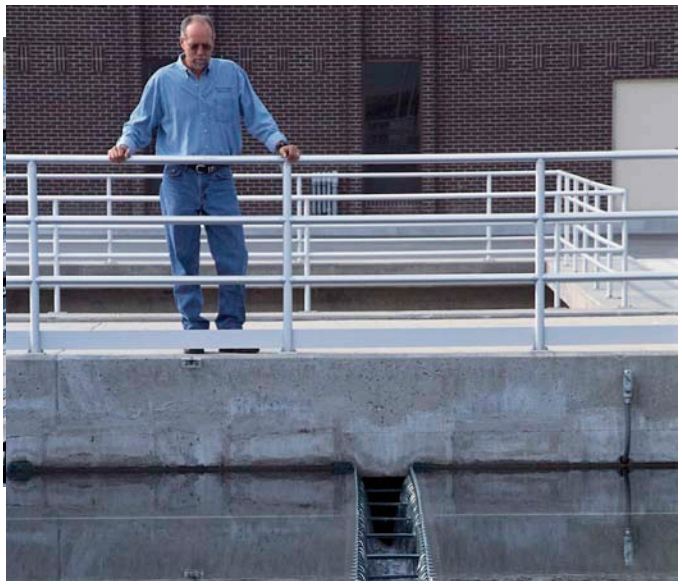
United States Environmental Protection Agency

Key Features in Action: Small Drinking Water Utilities

The Water Sector has developed the Key Features of an Active and Effective Protective Program (Key Features) to help owners and operators of drinking water and wastewater utilities prevent, detect, respond to and recover from adverse effects of all hazards, including terrorist attacks and natural disasters. The 10 Key Features describe the basic elements of a "protective program" for utility owners/operators to consider as they develop utility-specific approaches; they are flexible and can be used by all utilities, regardless of size. The Key Features can help small utilities reduce the public health, economic, environmental and social consequences of water service interruptions; and can promote overall improvements in utility operations.



Background

The U.S. Environmental Protection Agency (USEPA) conducted two Key Features case studies at small drinking water utilities (serving a population fewer than or equal to 3,300) during 2010 and 2011:

- Southeast Small Utility Case Study
- Mid-Atlantic Small Utility Case Study

The objectives of the case studies were to:

- Document how small drinking water utilities have successfully incorporated one or more of the Key Features into their operations.
- Provide examples of specific protective practices that can be replicated by other small drinking water utilities.
- Highlight benefits to small drinking water utilities of implementing the Key Features.

The Key Features

1. Make protection a part of business culture
2. Identify protective program priorities on an annual basis
3. Use contaminant warning systems
4. Assess risks and update vulnerability assessments
5. Establish facility and information access controls
6. Incorporate protection into infrastructure planning
7. Prepare, test, and update emergency response, recovery and business continuity plans
8. Develop partnerships with first responders, managers of critical interdependent infrastructure, other utilities and response organizations
9. Develop internal and external communication strategies
10. Monitor incidents and threats

Southeast Small Utility Case Study

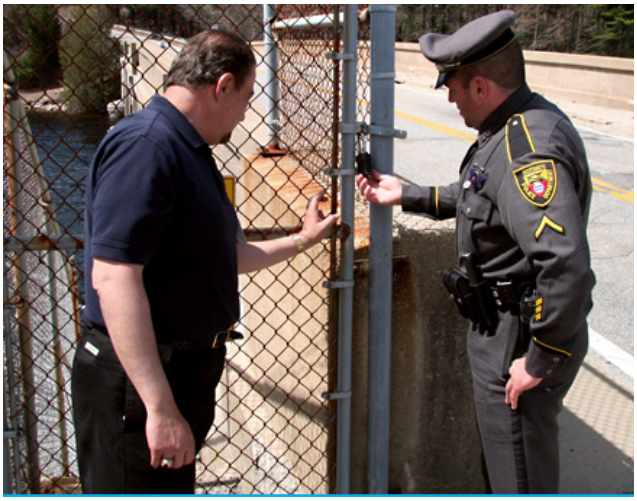
The drinking water utility profiled in the Southeast Small Utility Case Study is a very small community water system with a single municipal treatment facility. Water is supplied by wells, and the drinking water system provides approximately 100,000 gallons of drinking water per day to the town and surrounding area. The utility is part of the town government and has six employees, including the director, who is also responsible for the town's wastewater utility. The utility works closely with the government of the county that surrounds the town.

Highlights of Key Features Implemented

FEATURE 3. Use contaminant warning systems: The utility monitors contamination by sampling, customer complaint tracking and security monitoring by the local police. In the event of an incident, the local health department and the public would be notified and the contamination isolated if possible. If the drinking water system is taken off-line, the town's emergency plan specifies the utility will coordinate with other local jurisdictions. The utility has also established working relationships with local and state public health officials to detect unusual public health complaints, and works closely with the state environmental protection agency.

FEATURE 5. Establish facility and information access controls: The utility has fences around its treatment facility and well sites, in addition to steel doors and locks to prevent unauthorized access. Each lock has a unique key and an inventory system tracks usage. Additionally, each utility employee has an identification card. The local police department monitors utility facilities at night and notifies the town's dispatch center if there are any issues; the dispatch center then notifies the utility director.

FEATURE 7. Prepare, test and update emergency response, recovery and business continuity plans: The utility has an emergency response plan (ERP), which it reviews and updates every six months. The utility coordinates the development of its ERP with county emergency management and also includes its suppliers and the county government in its exercises and drills. They have an interoperable communications system, which includes hand-held radios and direct lines to first responders, to maintain contact with police, fire and rescue departments and the county government. The town regularly checks its emergency contact list to ensure it remains accurate. Periodic testing of phone lines and radios is also conducted to ensure they are operable.



BENEFITS

- The utility's security practices increase employee safety, reduce contamination threats and increase public safety (e.g., fences deter people from climbing water towers).
- Public communication strategies increase public awareness (e.g., citizens notify the public works department or town hall when they see suspicious activities or other security issues).
- Partnerships with local and state health departments have increased the utility's emergency preparedness.

UTILITY COMMENTS

- While the utility has an informal mutual aid agreement with a nearby military base, they would prefer to have the agreement in writing to ensure aid is provided when needed.
- Sharing best practices with other utilities, and learning what practices are working for them, help garner support for protective program improvements from upper management and policy makers.
- Utilities should work closely with local and state health departments to respond quickly to any unusual health complaints, which may be water related.

Furthermore, the utility is National Incident Management System (NIMS) compliant and upper management has received Incident Command Systems (ICS)/NIMS training. These efforts were instrumental during a recent hurricane when the utility worked with county emergency managers and shared facilities and resources.

FEATURE 8. Develop partnerships with first responders, managers of critical interdependent infrastructure, other utilities and response organizations The utility has established relationships with critical customers and other critical infrastructure sectors that rely on water service to function including a dialysis center, an assisted living center and an electric power cooperative. These organizations have also been addressed in the utility's Emergency Response Plan (ERP). These customers are notified of potential water service interruptions and changes made to the water supply; notifications are prioritized according to user need. Additionally, the utility has developed close relationships with the local and state health departments, local first responders and nearby utilities. The utility has signed a mutual aid agreement with the county that surrounds the town and has exercised the agreement twice during water main breaks. It also has a close working relationship with a nearby military base, and has an informal agreement for mutual aid with the base that has been utilized in the past.

FEATURE 9. Develop internal and external communication strategies: The utility has established many methods for disseminating information to the public, including through local government meetings; websites; a public access channel; other TV sources; radio; newspapers; flyers; and also the back of its water bills. The public can also sign up for community cell phone and email alerts on the town's website. The utility fosters internal communications through weekly safety meetings and by using hand-held radios and cell phones. The utility can respond to an incident 24 hours a day, seven days a week. The town's dispatch center also distributes information to utility staff and first responders in county government, the fire and rescue departments and the state's department of transportation. Finally, the utility's ERP includes a crisis communication plan developed in conjunction with the county government.

Mid-Atlantic Small Utility Case Study

The drinking water utility profiled in the Mid-Atlantic Small Utility Case Study is also a very small community water system and consists of a single municipal treatment facility. Drinking water is supplied by wells, and the system usage is approximately 90,000 gallons per day. The utility is part of the town government and has two employees.

Highlights of Key Features Implemented

FEATURE 3. Use contaminant warning systems: The utility requires all homeowners to have backflow prevention detectors attached to their water connections. They use customer complaint tracking and sampling to aid in contamination detection and contract with an outside laboratory to test samples. The utility has a relationship with local public health officials to monitor public health complaints and evaluate them for contamination implications. The utility's ERP also requires coordination with local health officials if a contamination event occurs.

BENEFITS

- Having a mutual aid agreement in place provides the utility with a back-up plan in the event of an emergency.
- Coordination with community emergency management partners, and having an ERP, provide the ability to more quickly detect, respond to and recover from an adverse event.

UTILITY COMMENTS

Frequent communication with citizens, employees, and elected officials (even informally) helps increase preparedness.

FEATURE 5. Establish facility and information access controls: The utility has barbed wire fences around all facilities and recently added six-foot fences around well houses and the water tower. Operators ensure that locks, which are on all facilities, are secured at all times. Operators perform daily walk-throughs in each facility including weekends and holidays. Additionally, the head operator recently participated in the Check-Up Program for Small Systems (CUPSS) training conducted by USEPA, which provides training in asset management for small water systems.

FEATURE 7. Prepare, test and update emergency response, recovery and business continuity plans: The utility has an ERP, which it coordinates with community emergency management partners, including the fire department. The utility has also established an interoperable communications system to maintain contact with police, fire and other first responders. The town's emergency operations center (EOC) has the utility operators' office phone numbers, cell phone numbers and email addresses, in order to contact them in an emergency. Additionally, the head operator has taken the ICS training course.

FEATURE 8. Develop partnerships with first responders, managers of critical interdependent infrastructure, other utilities and response organizations: The utility has established a relationship with the local hospital and has addressed the hospital's needs in its ERP. The utility also has an informal mutual agreement with a neighboring utility, as well as the town's wastewater utility, to provide aid, when needed. The utility also has a close working relationship with the local fire department, which is critical to ensure an adequate supply of water for emergencies.

FEATURE 9. Develop internal and external communication strategies: The utility has a crisis communication plan and a set of standard procedures, which are both included in the ERP, to ensure consistent measures are taken when sharing information with the public.

Conclusion

Small drinking water utilities can experience many benefits by implementing aspects of the Key Features into their daily operations, including reducing water service interruptions and increasing:

- Public health protection and public confidence in drinking water systems
- Water security and infrastructure protection
- The ability to prevent, detect, respond to, mitigate and recover from an emergency
- Access to resources, such as mutual aid and grant funding
- Coordination with emergency responders and government officials
- Employee awareness of safety

Available Resources and Additional Information: Many low- to no-cost tools are available to assist small drinking water utilities in implementing the Key Features. For more information, please visit: **http://water.epa.gov/infrastructure/watersecurity/features/index.cfm** or contact: **wsd-outreach@epa.gov**.

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