language that will apply to every place is not possible. Whether a utility serves 500 customers or 1 million people, relies on ground or surface water, or has a source area in the desert southwest or humid east coast, this report offers ideas and tips that make it easier to improve messaging and add fresh content to CCRs, as well as inform and inspire customers.
The Value of Communicating Source Water Protection Efforts

Americans have consistently ranked drinking water quality and safety as a top environmental concern over the past twenty years. According to a recent Gallup survey, 63% of respondents worry “a great deal” about drinking water pollution and 57% worry “a great deal” about the pollution of rivers, lakes, and reservoirs - the highest percentage since the early 2000s (see Figure 1).

In 2011, the research firm, Fairbank Maslin Maullin Metz & Associates, conducted a national survey asking people where the water they use in their home originally comes from. Respondents were limited to those that do not use well water. The majority (54%) said they did not know the source of their water while 23% gave the wrong answer and the remaining (<23%) of respondents correctly identified their drinking water source.

These are unrelated surveys but their findings corroborate the importance of educating customers, particularly about the source and health of their drinking water.

In addition to addressing public concerns about pollution, there are many other incentives for pursuing source water protection.

- It is less expensive to prevent a loss in water quality than it is to treat contaminated/unsafe water to safe standards, or to find and replace a town’s drinking water supply.
• Source water protection can help minimize public health risks and respond to uncertainties associated with emergent or unregulated contaminants (such as pharmaceuticals or other chemicals).
• Source water protection can help better prepare a utility for future changes in drinking water standards and regulations.

Protecting drinking water at its source is the first line of defense in a multi-barrier approach, to providing safe drinking water. The multi-barrier approach uses a series of technical and managerial barriers to prevent water contamination. The overall philosophy is that by using several methods to prevent contamination from the water source to the consumers' tap, customers will be safe, even if one barrier fails.

• **Risk prevention**: select and protect the best source(s) of drinking water.
• **Risk management**: install and operate effective treatment technologies, properly design and construct facilities, employ trained and certified operators, and maintain a robust emergency and spill response program.
• **Monitoring, compliance, and enforcement**: use a combination of monitoring that includes source water, finished water, distribution system, and tap monitoring to detect and fix problems.
• **Individual action**: empowering customers with information on drinking water quality and health effects of contaminants, and providing opportunities for customers to be involved in source water protection and water system decision-making.

In addition to the source water protection strategies captured in the multi-barrier approach above, there are many more ways to protect or enhance the water source, including but not limited to:

• education and outreach;
• habitat restoration;
• land acquisition;
• best management practices;
• formal agreements with landowners such as a memorandum of agreement (MOA) or covenant;
• and zoning or land use rules and ordinances.

The particular strategies or tactics that can or should be included in any given source water protection program will depend on the local situation, such as whether water is drawn from a well, reservoir, or a creek, and the land use activities prevalent within the source protection area.
For example, a surface source water area where the predominant land use is agriculture, best management practices associated with riparian buffers and pesticide, manure, or fertilizer management will be critical to protecting or improving water quality. Conversely, an urban source watershed protection program may incorporate prescription drug buy-back initiatives and low-impact development policies.

Even if the community does not have a source water protection plan, customers can be educated about their drinking water source and encouraged to reduce pollution and conserve water.

If the community wishes to develop a protection plan or program, the American Water Works Association (AWWA) provides several helpful resources. Visit the appendix of this report and see also https://www.awwa.org/resources-tools/water-knowledge/source-water-protection.aspx to get started (see Figure 2).
Communications Principles

Communications and outreach are important tools for raising awareness and support among customers for the myriad benefits and value of source water protection. Most importantly, however, communication — both listening and sharing — is fundamental to building trust. After all, the right time to introduce a threat or risk to the source water is before it becomes a crisis. Misunderstandings or disagreements will never be fully eliminated, but by educating and developing a rapport with customers through regular, honest, and proactive communications, complex issues or challenging decisions can be navigated with a bit more ease.

Print, web, and more

The good news is that there are many ways to reach customers, from social media to email, websites to newsletters, open houses, radio interviews, and press releases. However, this also means it can be harder to get their attention. The CCR is more than a state and federal requirement — it is an important communications tool because it goes to all customers. The CCR presents a unique opportunity to engage many customers at one time and connect them to additional information and resources.

For example, the Beaver Water District in Arkansas sends an annual newsletter to all its customers, going into detail on topics that might only get superficial attention in a traditional CCR. The local reservoir is the drinking water source as well as a popular recreation destination, so extra attention is given to describing lake conditions. While the utility still covers many of the CCR components in this newsletter, some elements, such as the water quality table, are available in digital form and given as a URL in the newsletter. This allows them to devote more space to topics and discussions that are of immediate relevance to the readers, like water quality trends and lake levels.

This approach is not for everyone. The prohibitive cost of printing means that many towns are moving all information to their websites and downsizing their print CCRs accordingly. Digital documents are relatively inexpensive to create, so some towns are creating in-depth and full color digital newsletters or magazines as their CCR and then sending out a postcard, which directs the reader to the online CCR.

While these forms of electronic communications are effective, easy, and increasing in prevalence, take stock of the situation in your community. Is online access a barrier to many residents? If so, a print publication is worth the cost. In addition, regardless of whether the CCR is printed and distributed, also making it available online should become standard practice. Web analytics tools can help the utility to monitor traffic on its website, such as counting the number of times a particular document has been downloaded or viewed, and thereby learn what content is most popular.
Ideally, the CCR is one medium of several used in an integrated, organization-wide communications strategy that is designed to raise awareness, educate key audiences, and promote beneficial actions. Short of that, it is still very useful to look at the CCR as a way to further outreach and provide information that complements what is shared elsewhere via web, print, and social media.

**To Whom are You Talking?**

**Audience & Messaging**

Knowing your audience is a fundamental principle of good communications. But it can be challenging to communicate effectively with a broad or general audience, such as the case with a CCR, which needs to reach all customers. There are likely many different segments of the community with different concerns and pursuits. Nevertheless, the following tips can help to make it easier to capture readers’ attention:

- People are hardwired to respond to stories. *Share personal or instructive tales* from your community.
- If there is an opportunity to target a customer group, such as businesses instead of residents, do so with *customized information* according to their needs and interests.
- Be consistent with messages; however, try *framing the same message in different ways*. Doing something as simple as rephrasing an idea can reach new people.
- *A picture is worth a thousand words.* If the same idea or information can also be conveyed in a picture, illustration, or chart, it will do more to reinforce your message than relying on text alone.
- There’s an old adage in the newspaper business: names, names, names. People rush to see their own name in print or those of friends and neighbors. The same goes for faces and pictures. Bringing customers and staff into communications materials is an easy and fun way to *humanize the work* and remind customers that providing clean drinking water is a team effort.
• Consider whether the information is conveyed succinctly and is easy-to-understand. In general, *try to avoid jargon and technical language* whenever possible, (without sacrificing accuracy, of course).

• Because CCRs are a one-way communications tool, it is important to have multiple ways for customers to ask questions or to provide feedback. At a minimum, the CCR must include the name and telephone number of a person that customers can call along with a schedule of public meetings. In Figure 3, Louisville, Kentucky provides the name, phone number, and email for a specific individual who customers can reach out to and offer to present at community meetings.

• Provide advice and ideas for how individuals can protect or restore their drinking water source. Add a tip box to your CCR that offers a real world action that customers can do to make a difference. See the following chapters for specific tips.

• *Celebrate successes*. Be sure that the public recognizes the good work done; this includes bringing attention to and honoring achievements, however small they may seem at the time.

**Credibility and Caring**

Regular, timely, and honest communication is important in building and maintaining trust. It is also a way to establish credibility. Not many people really understand what it takes to provide safe, reliable drinking water. Convey competence and expertise using stories and photos on relevant and relatable topics. It is also a way to show customers that their concerns are taken seriously.

• *Be responsive*. If customers are asking questions – via meetings or phone calls or letters – about a particular topic, the CCR can be an opportunity to share the answer with many people at once. Just be sure to preface the answer with a reminder as to why that information is included in the CCR. Perhaps start the section with a statement like, “Many customers have asked about. . .” or “We’ve heard that you’d like to know more about. . .” And remember to always include contact information so customers can ask questions or share ideas.
• **Introduce the staff in your CCR.** They are also the neighbors, family, or friends of the water utility customers. Ask employees to share a quote about why they are proud of their work or offer a chance to explain their job in a short interview. Use photos of your own staff at work rather than stock photos.

• **Use different messengers over time.** It’s an easy way to introduce staff and build credibility. For example, to address a special issue, such as the difference in taste when there is a seasonal switch from ground to surface water, bring in someone with the expertise and local authority who can speak knowledgeably to that and explain, in layman’s terms, why the switch happens and whether there is anything that customers should be aware of or concerned with. This might be the water treatment plant operator or it could be a utility director.

Values and Framing
Communicating in a clear and accurate manner is essential to credibility but it is also important to be personable. An easy way to do that is to relate a topic to shared community values. General communications research – across all disciplines – shows that Americans value family, prosperity, health, and safety as well as fairness, personal responsibility, transparency, and community. Explaining your work in terms of widely and/or locally shared values provides context for better appreciation of technical information.

For example, Salt Lake City Public Utilities makes source water protection relatable by connecting it to the day-to-day experience and values of its residents. Salt Lake City, Utah draws its drinking water from several canyons in the scenic Wasatch mountain range immediately outside of town. The Wasatch is a very popular recreation destination, beloved by residents and tourists alike. The city has made use of extensive signage in the canyons to educate and remind visitors that when there, they are in a drinking water protection area. They
reinforce this message through other media channels – online and print - by regularly discussing how their high-quality drinking water comes from the iconic places that residents know and love.

Recent research on drinking water utility rates, by Hahn Public Communications (March 2016), found that customers responded most favorably to messages that

✓ Spoke to safety, saving money, environmental sustainability, innovation, and a commitment to high standards of service and customer satisfaction.

The least persuasive messages according to Hahn were those that

✗ compared their town or utility to others, identified where resources were directed to nonutility purposes, and messages that appealed to job growth and attracting new businesses.

**Design**

The above suggestions can help to create thoughtful messages. Equally important to consider is the format and layout of the information. It is true that design matters. Color scheme, font or typeface, and even the spacing (aka white space) all make a difference to the reader’s interest in, and ability to find, the information in a CCR. There are free templates available for newsletters and other similar document types in common software programs like Microsoft Word and Apple Pages. If, for any reason, these are not a workable option, there is likely someone in the community who can help. Developing a CCR template could be a great exercise for the local high school communications class or a design class at the local community college. Alternatively, consider hiring a local graphic designer to build a template or to design the CCR each year. And, remember, this process should not be overwhelming. Making a few, small updates yourself with each CCR will result in a new template within a few years.
Manganese Removal—Another Success Story
Bill Snyder, Plant Manager (bsnyder@kkw.org) & Rob Weymouth, Facilities Manager (rweymouth@kkw.org)

In 2007, the District began using groundwater in addition to its Branch Brook source water supply. One of the advantages of using well water is the considerably lower chemical cost. As a result, we began relying less on Branch Brook’s surface source and more on well water, especially during the high demand summer months. The well water we selected in the Merriland aquifer was of very good quality, but like most groundwater, it contained higher mineral content than that of our surface water. Some minerals can create aesthetic issues such as discoloration or staining of plumbing fixtures. For example, manganese may show up as black or grey in color.

When manganese levels are relatively low, they can generally be treated by a process called sequestration. Simply put, sequestering minerals with phosphates means tying up minerals by keeping them in solution so as not to cause discoloration. Over time, though, we found the level of manganese in the well water slowly crept upwards, where sequestration was becoming less effective. After consulting with State regulators (because any change in water treatment must be approved by them) and discovering the USEPA’s growing concerns about manganese, we decided to take a more proactive approach and began looking for the most cost effective way to remove manganese.

Early in 2015 we successfully piloted a process of oxidizing the manganese, causing it to come out of solution, followed by filtration. It proved to be very effective, so we brought it up to full scale. Here is how the system works. A small amount of potassium permanganate and sodium hypochlorite (food grade oxidizers) are added to the Merriland River Well water, and turns the manganese into microscopic black particles. This water then passes through the two existing rapid sand filters at our Water Filtration Plant, where the manganese particles are trapped and removed. The water then goes through the existing groundwater treatment process for corrosion control (so as not to corrode customers’ lead and copper plumbing), disinfection and fluoridation, before being pumped into the distribution system to our customers.

It took a real in-house team effort to perform the research, laboratory analysis, modeling trials, engineering design and field construction to achieve this new treatment process for minimal cost (all without consultants or contractors). The total cost of this treatment modification was around $110,000, which is significantly less than the estimated $1,000,000 or more for any alternative manganese removal treatment process capable of treating 1 million gallons of water per day. We recently completed the project and after some off-line testing, have the treatment chemistry dialed in. The results have been extraordinary, with manganese in the finished water averaging about 0.01 to 0.02 parts per million (ppm), which is well below the SMCL of 0.05 ppm.

In addition to eliminating any aesthetic issues related to manganese, our new treatment regimen has us well positioned to meet any future regulatory changes that EPA may impose. This has been a great success story for the District and one that we thought was worth sharing. As always, it’s only the best for our customers, just like it says in our mission statement.

Figure 5 - Example of utility staff discussing source water quality, how it affects treatment, and how staff solve problems to protect public health and also save money. Excerpt from KKW Water District’s (ME) Summer 2016 Water Quality Report.
SECTION 2. Source Water Protection Topics

About the Drinking Water Source

Every CCR is required to identify the source of drinking water as well as the availability of a source water assessment. However simply stating “the source is groundwater and the assessment was published in 2003 and available at the office” is not adequate. By using maps and key facts about source(s) of local drinking water, customers can make a more personal connection with their source water, which fosters support for the utility.

Source Identification

In addition to naming the lake or river of the water intake, or listing the number of wells, maps or illustrations should be included. Maps are popular for a reason. Made well, they help the reader to see patterns, and provide orientation to and context within the wider world. Illustrations, too, can help readers to “see” better by simplifying complex systems or illuminating that which is not visible, such as groundwater.

Following are just a few examples of illustrations and maps that help the reader to appreciate the drinking water sources and the relationship to the communities served and the built water system components. Something as simple as circling areas on a topographic map, as in the case of Bozeman, Montana (Figure 6) or working with a graphic designer or artist to create illustrations, as seen in the different stylistic approaches taken by Bloomington, Minnesota and Portland, Oregon (Figures 7 and 8).

Why include this?

To educate customers and create a personal connection with their source water which, in turn, helps to foster pride and a sense of ownership.
Figure 6 - Excerpt from Bozeman, MT’s 2016 Water Quality Report
Figure 7 - Excerpt from Bloomington, MN's 2015 Water Quality Report

Figure 8 - Excerpt from Portland, OR's 2015 Water Quality Report
Source Water Assessment and Characterization

Every CCR is required to identify the existence of a source water assessment, and information on how customers can view or obtain a copy. Assessments usually have a lot of interesting information that is worth sharing with customers to help them become champions for source water protection. The source water characterization is an easy place to share highlights, trivia, or a key takeaway, such as points of pride or persistent challenges. It is also important to note who did the assessment so customers have that information.

The data inputs, methodology, and terminology used in source water assessments varies considerably around the country and, in some cases, the writing may be technical or complex. The first and most important step is to be sure that the person writing the CCR understands the information provided in the source water assessment.

Choose the information that is both relevant for the target audience and meets the desired communication goals. Then present it in an easy-to-understand manner. To get started, try answering the following questions and incorporating the answers into future editions of the CCR.

- **Is there anything exceptional or noteworthy from the assessment?** For example, if the water source is pristine, quoting the assessment can be a good way to create pride in the source and confidence in the drinking water supplier.
- **What is the one thing you want customers to know from the source water assessment?** For example, the water provider for Saginaw, Michigan recognized that simply stating

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*In June 2004, the Michigan Department of Environmental Quality completed its assessment of our Lake Huron raw water supply and issued a Source Water Assessment report. This assessment determined our raw water supply’s susceptibility to contamination. The State used a seven-tiered susceptibility rating scale from “very low” to “very high” based primarily on geologic sensitivity, water chemistry, and contaminant sources.*

*The susceptibility of our raw water was rated “moderately low.” Although the threat of contamination still exists, this rating is the best a surface water source can achieve. The forethought used in selecting the location of the intake helped our raw water supply achieve its “moderately low” susceptibility rating.*

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*Figure 9 - Excerpt from Saginaw Water Treatment Plant’s (WI) 2015 Water Quality Report*
the assessment ranked their source area as having a “moderately low” susceptibility to contamination would not be meaningful to most people. The city went on to explain the significance of the ranking and how it was achieved (See Figure 9). As a result, the main takeaways for customers in Saginaw is that their drinking water comes from a high-quality water source, thanks to the thoughtful choices made by the city when siting the intake.

- **Are there any public health risks identified in the assessment that require the help of customers?** If so, be specific about the scope in terms of timeline and/or geographic extent, and potential consequences of the risk. For example, if failing septic systems are a risk to your groundwater source, citing the assessment findings can be an opportunity to educate residents about the threat of inadequately treated sewage and the spread of disease-causing bacteria. The assessment can also provide information and resources, such as loan programs, to encourage homeowners to repair or replace their septic systems. In the case of Manchester Water Works (see Figure 10), where they do not appear to face an immediate threat, they speak more generally about two categories of nonpoint sources of contaminants as a way to invite citizens to help preserve the source waters.

Source Water Assessment

In compliance with a federal mandate, the NH Department of Environmental Services performed a Source Water Assessment on Lake Massabesic in September of 2002. The assessment looked at the drainage area for the lake and ranked its vulnerability to contamination. Lake Massabesic received four high and four medium vulnerability ratings, while it ranked at low vulnerability for five additional categories. Concern was raised over the detection of MTBE, now prohibited, which came from reformulated gasoline. Concern was also raised over Potential Contamination Sources (PCSs) on the watershed such as highways. Overall, the report presents a positive picture of Manchester’s water source and its condition. While Manchester Water Works has done its best to protect Lake Massabesic, we understand more than ever that we rely heavily upon the standards and practices of each citizen and each community on the watershed for their continued efforts to preserve this precious resource.


Figure 10 - EXCERPT FROM Manchester, NH’s WATER QUALITY REPORT

To see more examples of how other utilities have taken on this topic, from describing the types of contaminants to emphasizing the significance of the findings, follow the links below.

- Beaver Water District in Arkansas provides extensive data and several pages of updates on the current health of Beaver Lake. [https://www.bwdh2o.org/beaver-lake/lake-data/](https://www.bwdh2o.org/beaver-lake/lake-data/)
• The City of Seattle explains the vulnerability ranking for their water sources in the context of their source water protection efforts.
Why Drinking Water Source Protection Matters

Water protection is an important, common sense, and cost-effective strategy for keeping treatment and operation costs down, while also ensuring the protection of public health and providing additional benefits such as improved wildlife habitat and recreational opportunities.

Ratepayers who care about their drinking water source are more likely to support or participate in efforts aimed at protecting and restoring the rivers, streams, lakes, springs, or groundwater on which they rely. After all, no single person or organization can take care of source water health on their own.

“The natural and working lands around our water sources serve as vital water infrastructure for cities around the world. These lands collect, store and filter our water, while providing a number of benefits to people and nature.”


The following sections break down the major reasons for protecting source water. They offer key points as inspiration for what might be included in a CCR. Consider using the following information as individual trivia or blended into stories about the utility’s work.

REASON 1: Nature IS Water Infrastructure

Nature is the original engineer, capturing, infiltrating, storing, delivering, and filtering water. Intact aquatic, riparian, floodplain, and terrestrial habitats provide important services for everyone, including enhanced groundwater replenishment and dry season stream flows; flood control; and water pollution removal. For this reason, nature or nature-based approaches are also sometimes called green or natural infrastructure.

Green infrastructure is often used in reference to water management systems that are designed to take advantage of natural materials—like in rain gardens, bio-swales, or constructed wetlands—to provide services like improved infiltration and pollution reduction. However, green infrastructure can also refer to stream and upland habitat conservation actions that will recover, enhance, or protect natural hydrologic processes.

These types of practices serve to reestablish the natural form and function of stream and upland habitat. For example, reconnecting a stream with its historic side channel allows fish and other aquatic organisms to migrate to cool water habitat, while also slowing down flood waters. Slower-moving waterways give sediment a chance to drop out before it reaches
drinking water intakes, reducing the amount of filtration and treatment required before it reaches the tap.

Healthy soils and vegetation throughout the source area also give water a chance to soak into the ground, which means that pollutants are filtered out before they can enter a stream, lake, or river; groundwater supplies can be recharged; and stream flows are moderated. Less water running off the land and into streams during storm events means a reduction of peak floodwater depths. If more subsurface moisture is available, creeks and streams are replenished longer throughout the year, keeping in-stream flows higher during the dry season.

Traditional infrastructure, also called *gray* or *built infrastructure*, refers to the methods, equipment, and systems for storing, treating, and moving water that are typically associated with civil engineering, such as dams, tunnels, settling tanks, and chemicals.

It is important to note that nature is an asset that works alongside and enhances traditional solutions comprised of concrete, steel, and chemicals. While it cannot replace gray infrastructure, *a mix of green and grey components are more sustainable and generate long-term value for towns and water utilities* (see Table 1).

<table>
<thead>
<tr>
<th>WATER SECURITY OBJECTIVE</th>
<th>BUILT INFRASTRUCTURE</th>
<th>NATURAL INFRASTRUCTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure adequate drinking water supplies in times of drought</td>
<td>Storage such as reservoirs and tanks, water conservation, and water-use efficiency technologies</td>
<td>Varied and healthy soil composition promotes infiltration and holds moisture, releasing water during periods of low rainfall and improving water availability, especially at the regional scale (de la Cretaz and Barten 2007; Ellison et al. 2012; Ice and Stednick 2004).</td>
</tr>
<tr>
<td>Secure water quality by protecting against nutrient pollution, toxic algae, and microbes that intensity with increasing water temperature</td>
<td>Membrane filtration, coagulation, reverse osmosis filtration</td>
<td>Requires water treatment plant</td>
</tr>
<tr>
<td>Prevent nutrient pollution from sediment or silting of waterways as storm intensity increases</td>
<td>Removal of deposited and suspended sediment Requires water treatment plant; dredging</td>
<td>Root systems anchor soil in place. Forests have thick root systems, while native grasslands and no-till agriculture also provide some erosion control. During intense storm events forests can reduce rates of erosion (Neary et al. 2009).</td>
</tr>
<tr>
<td>Flood control by reducing peak flow during storm events</td>
<td>Dams, diversion canals, levees, reservoirs, etc.</td>
<td>Forest layers: promote water infiltration into the soil and groundwater, provide a barrier that slows downslope water movement, and reduce runoff, thereby reducing flooding and related siltation (Neary et al. 2009).</td>
</tr>
</tbody>
</table>

*Figure 11 - Examples of how natural infrastructure can provide better drinking water supply* SOURCE: Ozment, S, et. Al. 2017. Protecting drinking water at the source. World Resources Institute
REASON 2: Safeguard Public Health
Source water protection is the first line of defense in a multibarrier approach to the provision of safe drinking water, which is another way of saying that safe drinking water starts upstream. Maintaining or improving water quality at its source can offer greater public health protection, especially for sensitive populations. Specifically, source water protection can:

- help to reduce the use of chemicals needed to make the water safe for drinking;
- minimize uncertainties associated with emergent or unregulated contaminants (such as pharmaceuticals or other chemicals); and
- help to prevent and lessen risk by addressing the root causes of problems instead of only dealing with the consequences that emerge later.

“Starting with the highest quality source water possible is the best assurance that treated drinking water will reliably and continually meet public health standards.”

-Dave Leland, former Manager of Oregon Health Authority’s Drinking Water Services

REASON 3: Save Money
Protecting the source of a community’s drinking water is a wise investment. Like preventative healthcare, keeping water clean at its source is less expensive than treating dirty water to reach safe standards, because it requires less energy and fewer chemicals. It is also less expensive than replacing a town’s drinking water supply. Natural systems are also more sustainable. For example, intact floodplains do not require perpetual maintenance, expensive upgrades, or eventual rebuilds. Moreover, land and waterbodies do not depreciate in value like machinery, buildings, and other fixed assets.

- **Money saved is available for other community priorities.** If protecting or improving drinking water quality at the source means extending the useful life of the drinking water treatment plant by ten years, point out how delaying a major capital expense allows the utility to better address immediate maintenance needs like fixing leaky pipes or replacing lead service lines.
- **River and land (watershed) restoration offers opportunities for employment and stimulates local economic activity.** Studies by the University of Oregon show that an average of 80 cents of every dollar spent on habitat restoration in the state stays in the county where the project is located, and restoration creates more new jobs than comparable investments in other sectors of our economy (see Hibbard and Lurie, 2006, Journal of Environmental Planning and Management).
REASON 4: Multiple Co-Benefits

Traditional gray infrastructure is usually designed with a single purpose in mind. These are critically important purposes, like storing water or killing pathogens. However, nature-based approaches can be included as a complement and bring a host of additional benefits. More than likely, these co-benefits speak to values held by community members (see the example from Salt Lake City Public Utilities on page 11). Intact aquatic and upland habitats provide:

- **Enhanced biodiversity and open spaces**: healthier fish or wildlife populations, more or better animal habitat, and natural places for people.
- **Water security**: such as flood control, groundwater recharge, and enhanced instream flows.
- **Improved well-being**: enhanced quality of life, natural beauty, air quality, property value, and recreational opportunities. It also includes benefits to future generations by leaving a legacy of environmental health; making sure our children and grandchildren have the same advantages we do.
• *Climate change mitigation and adaptation:* increased carbon sequestration and resilience to changing conditions.

**REASON 5: The Whole Community**

Whatever the basis, the most important reasons for protecting the community’s drinking water are those that keep the utility striving for the best. Perhaps the ideas above captured them but there are likely others more specific to a particular situation. Using the words of utility employees and local residents, share stories about what the source area means to the community or how protection activities are paying off. This is a great opportunity to include pictures, real people and places, and local values. Remember it is not just about helping to improve water quality; it is also about helping to keep a favorite lake safe for kids to swim (Figure 12), for local anglers to fish, and for future generations to enjoy.

![Figure 12 – Recreational use of drinking water source.](image)
The Utility’s Commitment to Source Water Protection

The utility or municipality should demonstrate that it is taking a proactive, organized, and serious approach to source water protection, reflecting the valuable nature of the resource. There are two main components for communicating this.

1. Articulating a vision, goals, or objectives for source water protection.
2. Telling stories about the source water protection activities, projects, or initiatives that are underway, or accomplished.

Goals: Framing the Commitment to Source Water Protection

A short statement should be included that speaks to the utility’s vision for source water protection. It can be as complex as Bloomington’s description of its source water protection vision, goals, and actions, (see Figure 13) or as simple as Philadelphia’s statement about its commitment to source water restoration (see Figure 14).

Our source water protection vision is to achieve the highest possible water quality in our reservoirs through cooperative actions with landowners, citizens and local governments to improve conditions in the catchments, streams and lakes. In addition to providing excellent source water, our lakes will support premier fisheries and provide recreational and educational opportunities to residents and visitors.

Our source water goals are to reduce nitrate nitrogen, sediment and phosphorus loadings to the reservoirs to acceptable levels. Lower phosphorus and nitrate concentrations in both reservoirs will decrease the occurrence and severity of excessive algal growth. Reducing sediment loading will increase the longevity of the reservoirs as water supplies by decreasing the rate of storage loss to sedimentation.

Our action plans for both reservoirs can be found in the watershed plans written by local watershed committees. The actions described in the plans range from stormwater best management practices, lawn care practices and onsite waste system education for urban areas to nutrient management programs, stream restoration, lake shoreline stabilization, lake desstratification, wetland construction and other activities in the drainage basin and in the lakes.

Figure 13 - Excerpt from Bloomington, IL’s 2015 Water Quality Report

PROTECTING OUR WATER SUPPLY

The Philadelphia Water Department (PWD) is committed to stream restoration in our watersheds to protect our drinking water supply, natural lands and existing infrastructure. PWD works to improve the whole ecosystem at restoration sites by rebuilding stream banks, removing invasive vegetation and replanting with native varieties.

Figure 14 - EXCERPT FROM PHILADELPHIA, PA’S 2014 WATER QUALITY REPORT
Vision statements and programmatic or organizational goals are, by definition, more conceptual than tangible. The point of this item is to express awareness of, concern for, and dedication to providing safe drinking water by considering source water protection. Keep it simple and then follow up with more detail in the second point, below.

**Working Toward the Goals: Share Source Water Protection Actions, Projects, Activities**

It is important to have a vision but at the end of the day people want to know their source water is protected. If there are on-the-ground activities or projects with measurable results,
share them. This is where visions and goals become real and relatable and it is where credibility as a hardworking water provider is bolstered.

- If there is a source water protection action plan, post it online and provide a link to the document or, if only in hard copy, let customers know how and where they can view a copy.
- Give examples from the source water protection action (or work) plan, preferably for activities that are underway or those tied to recent events. For example, if there was a wreck and an oil tanker spilled oil in the source area, the incident is a chance to talk about the utility’s spill/emergency response strategies and monitoring efforts. In Figure 16, the City of Philadelphia features individual restoration projects completed in the source watershed during the prior year.

SECURING SOURCE WATER AND UNUSED WELLS

The City has many plans in place to protect Bloomington’s water. These include the wellhead and source water protection plan approved by Minnesota Department of Health in 2014. The plan addresses the six municipal water supply wells used to provide the majority of the City’s drinking water. It assesses data required by the State to evaluate source water aquifer vulnerability to contamination.

To do that, City staff takes an inventory of potential contaminant sources in addition to analyzing the impact of potential changes in the physical environment, land use, surface water resources, groundwater resources, overall water use and regulatory influences.

They also identify issues, opportunities, objectives and plans of action aimed at continuing to meet drinking water demands with a sufficient and safe water supply. One of these objectives is to promote the proper sealing of unused, unmaintained or abandoned wells.

“Sealing unused or abandoned wells is all about maintaining safe water and safe communities,” said Assistant Utilities Superintendent Scott Anderson. “Unused and unmaintained wells are potential pathways for contaminant introduction to groundwater sources.”

The City hired a contractor to seal three abandoned community wells previously used to provide drinking water to small developments and neighborhoods before completion of the Sam H. Hobbs Water Treatment Plant in the 1970s. The City is performing these projects with help from a Minnesota Department of Health grant.

Implementation of the wellhead protection plan is ongoing and may include similar construction projects in the future along with other outreach and cooperative efforts to protect the City’s water supply. For more information, visit blm.mn/sourcewaterplan and for more information about the City’s wells visit blm.mn/wellinspection. Questions? Call the City’s Environmental Health Division at 952-563-8934.

Figure 15 - Tying together source water assessments, planning, and actions. EXCERPT FROM BLOOMINGTON, MN’S 2015 WATER QUALITY REPORT

- Celebrate successes. If a milestone is reached, a project completed, or a positive on-the-ground change realized, be sure to bring attention to it and honor the achievement, however small it may seem at the time. Use this as an opportunity to highlight local champions and use local voices.
River protection program earns national praise

The U.S. Forest Service in 2015 recognized Eugene Water & Electric Board Environmental Supervisor Karl Morgenstern with a national watershed protection award for his efforts to protect the McKenzie River and the public and private lands the iconic river runs through. The agency chose Morgenstern and EWEB for its "National Rise to the Future – Watershed Resources Award."

The national review panel cited Morgenstern's innovative approach to maintaining clean water and healthy riparian lands throughout the McKenzie watershed, as well as his ability to reach out and connect with a broad spectrum of local people and agencies. The McKenzie is the sole source of drinking water for Eugene.

Also in 2015, Carpe Diem West, a network of water protection professionals from around the western United States, presented the inaugural "Healthy Headwaters Innovation Award" to Morgenstern and EWEB for outstanding leadership and innovation for creating a program that rewards landowners who maintain high-quality land along the McKenzie.

Accomplishments noted by the awards panels included EWEB’s McKenzie Watershed Emergency Response System, the utility’s Septic System Assistance Program, the Healthy Farms Clean Water program, EWEB’s contributions to the Berggren Demonstration Farm and the Voluntary Incentive Program. Morgenstern played the primary role in the creation of those programs. For more information, go to eweb.org/sourceprotection

Figure 16 - Example of celebrating source water protection in a CCR. Excerpt from Eugene Water & Electric Board’s 2015 Water Quality Report.

- Much of what is done to protect source water may not seem very news-worthy, like emailing or writing a report, so it is critical to communicate activities in visible or material ways. For example, include photos from a meeting between the Soil & Water Conservation District staff and a landowner where they discuss agriculture best management practices (BMPs) or share a quote or snippet of conversation from one of these meetings, even if no best management practices have even been implemented yet. It gives a face to the idea and helps the customer to understand that source water protection takes time. Behind every riparian buffer planting or litter clean-up event, is a lot of communicating, planning, and relationship building.
PROTECTING OUR WATER SUPPLY

The Philadelphia Water Department (PWD) is committed to stream restoration in our watersheds to protect our drinking water supply, natural lands and existing infrastructure. PWD works to improve the whole ecosystem at restoration sites by rebuilding stream banks, removing invasive vegetation and replanting with native varieties.

Check out a few of our projects in the Wissahickon Creek watershed:

- **Bells Mill Run Stream Restoration**: 5,400 feet of stream restoration slows the flow from two stormwater outfalls, preventing erosion from washing away the banks and undercutting Bells Mill Road.

- **Wises Mill Stormwater Treatment Wetland**: The three acre wetland captures runoff from 92 acres of land, holding it temporarily while the water filters slowly into the ground, reducing the flow of sediment downstream.

- **Cathedral Run Stormwater Treatment Wetland**: The 95,000 cubic foot wetland captures runoff from 74 acres of land, slowing the flow into Wissahickon Creek and reducing erosion.

- **Carpenter’s Woods Gully Repair**: Gully repairs successfully slow the flow from three stormwater outfall pipes, reducing erosion and stabilizing the stream channel.

- **Saylor Grove Stormwater Treatment Wetland**: This one acre wetland captures runoff from 156 acres of land, allowing it to slowly filter into the ground, reducing the flow of water and sediment into Monocacyhore Creek.

Figure 17 – EXCERPT FROM PHILADELPHIA, PA’S 2014 WATER QUALITY REPORT. It is easier to appreciate what source water protection is when presented in terms of on-the-ground projects, numeric accomplishments, and photos from the field.
How Customers Can Help to Protect the Drinking Water Source

Source water protection is a big job and requires everyone who lives, recreates, works, or does business in the area to help maintain or improve drinking water quality and quantity. Ultimately, then, customers need to know how to do their part. Help them by delivering the message in two ways.

1. Point customers to engagement opportunities in source water protection activities, and
2. Offer specific tips for behavior change at the individual, business, or household-level.

Resources for Engagement

Some people develop a deeper connection to their drinking water source by visiting and enjoying the river or area. Others like to get more involved than simply installing a low-flow shower head; they want to get their hands dirty. Yet others are motivated to give back to the community or want to feel like they are part of something bigger. Fortunately, several groups in any given area are likely to create opportunities for these types of engagement, if not more.

Community, grassroots, citizen, or nonprofit conservation organizations may undertake projects to help protect land or river health in the source area. For example, watershed councils often have initiatives aimed at connecting people to nature through educational programs or volunteer activities, and soil and water conservation districts typically work with local farmers to encourage best management practices that improve soil health and water quality.

From K-12 outreach to bird-watching trips and trash clean-ups to tree-planting events, these groups can effectively extend outreach and education capacity for source water protection. For example, the Philadelphia Water Department directs customers to local, reputable organizations that offer meaningful ways for customers to engage with the source area and its protection (see Figure 18). Even a large city like Philadelphia needs the cooperation and assistance of many different groups to protect its source area.
Many excellent communication resources offer tips on ways that individuals, households, and businesses can reduce water use and pollution. See Section 3 of this document for a few guides and websites that offer lists of ideas that can be included in any CCR, such as “turn off the faucet when brushing teeth.” In addition, follow these suggestions:

- **Provide specific and practical advice.** The less ambiguous and ambitious the ask, the easier it is for people to comply. See Figures 19, 20, and 21 for examples of clear, concise, and doable instructions.
Figure 19 – Unambiguous suggestions for saving water. Excerpt from New York City’s 2016 Water Quality Report.

Figure 20 - Being as specific as possible with pollution prevention tips can avoid confusion and make it easier for customers to do the right thing. Excerpt from Tampa Bay, FL’s 2016 Water Quality Report.
• **Consider including a regular feature in the CCR that offers up new tips each time.** There are sufficient ideas for conservation and pollution prevention (see guides listed in Section 3) to fill an editorial calendar for a long while.

• **If there is a crucial message for customers that does not change over time, create a dedicated space for it but try presenting it differently in each CCR to reach new audiences.** Use different messengers to deliver the message, reframe the issue to emphasize a new aspect, or communicate it with visuals such as charts or photos instead of only words. Repetition and reminders are helpful in encouraging the creation of new habits.

• **Justify the call for action by making use of data from the utility’s own system.** For example, introduce a waste tire collection program or prescription drug take-back event by connecting it to information in the source water assessment about the threat of contaminants in the source area. In Florence, Oregon, they see marked differences in water use during the summer tourist season, so they included a chart of water demand (see Figure 22) with a call for conservation. Pairing this kind of chart with a short list of water-saving tips will have a higher impact than simply providing the tips alone.

*Figure 21 – Bold graphics deliver water conservation and pollution prevention tips. Excerpt from Lansing, MI’s 2016 Water Quality Report.*
• **Feature any relevant customer incentive programs in the CCR.** Examples include free backflow prevention devices, downspout disconnection services, cash rebates on the purchase of high efficiency appliances, or small grants for replacing lawns with drought-tolerant and native plants.

• **We all live downstream.** If the source area is remote, protected, and relatively inaccessible, there may not be much residents can do. However, in all likelihood you are upstream of someone else's drinking water source area, and it is responsible to act accordingly. Remind customers that how they use water will affect the people, plants, and wildlife that live downstream. Sometimes, the service area and source area are coincident, as with the city of Pittsburg, Pennsylvania. In Figure 23, they explain to customers why preventing storm water pollution is also important to protecting their own drinking water.

![2015 Water Demands](image)

*Figure 22 – Using data from the utility’s own system is interesting and educational. In this case, it can also help drive home the importance of reducing water use during summer months. Excerpt from the City of Florence, OR’s 2016 Water Quality Report.*
Conclusion

Ratepayers who understand and care about the health of their drinking water source are more likely to support the utility’s work or participate in efforts aimed at protecting and restoring the rivers, streams, lakes, springs, or groundwater on which they rely. After all, no single person or organization can take care of source water health on their own. Ultimately, then, the messages that the utility provides to customers should:

- foster an educated ratepayer base;
- instill confidence in the utility and the drinking water supply; and
- encourage customers to become stewards of and champions for source water protection.
The CCR is a critical tool for delivering source water protection messages. Make the most of it by including the following four major source water protection items in every CCR and apply principles of good communications.

**What to include in every CCR**
To educate and develop a rapport with customers, include the following four elements in each CCR.

- **Describe the source area.** Do not simply identify the source and availability of a source water assessment. Go above and beyond the minimum federal requirements. Make use of maps, illustrations, and graphics to help the reader appreciate the source of their drinking water and its relationship to the community. Include key facts from the source water characterization and assessment to educate customers about the reliability and vulnerabilities of the source area. (See Chapter 4)

- **Explain why it matters to protect the source area.** There are many good reasons for pursuing source water protection, from protecting public health to saving money and enhancing fish and wildlife populations. Consider featuring different explanations in each CCR, and always relate them to community values and the utility’s work. (See Chapter 5)

- **Underscore the utility’s commitment to source water protection.** The utility or municipality should demonstrate that it is taking a proactive, organized, and serious approach to source water protection, reflecting the valuable nature of the resource. There are two main components for communicating this: (1) Articulate a vision or goal for source water protection, and (2) give specific examples of how you are protecting the source area. (See Chapter 6)

- **Offer clear ways for customers to help protect the drinking water source.** Source water protection is a big job and requires everyone who lives, recreates, works, or does business in the area to help maintain or improve drinking water quality and quantity. Ultimately, customers need to know how to do their part. Help them by delivering the message in two ways: (1) Point customers to additional resources for engaging in source water protection activities, such as volunteer tree-planting events or educational tours of the source area, and (2) offer practical tips on behavior changes that individuals, households, and businesses can make to reduce their water use and pollution. (See Chapter 7)
**Good Communication Practices**
To best capture and retain customers’ attention, make routine use of the following principles.

- **Assume that customers care** about drinking water quality and the health of our rivers, lakes, and groundwater.
- **Exercise regular, honest, and proactive communications.** This is an important way to build credibility and trust with customers.
- **Listen and share.** Demonstrate that the utility is responsive to community questions and feedback.
- **Make the CCR accessible to every customer.** This means offering each CCR in print (hard copy) and online (electronic copy).
- **Create a well-designed CCR.** Design matters, therefore use a document template or hire a professional graphic designer.
- **Always communicate in a clear and accurate manner.** Avoid jargon whenever possible. Do not be afraid to also be personable and tell stories.
- **Know your audience.**
- **Connect the utility’s work to community values.**
  - Speak about safety, saving money, environmental sustainability, innovation, and a commitment to high standards of service and customer satisfaction (Hahn Public Communications March 2016).
  - Emphasize family, prosperity, health, and safety.
- **Use photos, illustrations, maps, and charts** where appropriate to reinforce messages and convey complex information. A picture is worth a thousand words.
- **Use local voices** and showcase drinking water champions.
  - Give staff a chance to share why they work to provide clean drinking water and describe what their job entails. Staff are also likely the neighbors, family, or friends of customers.
  - Feature customers, where appropriate. It’s an easy and fun way to engage readers and build a sense of shared responsibility.
- **Celebrate successes and accomplishments.** Providing safe, reliable supplies of drinking water is a big job and deserves recognition.
SECTION 3. Additional Resources

There are many resources available to help a utility communicate with customers about source water protection. The following list, while not comprehensive, is a good place to start. Some of these links are for reports that provide tips and tactics. Other links are for working examples that a utility can emulate for its own purposes and a few more are gateways to yet more resources.

General Communications

American Water Works Association
“Communicating Water’s Value: Talking Points, Tips & Strategies”

“Communicating Water’s Value Part 2: Stormwater, Wastewater & Watersheds”

“Write Consumer Confidence Reports Customers Can Understand”

AWWA’s Drink Tap campaign provides statistics and educational materials that utilities can use
www.drinktap.org/

Carpe Diem West:
“Crisis Communications: Basic principles for talking about healthy headwaters during and after a wildfire” and “Communicating the Benefits of Watershed Investment”
www.carpediemwest.org/resources/tools/

Environmental Protection Agency
“Communicating the value of drinking water services: using campaigns and community engagement efforts.” offers case studies of marketing and education campaigns undertaken by utilities around the country
www.epa.gov/sites/production/files/2015-06/documents/epa810s15001_0.pdf

Source Water Protection

American Water Works Association
AWWA provides in-depth manuals for water utilities interested in pursuing source water protection, including
Source Water Protection Resources Webpage
www.awwa.org/resources-tools/water-knowledge/source-water-protection.aspx

AWWA G300-14 Source Water Protection


Water Supply Operations Source Water Protection

*Environmental Protection Agency*
Source Water Protection website provides background information on source water protection topics, including funding sources and other tools:
www.epa.gov/sourcewaterprotection

### Water Conservation and Pollution Prevention

The American Water Works Association has a Water Conservation Communications Guide for Utilities (2010):

The Universality of Nebraska has a suite of residential water use information, especially for lawn, garden, and landscaping:
water.unl.edu/residential-water-use

The Environmental Protection Agency’s WATER SENSE website has tools, guides, and other resources tailored to residential and commercial water use:
www.epa.gov/watersense

National geographic has a series of brief facts about water use and tips on how individuals can conserve water:
www.nationalgeographic.com/environment/freshwater/water-conservation-tips/

Many agencies offer tips for recreational boaters and pollution prevention resources, including:

Minnesota Department of Natural Resources
www.dnr.state.mn.us/invasives/preventspread_watercraft.html
Many utilities and grassroots groups have created brochures, flyers, and mailers to educate particular customer groups, such as hobby farmers or industry. For example, the Clackamas River Water Providers – a coalition of eight municipal water providers in Oregon - has developed outreach brochures on septic systems and pesticide use: 
www.clackamasproviders.org/resource/

See also your local Extension Service. In addition to print materials that you may be able to make use of, many offer trainings or workshops that your customers will find useful. For example, the University of Mississippi’s Extension Service offers background information and events on topics ranging from pest and invasive plant species management to private well monitoring and protection. http://extension.msstate.edu/

To find your state land grant institutions and association extension offices, see https://nifa.usda.gov/land-grant-colleges-and-universities-partner-website-directory?state=All&type=Extension
SECTION 4. References


