

MUTUAL AID EMERGENCY RESPONSE TABLETOP EXERCISES FOR WATER UTILITIES

John Whitler

U.S. Environmental Protection Agency¹

Bradley Armstrong, Alfredo Lagos, Tom Moore

Computer Sciences Corporation²

Keywords

water security, mutual aid/assistance, water/wastewater agency response networks, emergency response, exercises

Abstract

The water sector (drinking water and wastewater utilities) in the United States is developing intrastate mutual aid/assistance agreements, commonly referred to as Water/Wastewater Agency Response Networks (WARN). The number of statewide WARN agreements has more than tripled in the past year, leading to a better-prepared and more resilient water sector. As with any emergency response agreement or plan, there is a need to exercise and validate the procedures member utilities will use during activation of a WARN. The U.S. Environmental Protection Agency (EPA) is responding to that need by developing tabletop exercise materials that will support the facilitation of exercises. EPA is designing the tabletop exercise materials to bring together key personnel to discuss hypothetical scenarios in an informal setting. This type of exercise typically is aimed at strengthening understanding of concepts, identifying strengths and shortcomings, and affecting changes in the approach to a particular situation.

While some WARNs are well-established and have responded to emergencies, others are in the development stages and have not practiced implementation of their agreements. The tabletop exercise materials are designed to guide each WARN in the development and execution of a tabletop exercise to create, update, and/or improve their procedures. Tabletop exercises will allow WARNs to practice and exercise their procedures so that requesting and responding utilities have a better understanding of how to implement their WARN agreement. By practicing the functionality and operations of activating the agreement, a WARN will respond more effectively and efficiently during an actual incident. Building on the successful EPA “Emergency Response Tabletop Exercises for Drinking Water and Wastewater Systems CD-ROM,” the tabletop exercise materials will be widely available as an EPA publication and will include instructions for planning, organizing and conducting, an exercise specific to the circumstances of an individual WARN.

¹ U.S. EPA, Office of Ground Water and Drinking Water, 1200 Pennsylvania Ave., NW (4601 M), Washington, DC 20460, whitler.john@epa.gov, 202-564-1929.

² Computer Sciences Corporation, Science Engineering and Mission Support, 6101 Stevenson Ave., Alexandria, VA 22310, barmstrong2@csc.com, alagos@csc.com, tmooore45@csc.com.

Introduction

The water sector (drinking water and wastewater utilities) encounters threats from a growing number of causes: natural disasters (hurricanes, floods, earthquakes, etc.), accidental spills or equipment failures, vandalism, and intentional tampering or contamination. For all types of emergencies, a drinking water or wastewater utility analyzes the situation and determines the best alternatives to address its needs. One possible way for a utility to supplement their own resources when they become overwhelmed is through a Water/Wastewater Agency Response Network (WARN). The U.S. Environmental Protection Agency (EPA) is fostering the adoption of mutual aid/assistance agreements through its support for WARNs. Similar to mutual aid agreements between electric utilities, the “Utilities Helping Utilities” concept behind WARN allows both public and private drinking water and wastewater utilities to quickly obtain emergency assistance in the form of personnel, equipment, materials, and other services from one another during response to and recovery from any type of natural disaster or human-caused event.

The mission of WARN is to provide expedited access to the specialized resources needed to respond to and recover from natural and human-caused events that disrupt the operational capabilities of public and private drinking water and wastewater utilities within a state. By adopting the WARN approach to mutual aid/assistance, drinking water and wastewater utilities in each state are able to sign a single agreement covering issues such as indemnification, workers’ compensation, and reimbursement. Unlike existing statewide mutual aid agreements, WARN membership is open to both public and private utilities. WARN also helps utilities reduce the typical response “gap” between local agreements and activation of statewide agreements, as it does not require an emergency declaration prior to activation. Thanks in part to support from EPA, the number of statewide WARN agreements has more than tripled in the past year, leading to a better-prepared and more resilient water sector in the United States.

By supporting the WARN program, EPA is working to address its role as the Sector-Specific Agency for drinking water and water treatment systems under Homeland Security Presidential Directive (HSPD-7) on Critical Infrastructure Identification, Prioritization, and Protection. As Sector-Specific Agency, EPA is responsible for infrastructure protection for the water sector. As a support agency to Emergency Support Function #3, the public works and engineering annex to the U.S. Department of Homeland Security’s National Response Framework (NRF), EPA also coordinates the federal response to water and wastewater critical infrastructure activities during national disasters. In its ESF #3 role, EPA works closely with the water sector both to ensure that response capabilities are in place and ready for activation, and to strengthen emergency preparedness planning.

Purpose of the WARN Tabletop Exercise Materials

The “Utilities Helping Utilities” concept – central to WARN – continues to evolve as newly formed WARNs work through development of their programs. While some are well-established and have responded to emergencies, other WARN programs are in the developmental stages and have not practiced implementation of their agreements. As a result, WARNs have requested information on how to develop a tool to exercise and validate their intrastate mutual aid/assistance operational plans in preparation for an actual emergency. In response, EPA is developing tabletop exercise materials that can help a WARN exercise its mutual aid/assistance operational plan and intrastate activation of its agreement.

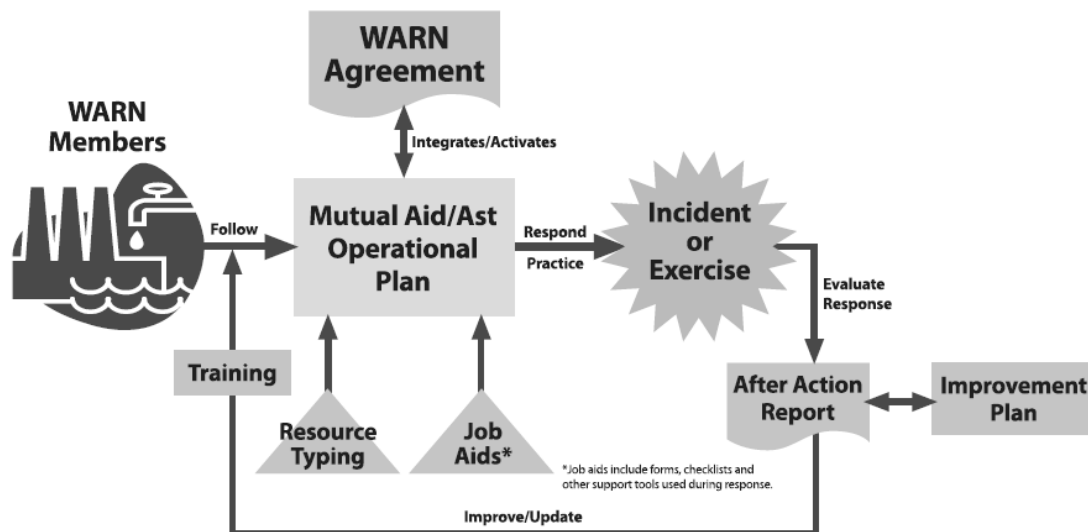
Practicing and exercising the WARN mutual aid/assistance operational plan or other procedures help member utilities better understand how the agreement may be implemented. Using tabletop exercises to practice functional roles and operational procedures of activating and executing agreements and the allocating of resources and expertise, WARN members

increase the efficiency and effectiveness of their efforts during actual implementation of WARN during an incident. Additionally, tabletop exercises facilitate opportunities to:

- Build/strengthen relationships between WARN members
- Define roles and responsibilities of all WARN participants prior to and during incidents {water utilities, state primacy (regulatory) agencies, state and local emergency management and response agencies, federal agencies (including EPA), and supporting professional organizations (e.g. the American Water Works Association)}
- Review and simulate procedures to identify “gaps” or areas for improvement
- Optimize mobilization/demobilization and resource-matching procedures
- Validate procedures for activating and modifying WARN agreements
- Refine components of the WARN agreement, the mutual aid/assistance operations plan (the operational extension of the agreement outlining procedures that make the agreement work), and administration to manage the WARN, as well as modify each as needed

The WARN exercise materials build on the successful EPA training CD-ROM, “Emergency Response Tabletop Exercises for Drinking Water and Wastewater Systems.” The training CD-ROM contains materials that a utility can use when developing their own tabletop exercise. As the first document of its kind written specifically for WARNs, EPA designed the “Water/Wastewater Agency Response Network Tabletop Exercise Facilitator Guide” and accompanying exercise materials to guide a WARN in the development and execution of a tabletop exercise to create, update, and/or improve its mutual aid/assistance operational plan. Figure 1 shows how member utilities activate the agreement by following the operational plan and illustrates how exercising the operational plan ensures the functionality of the WARN system.

Figure 1. Member utilities use exercises to create, update, and/or improve procedures for activating a WARN Agreement.



Discussion

Overview of the WARN Tabletop Exercise Materials

The WARN tabletop exercise materials include the following parts:

- Instruction sections describing the steps for developing and conducting a WARN tabletop exercise
- Sample exercise objectives

- Easily modifiable example scenarios that cover:
 - Flood event
 - Hurricane event
 - Earthquake event
- Sample discussion questions for a “Developing” and “Established” WARN
- Sample documents such as:
 - Exercise Agenda
 - Participant Handout
 - PowerPoint presentation materials
 - Exercise Evaluator Form
 - Participant Evaluation Form
 - Debrief Comment Capture Form
 - Debrief/Hot Wash Questions
 - After Action Activities Form
- “*Facilitator Notes*” boxes that provide hints and suggestions to assist in developing and conducting the exercise, posing discussion questions, and evaluating the exercises. WARNs are free to adopt or adapt all of the exercise materials.

This paper focuses on key parts of the exercise materials including the instructions, exercise objectives and scenarios, and discussion questions.

Planning for a WARN Tabletop Exercise

Depending on the size of the emergency, all levels of response may not be needed every time WARN is activated. All emergencies start and end locally. If the resource needs can be addressed by one utility calling another, that may be all that is needed. In emergencies that affect more than one locality, coordination at the county level may be necessary. In emergencies that affect more than one county, coordination at the state level may be necessary. Clear goals and objectives should be established for the exercise, and materials adapted to keep the scope of the response to an appropriate level.

The exercise goals and objectives help direct the activities and outcome of the exercise. The objectives should be tailored to the needs of the WARN program, based on the goals established by the WARN Steering Committee. The sample exercise materials provide objectives that the exercise Facilitator may use as a starting point. In order to address the growing number of WARNs, the samples include two lists of objectives based on whether the WARN program is still in its early developmental stages, or it is established and has been used to respond to past events.

When planning for a WARN tabletop exercise, the exercise materials encourage WARNs to bring together key personnel who participate in critical infrastructure restoration from all areas of the water sector, including:

- WARN member utilities,
- Water sector associations such as the American Water Works Association (AWWA) and the National Rural Water Association (NRWA),
- Emergency management representatives from local Emergency Management Agencies and the Emergency Management Assistance Compact (EMAC), and
- Local, county, state and federal government personnel from drinking water and wastewater regulatory, environmental, and public health agencies.

The exercise materials present a 10 step guide to develop, organize, and conduct a tabletop exercise specific to the needs of an individual WARN. The steps include activities to complete in preparation for, during, and following the exercise. Table 1 describes the sequence of steps for developing, organizing, and conducting a WARN tabletop exercise.

Table 1. Steps for developing and conducting a WARN tabletop exercise.

Steps for developing and conducting a WARN tabletop exercise:	
	Completed
1. Identify Roles and Responsibilities	
2. Create WARN Tabletop Exercise Materials for a Participant Handout	
a. Establish Objectives	
b. Identify Assumptions	
c. Develop Exercise Rules	
d. Review Scenarios and General Discussion Topics	
3. Create Multimedia Presentation	
4. Create Invitations, Sign-in Sheets, Badges and Complete Room Logistics	
5. Conduct the Exercise – Schedule of Events	
6. Conduct Verbal Exercise Evaluation	
7. Conduct Debrief Meeting with Facilitators/Evaluators/Exercise Design Team	
8. Analyze Evaluator Forms, Participant Evaluation Forms, Verbal Exercise Evaluation, and Debrief Notes	
9. Draft an After Action Report	
10. Implement After Action Activities	

As part of the planning process, the exercise materials outline roles and responsibilities for the WARN Steering Committee, an Exercise Design Team and exercise Facilitator to manage the development of the tabletop exercise.

WARN Tabletop Exercise Scenarios

The exercise materials provide sample scenarios to help participants focus on a common event to test the objectives designated during development of the exercise. Sample scenarios are offered as templates that the Facilitator and Exercise Design Team can modify to help focus discussion on the designated objectives. There are three sample exercise scenarios focusing on three different events utilities in the United States are likely to encounter: a flood, earthquake, and hurricane. Each scenario includes a modifiable narrative describing the disaster and its effects on drinking water and wastewater utilities.

These three scenarios were chosen because virtually every utility throughout the United States is susceptible to at least one or more of these event types. Second, each of the scenarios provides different starting points for discussion. Activation of the WARN agreement may occur prior to a locally declared emergency and anytime a WARN member’s response capabilities are overwhelmed and they need help. The flood scenario encourages discussion on the minimum threshold for activating the WARN agreement. The hurricane scenario can be characterized as a “warning” or “notice” event and encourages discussion on pre-staging WARN Response Teams and preparing member utilities for possible deployment. In contrast, the earthquake scenario encourages discussion of emergencies that provide little or no warning.

The scenarios require attention from the Facilitator or Exercise Design Team to make them specific to the locations, counties, and cities that could be affected by the events. Research into similar events (either in recent or past history) can make the event more realistic to the participants. Additionally, water system or community details can enhance realism and the exercise materials encourage modification of the scenarios to address this need. The exercise

materials also encourage WARNs to develop additional scenarios (for example, an intentional contamination or ice storm scenario). The scenarios presented in the WARN exercise materials serve as a starting point from which to modify or develop additional scenarios.

WARN Tabletop Exercise Discussion Questions

Discussion questions designed to solicit dialogue on specific topics are provided as recommendations and the customization of these questions is critical to a successful exercise. The exercise materials encourage the Facilitator and Exercise Design Team to set aside time to review and evaluate the types of questions that need to be developed, based on the designated objectives. In order to address the growing number of WARNs, there are two sets of sample discussion questions based on whether the WARN program is still in its early developmental stages, or it is established and has been used to respond to past events.

The exercise materials provide an extensive list of sample questions to help focus the attendees on the process of activating and implementing their WARN agreement. The questions are divided among eight categories, including:

- Notification and Activation of the WARN Agreement
- Coordination with Response Partners
- Resource Mobilization and Operations
- Logistics
- Communications
- Finance
- Resource Demobilization
- Recovery

Conclusion

The “Water/Wastewater Agency Response Network Tabletop Exercise Facilitator Guide” and accompanying exercise materials will enable individual WARNs to become more resilient and better prepared for all types of hazards. By practicing the functionality and operations of activating a mutual aid/assistance agreement, WARN member utilities can respond more effectively and efficiently during an actual incident. This also allows WARNs to continually refine and enhance their operational protocols and agreements.

The exercise materials enable participating utilities and agencies to define their roles and responsibilities more precisely and realistically. They can also strengthen the water sector’s relationship with the emergency response community as the exercise materials enable WARN members to coordinate more effectively with state and local emergency management agencies, state regulatory agencies, federal agencies, and other stakeholders in water critical infrastructure restoration.

The end goal of this project is to have a WARN program in all 50 states, leading to a better prepared and more resilient water sector, while providing increased security to one of the United States’ critical infrastructure. EPA is fully committed to WARN and supports its development through extensive outreach, facilitation, and technical support.

References

NRF Resource Center. (2008). National Response Framework. U.S. Department of Homeland Security, Washington DC, United States. <http://www.fema.gov/emergency/nrf/>. Last Accessed 25 February 2008.

Homeland Security Presidential Directive 7, Critical Infrastructure Identification, Prioritization, and Protection. (2003). The White House, Washington DC, United States.

<http://www.whitehouse.gov/news/releases/2003/12/20031217-5.html>. Last Accessed 25 February 2008.

Emergency Response Tabletop Exercises for Drinking Water and Wastewater Systems CD. U.S. Environmental Protection Agency, Washington DC, United States. <http://cfpub.epa.gov/safewater/watersecurity/trainingcd.cfm>. Last Accessed on 25 February 2008.

Author Biography

John Whitler is a Threat Specialist with the U.S. Environmental Protection Agency, Office of Water, Office of Ground Water and Drinking Water, Water Security Division. John holds a B.S. from Indiana University in Public Affairs/Policy Studies/Environmental Management. John has worked on emergency response and recovery at EPA for the past three and one-half years and helped publish the “Emergency Response Tabletop Exercises for Drinking Water and Wastewater Systems CD-ROM.” John works on other tools, training, and outreach with the goal of helping the Water Sector to be better prepared to respond and return to normal operations more quickly. John is the Water Security Division's lead in the promotion of mutual aid and assistance agreements in the Water Sector and also works on other emergency response training. John has been recognized by EPA with a Bronze Model for Commendable Service for his work on water security. Additionally, John received the Administrator's Award for Excellence for his contributions to the Agency's efforts during Hurricanes Katrina and Rita. John also helped EPA to receive recognition by the International Association of Emergency Managers with his work on mutual aid—for which EPA and AWWA shared the Partners in Preparedness Award in 2006. John recently (March 2007) published an article in the AWWA Journal entitled, "Emergency Preparedness for Drinking Water and Wastewater Systems."