



# EPA Water Security & Resiliency Highlights

## Program Overview

Safe drinking water and properly treated wastewater are critical to human health, the environment and the economy. Protecting drinking water and wastewater utilities is key to maintaining not only the public health and environmental benefits of safe and clean drinking water, but also to maintaining other critical infrastructure sectors, which share interdependencies with the Water Sector.

The United States Environmental Protection Agency's (EPA) mission is to provide national leadership in developing and promoting security and resiliency programs that enhance the Water Sector's ability to prevent, detect, respond to and recover from all hazards.

EPA, in partnership with drinking water and wastewater utilities and their associations, has developed four goals that will drive development of EPA's security and resiliency program. These goals are:

Goal 1 – Sustain protection of public health and the environment

Goal 2 – Recognize and reduce risk

Goal 3 – Maintain a resilient infrastructure

Goal 4 – Increase communication, outreach and public confidence

This document highlights water security projects and partnerships managed or funded by EPA. For more information, visit <http://www.epa.gov/watersecurity>.

# Goal 1 Sustain Protection of Public Health & the Environment

**Water Security initiative (WSi):** The goal of WSi is to help drinking water utilities identify and respond to water quality problems, including contamination, in the distribution system. EPA is implementing WSi in three phases:

(1) Develop the conceptual design for a system that achieves timely detection of and response to contamination and other water quality incidents in drinking water distribution systems to mitigate public health and economic impacts. EPA completed this phase in 2006 with the design of a comprehensive water quality surveillance and response system;

(2) Demonstrate and evaluate water quality surveillance and response systems through pilots at drinking water utilities and municipalities. EPA completed this phase in 2013. Pilot systems were designed, deployed and evaluated in Cincinnati, San Francisco, New York City, Philadelphia and Dallas; and

(3) Develop practical guidance and outreach to promote voluntary national adoption of effective and sustainable water quality surveillance and response systems. This phase is currently underway. A number of interim guidance documents are currently available on EPA's web site. In addition, EPA expects to release the Water Quality Surveillance and Response System Deployment Tool in 2014. This tool will translate lessons learned from the demonstration pilots into a software application that will assist utilities with developing individualized water quality surveillance and response systems. <http://water.epa.gov/infrastructure/watersecurity/lawsregs/initiative.cfm>

**Water Laboratory Alliance (WLA):** Provides the Water Sector with an integrated nationwide network of laboratories with the analytical capability and capacity to respond to drinking water contamination events. Launched in September 2009, the WLA is composed of public health, environmental, and commercial laboratories. The WLA leverages existing laboratory network capability and infrastructure and is designed to fill gaps in national laboratory preparedness for water analyses. The foundation of WLA is the Water Laboratory Alliance Response Plan (WLA-RP). It establishes a comprehensive, national laboratory response approach to water contamination events including preparedness, response, remediation and recovery. The WLA-RP provides laboratories with a structure for a systematic, coordinated response to a water contamination incident that can be used in conjunction with existing Incident Command System (ICS) structure and procedure. Additional activities of WLA include laboratory response exercises and the development of chemical and biological methods. WLA membership has multiple benefits, including: improved laboratory emergency preparedness and response capabilities; improved communications with peer laboratories to help address emerging analytical, security, or operational challenges; access to validated methods for unregulated contaminants of interest to the Water Sector and opportunities for water security-related training. <http://water.epa.gov/infrastructure/watersecurity/wla/>

**EPA/U.S. Department of Homeland Security (DHS) Coordination:** EPA coordinates with DHS on critical infrastructure/key resource activities to ensure a consistent approach to security across the Water Sector. EPA activities include participating in Water Government Coordinating Council (GCC) and Critical Infrastructure Partnership Advisory Council (CIPAC) working groups.

**Coordination with Emergency Management Agencies:** EPA has

recently developed three documents to help further the coordination and integration of the water sector and emergency management community.

Coordination of the Water Sector and Emergency Services Sector is an eight-page document that discusses the value of water to the emergency management community, and provides recommendations on how utilities can work together with their local emergency management agency. The document references examples of successful coordination between agencies for activities such as funding, training, exercises and responding to incidents. Bridging the Gap is a similar document, but focuses on the relationships between state drinking water primacy agencies and state emergency management agencies. It includes numerous examples from states where these agencies are working together to support water sector preparedness and response activities. The State Drinking Water Program All-Hazards Checklist lists best practices that should be considered before, during and after an emergency. It also provides contact information for four State Drinking Water Program Directors who have offered to serve as mentors to other states.

<http://water.epa.gov/infrastructure/watersecurity/emerplan/index.cfm#pp9>



# Goal 2 Recognize & Reduce Risk

**Risk Assessment Methodologies:** Drinking water and wastewater utilities are encouraged to conduct or update risk assessments and to prepare/ revise Emergency Response Plans (ERP) on a regular basis. EPA's Vulnerability Self-Assessment Tool (VSAT) provides Water Sector utility owners and operators with qualified and quantified risk assessment processes to measure risk at the asset and system level; prioritize utility investments and efforts to mitigate risk and track utility risk management performance and investment over time.

VSAT uses consistent vulnerability, consequence, and threat information within the Risk Analysis and Management for Critical Asset Protection (RAMCAP). VSAT aligns with the features and elements of risk assessments as identified in the National Infrastructure Protection Plan (NIPP). The VSAT software tool is currently available for download. EPA is currently updating VSAT to provide improved functionality and ease of use for small systems, allow quantitative (monetized) risk assessments, and to be consistent with the AWWA

J100-10 Standard for Risk and Resilience Management of Water and Wastewater Systems. This updated version of VSAT will be available in 2014. <http://water.epa.gov/infrastructure/watersecurity/techtools/vsat.cfm>

**Consequence Analysis:** EPA-supported efforts on consequence analysis include coordination with the Water Sector and experts in risk assessments, utility operations, public health and economics to analyze the potential health and economic consequences of various contamination and damage scenarios.

EPA has developed version 2.0 of the Water Health and Economic Analysis Tool (WHEAT). WHEAT is a generalized (threat-neutral) consequence analysis tool, designed to assist drinking water and wastewater utility owners and operators in quantifying public health consequences, utility-level financial consequences, direct and indirect regional economic consequences and the downstream impacts of an adverse event that pose risks to the water sector. WHEAT analyzes two different event scenarios—release of hazardous gas and loss of operating assets—and provides information that can be used by utilities as part of a comprehensive risk assessment.

EPA is currently finalizing version 3.0 which includes contamination scenarios. The WHEAT tool is available for download at: <http://water.epa.gov/infrastructure/watersecurity/techtools/wheat.cfm>

## Goal 3 Maintain a Resilient Infrastructure

**Water Contaminant Information Tool (WCIT):** This free, secure online tool was created to support the Water Sector in preparedness, detection, response and remediation. WCIT contains full profiles for 114 contaminants containing medical information, early warning indicators, drinking water treatment and several other categories of valuable information. For more than 700 additional substances, WCIT includes details about both field and laboratory methods with descriptions, uses and, when available, links to the full methods. EPA will continue to enhance the tool and update its information to reflect the most current data available to the Water Sector.

<http://water.epa.gov/scitech/datait/databases/wcit/index.cfm>

**Water/Wastewater Agency Response Networks (WARNs):** Intrastate mutual aid and assistance agreements, available to both private and public Water Sector utilities, facilitate the sharing of resources, personnel and equipment during events that disrupt drinking water and wastewater services. WARNs have been established in 49 states and the National Capital Region. EPA continues to support WARNs with tabletop exercises, attracting new members and sponsoring annual meetings of WARN chairs. <http://www.epa.gov/mutualaid>



**Emergency Response Exercises/Training:** EPA, working with its partners in the States and national Water Sector associations, has conducted exercises and provided extensive training programs to improve coordination and communication between emergency response partners at the local, state, and federal levels. For example, EPA has sponsored state-wide emergency response exercises that examine Water Sector-specific issues. Recent exercises were completed in North Carolina and Alabama. In addition, EPA provides training on the Incident Command System (ICS) and National Incident Management System (NIMS), which are national standards used by the Water Sector and its first response partners.

**Tabletop Exercise (TTX) Tool for Water Systems:** The TTX Tool is designed to provide the Water Sector with the necessary resources to plan, conduct, and evaluate tabletop exercises. Tabletop exercises allow water systems to practice, test, and improve ERPs and procedures. The TTX Tool simplifies the process of planning and conducting tabletop exercises, and provides resources that aid in the development of customized scenario-driven, discussion-based tabletop exercises.

<http://water.epa.gov/infrastructure/watersecurity/techtools/ttx.cfm>

**Community-Based Water Resiliency (CBWR) Tool:** The CBWR Tool aims to enhance the resiliency of drinking water and wastewater utilities and the communities they serve in the face of water service interruptions. Users of the CBWR Tool learn how to integrate water utilities into community preparedness efforts and identify water interdependencies in the community. The main feature of the CBWR Tool is a self-assessment that assesses users' level of preparedness and generates a summary report that includes specific recommendations, tools, and resources to enhance their organizations' water resiliency. There are over 400 free tools and resources in the CBWR toolbox for a user to access. The CBWR Tool also includes the Water Resiliency Action Plan (WRAP) kit, which provides a step by step guide for users to host an emergency water discussion in their community, with critical stakeholders. EPA has conducted several trainings throughout the country on how use the CBWR tool and assisted three communities in conducting water resiliency discussions. In 2014, EPA is continuing to conduct tool training and work on improvement planning across the country.

<http://www.epa.gov/communitywaterresiliency>

**Key Features of an Active and Effective Protective Program:** The Key Features provide drinking water and wastewater utilities with the elements of a protective program and address physical, cyber and human aspects of prevention, detection, mitigation, response and recovery. The Key Features help utilities protect against a range of threats, including natural disasters, aging infrastructure, cyber intrusions and man-made disasters. <http://water.epa.gov/infrastructure/watersecurity/features/index.cfm>

**Federal Disaster Funding:** Since its release in 2012, EPA's web-based tool called Federal Funding for Utilities – Water/Wastewater – in National Disasters (Fed FUNDS) has been used extensively by the water sector. Fed FUNDS provides tailored information about funding from FEMA, EPA, USDA, HUD, and SBA to help water and wastewater utilities get better access to federal disaster and

mitigation funding. Fed FUNDS includes funding tips, funding mentors and examples of successful utility applications. To prepare for hurricane season, EPA conducted five Fed FUNDS workshops throughout the East Coast for drinking water and wastewater utility managers, operators and financial staff. After Hurricane Sandy, Fed FUNDS was widely distributed to the water sector. EPA funding experts participated in sessions in New York and New Jersey to help water/wastewater utilities better understand and apply for possible funding opportunities. Through the close multi-agency effort to develop Fed FUNDS, EPA was able to work effectively with FEMA and HUD on issues of coordination and eligibility for federal funding efforts for the water sector. <http://www.epa.gov/fedfunds>

**Federal Disaster Support:** EPA provides Federal disaster support under the National Response Framework (NRF) as a support agency to the U.S. Army Corps of Engineers (USACE) under Emergency Support Function (ESF) #3, Public Works and Engineering. Under ESF #3, EPA provides technical assistance to USACE in assessing the operating status of water and wastewater systems. EPA also offers assistance during hazardous material incidents involving contaminated water and wastewater systems.

Similar to the NRF, EPA supports the National Disaster Recovery Framework (NDRF), which coordinates recovery efforts at all levels of government and private sector partners. Within the NDRF, EPA is identified as a support agency under the Infrastructure Systems Recovery Support Function. EPA has participated in several recent activations of the NDRF including the drought in the Midwest, Hurricane Isaac in Mississippi, Hurricane Sandy in New York and New Jersey and the flooding in Colorado.

**Decontamination Strategy and Technologies:** The Water Sector Coordinating Council and the GCC, through the CIPAC Working Group developed a decontamination strategy to assist the Water Sector in establishing priorities for decontamination and recovery from water incidents. The strategy included 16 priorities and 35 recommendations related to the type of system (e.g., drinking water, wastewater), type of contaminant (e.g., chemical, biological, radiological), type of media affected (e.g., water, water infrastructure, decontamination equipment, household plumbing), type of incident (e.g., natural or man-made, accidental or intentional) and extent of contamination (e.g., concentrations, spatial and temporal variations).

In 2012, EPA released the document entitled, “Containment and Disposal of Large Amounts of Contaminated Water: A Support Guide for Water Utilities” (also known as the ‘decision support guide’). Since the release of the decision support guide for water utilities, EPA continues to implement the decontamination strategy for the Water Sector. In 2013, EPA conducted outreach on the decision support guide by providing webinars to help inform and train water utilities on the containment and disposal of large amounts of contaminated water from a contamination incident. EPA also launched the decontamination website featuring key information on decontamination as part of EPA’s mission, Water Sector decontamination priorities, decontamination roles and responsibilities of EPA program offices, guidance documents and laboratory resources. EPA is currently addressing additional recommendations from the decontamination strategy that will help utilities become more prepared to respond and recover from a contamination event. <http://water.epa.gov/infrastructure/watersecurity/emmerplan/>



**All-Hazards Consequence Management Planning Document (All-Hazard CMP):** The All-Hazard CMP for the Water Sector, was prepared by the Emergency Response CIPAC Working Group, and was finalized in November 2009. It includes customizable checklists of preparedness, response, and recovery actions that will improve resiliency, incident-specific flow charts and checklists, and information on how NIMS and ICS are used for preparedness planning, and implemented during response and recovery.

**Weather & Hydrologic Forecasting for Water Utility Incident Preparedness and Response:** This document describes and provides links to all-hazards and event-specific resources that are instrumental for both maintaining seasonal awareness and monitoring active hazardous weather. It also discusses the value of water utilities and their response partners building a relationship with their local NOAA Weather Forecasting Office to promote resilience at a local level.

<http://water.epa.gov/infrastructure/watersecurity/emmerplan/upload/epa817f13005.pdf>

## Goal 4 Increase Communication Outreach & Public Confidence

**Water and Energy Nexus in Disaster:** EPA has hosted several Water and Energy Nexus in Disasters workshops to help increase coordination and communication between water, electric, and gas utilities, and provide information on how drinking water and wastewater utilities can increase their resiliency to power outages. In 2014 EPA will share key findings from this effort via webinar series and a best practices summary.

**Water Information Sharing and Analysis Center (WaterISAC):** This tool is a mechanism for all-hazards security information within the Water Sector. WaterISAC facilitates sharing of information about physical and cyber threats, vulnerabilities, incidents, potential protective measures and effective security practices. WaterISAC is a secure, internet-based, rapid notification system and information resource for gathering, evaluating, conveying, and sharing security-related information on drinking water and wastewater systems; communications are geared to utility executives, managers, operators and security officers. <http://www.waterisac.org>

For more information on any of the projects listed, please visit EPA’s water security website at <http://www.epa.gov/watersecurity> or send an email to [WSD-Outreach@epa.gov](mailto:WSD-Outreach@epa.gov).