

ASCE | *The newspaper for members of the  
American Society of Civil Engineers*

# news

## Standards Committee's Training Programs to Boost Security of Water Utilities

**By Mark Fitzgerald**

The Environmental and Water Resources Institute's Water Infrastructure Security Enhancements Standards Committee, or wise committee, which also includes members of the American Water Works Association (AWWA) and the Water Environment Federation (WEF), recently finished developing three comprehensive training programs that are expected to enhance the physical security of the nation's water utilities. The programs represent the second phase of a water security initiative (organized in June 2002 by the Environmental and Water Resources Institute [EWRI] and funded with a grant from the U.S. Environmental Protection Agency [EPA]) aimed at bolstering the safety of water, wastewater, and storm-water systems. The first phase—outlining a consensus process for security standards and providing a foundation for the training programs—was completed last December with the release of three documents: “Interim Voluntary Guidelines for Security Guidance for Water Utilities,” “Interim Voluntary Guidelines for Security Guidance for Wastewater/Storm Water Utilities,” and “Interim Voluntary Guidelines for Designing an Online Contaminant Monitoring System” (crafted by respectively the AWWA, WEF, and ASCE).

“Our society depends on a safe and reliable water supply, not only for human consumption but also for other needs, such as industry, agriculture, and even fire protection,” said ASCE's executive director, Patrick J. Natale, P.E., F.ASCE, shortly after the documents had been released. “These new security guidelines will help water utilities take the necessary steps to ensure the safety and quality of our water supply for domestic and commercial use in light of the potential of both natural and man-made

disasters.” Intended for new and existing facilities of all sizes, the training programs offer operations personnel, design professionals, managers, and regulatory officials detailed instructions on how to implement measures designed to protect water utilities from terrorist attacks.

The training programs—Interim Voluntary Security Guidance for Water Utilities Training Module, developed by the AWWA, Interim Voluntary Security Guidance for Wastewater/Storm Water Utilities Training Module, developed by WEF, and Interim Voluntary Guidelines for Designing an Online Contaminant Monitoring System Training Module, developed by ASCE—come with guides for instructors, material designed for presentation via Microsoft PowerPoint, and quizzes and exams. Developed for public officials and operations and management personnel with varying levels of expertise, the training programs are both flexible and thorough.

“An Online Contaminant Monitoring System (OCMS) should be designed to detect contamination events and provide information on the location of the contaminants within the system,” says the literature accompanying the ASCE program. “The objectives of an OCMS are,” it says, “to provide an early reliable warning of a contamination event so that steps can be taken to reduce its effects by limiting exposure of the at-risk population; to indicate the location and travel of the contaminant in order to facilitate implementation of the appropriate responses; insofar as possible, to identify the contaminant and determine its concentration so that the most appropriate response can be mounted and to alert and inform the medical community about the potential need for treatment; to provide information on the ‘normal’ operating characteristics of the water supply or wastewater system; and to support or supplement the existing regulatory surveillance activities.”

According to recent statistics from the EPA, there are currently about 170,000 water systems in the United States, and they provide drinking water to more than 300 million people. “It’s not enough to think only about how to protect a facility after it’s constructed,” said J. Alan Roberson, P.E., the AWWA’s director of regulatory affairs, during a teleconference in December. “We need to integrate security into the design and structure of our water plants. We need to ask the right questions up front—to retrofit and develop facilities and distribution systems that will be secure now and in the future.”

According to the document released by the AWWA last December (“Interim Voluntary Guidelines for Security Guidance for Water Utilities”), upholding and protecting the public’s health and safety insofar as they depend on water quality and reliability loom large in many water utilities’ mission statements, goals, and priorities. That document points out that many utilities recognize the need to “provide high quality water in sufficient quantity to [their] customers; operate in a manner that protects against, detects, and responds to man-made threats and natural disasters from both inside and outside the utility; provide a safe work environment for employees and safe, reliable water delivery for the public; and identify and maintain assets that are critical to the

utility's ability to meet its mission.”

Furthermore, with more than 16,000 publicly owned water treatment plants in the United States reflecting a wide range of structures and modes of operation, there is good reason for the designers, owners, and operators of these facilities to pursue upgrades that improve efficiency and security and reduce vulnerabilities to malevolent acts.

“Wastewater and storm-water infrastructure, while possible targets of purposeful attack, also serve as a conduit for access to other targets,” says the literature accompanying the WEF training program. “Large-diameter gravity sanitary, storm, or combined sewers,” it says, “are often easily accessible via manholes, inlets, and overflow structures, and they can provide a means of undetected passage under the streets of a municipality to attack both ‘soft’ and ‘hardened’ targets. Large and small pipelines can also be made into weapons via the introduction of a highly flammable substance such as gasoline through a manhole or inlet, or even through a building drain or cleanout. Purposeful contamination of wastewater or storm water, as well as damage to, or destruction of, treatment or conveyance systems, can lead to widespread and long-term environmental damage, and severe public health impacts.”

Based in Alexandria, Virginia, WEF is an interdisciplinary technical and educational organization focused on preserving and enhancing the global water environment. The AWWA, headquartered in Denver, is an international scientific and educational society dedicated to improving the quality and supply of drinking water. ASCE is working with both of these organizations to refine and develop the December documents and the training materials, the goal being to build a consensus with regard to water security standards. Such standards will mark the third and final phase of the EWRI initiative and are to be promulgated late next year. Drawing on emerging technologies and methods and following accredited development processes from the American National Standards Institute, these standards are expected to represent the latest thinking among the nation's infrastructure security experts.