

EVANSTON WATER EMERGENCY ROUNDTABLE
September 2, 2009

SUMMARY REPORT

INTRODUCTION

The Evanston Water Emergency Roundtable was held on September 2, 2009, in Evanston, Illinois, as a collaborative effort between the Evanston Water Utility and the United States Environmental Protection Agency (U.S. EPA) Region 5. A short term water emergency in January, 2009, caused by frazil ice build-up on the Evanston water intakes (located in Lake Michigan), resulted in heightened awareness of how critical reliable and resilient water service is to the communities served by the Evanston Water Utility.

The Roundtable was designed to promote a better understanding of public-private sector interdependencies, foster a greater understanding of water infrastructure and the potential impacts from a loss of service, and identify actions and resources needed to respond to and recover from a water emergency. Participants in the invitation-only meeting had the opportunity to tour the Evanston Water Utility prior to the start of the meeting, to help set the stage for presentations on the drinking water and waste water infrastructure serving Evanston and its outlying customers.

Customers of the Evanston Water Utility were asked in advance to come prepared to talk about their water needs and their emergency response plans for a water emergency, in the context of a scenario in which the Evanston Water Utility is unable to treat or pump water for at least a week. Customers included six water utilities that receive water from Evanston (Skokie, and the Northwest Water Commission which in turn sells water to Arlington Heights, Buffalo Grove, Palatine, and Wheeling) and retail customers within Evanston. Similarly, the public sector was asked to describe their roles and capabilities in a water emergency response. During discussions, participants identified multiple action items that could help increase preparedness and community resiliency.

The first part of this report summarizes the information shared by the public and private sector participants (Information Sharing), and the second part of the report lists the possible follow-up action items (Follow-up Options for Consideration) they identified.

INFORMATION SHARING

The morning session of the Roundtable was devoted to presentations on the operations of the Evanston Water Utility and the Metropolitan Water Reclamation District (MWRD), followed by an introduction to the functions and services of the Department of Homeland Security Protective Security Advisor program, and finally a short presentation on preparedness planning for pandemic flu.

The afternoon session of the Roundtable focused on two major topics: the level of preparedness of major water users (both water systems that purchase water from the Evanston Water Utility, and major water customers within Evanston), and the roles that various agencies and organizations could play, in the event of a water service interruption that lasts at least a week.

Major Water Users within the City of Evanston

Major water users within the City of Evanston that were represented at the Roundtable included two hospitals, a major university, a large retirement community/nursing home complex, and a large condominium association.

The level of preparedness ranged from having no water emergency plan at all, to having an extensive plan that would allow the facility to operate with little to no need for emergency response assistance through a one-week service interruption.

One of the two Evanston hospitals estimated that without a source of emergency water for general operations, they would be able to stay open for only 4-6 hours. Hospitals have lower and upper temperature limits mandated by regulatory agencies for patient, staff, and visitor safety in order to stay open, so having access to large quantities of water for heating and cooling is essential. Hospitals in general do know how much water is used for heating and cooling, because that water usage is metered; the water is then chemically treated, rendering it unsuitable for domestic purposes. However, hospitals in general do not have good estimates of how much water is used for domestic purposes within their facilities. Consequently, it is difficult for them to estimate how much water they need in order to keep essential domestic functions operating, and how much their water need would be reduced by shutting down non-essential functions during a water service emergency. The American Water Works Association (AWWA) and Centers for Disease Control and Prevention (CDC) are developing a guide for conducting a water audit within a hospital, and that tool should be helpful to all hospitals across the country that have the same need to understand and quantify their internal water usage.

Both hospitals have investigated the possibility of getting assistance from the Evanston Fire Department and neighboring fire departments, to obtain water through fire hose connections from a neighboring municipality's fire hydrants directly to their hospital facility.

The university has an alternate water resource plan already developed, which includes obtaining water from their cooling water plant, i.e., using once-through condenser cooling water, to provide water for boilers during a declared emergency. In setting priorities for limited water availability, fire protection and preserving the functionality and indoor environment of their research facilities and student residences takes precedence over administration and academic facilities.

Water Systems that obtain water from the City of Evanston

The Evanston Water Utility sells water directly to the Village of Skokie, and serves four other communities (Arlington Heights, Buffalo Grove, Palatine, and Wheeling) through wholesale water sold to the Northwest Water Commission.

Discussions with the five systems that use water from the Evanston Water Utility focused on several general characteristics:

1. amount of water stored in water towers or water stand-pipes
2. capacity and operability of stand-by emergency back-up wells
3. capacity of inter-connections with other public water supplies
4. the likelihood that various emergency water supplies, coupled with municipality-wide conservation, would provide sufficient water to sustain basic operations within a community

Storage. The Northwest Water Commission has one day's storage, its four customers are required by contract to have one day's storage, and Skokie also has one day's storage. The scenario for the Roundtable was intentionally defined as a service outage that lasted at least a week so that stored water, even with extreme conservation, would not be sufficient to supply a community.

Stand-by Emergency Back-Up Wells. Once stored water is exhausted, a community needs to have a water alternative. All four systems served by the Northwest Water Commission have stand-by emergency back-up wells. These wells, for the most part, were constructed before the communities opted, in 1985, to purchase Lake Michigan water. All the communities have grown since they switched to Lake Michigan water as a source, and for 3 of the 4, the current well capacities alone are no longer sufficient to supply the community's average daily use.

Wells are routinely pumped once per month, but only for a very short period of time, so they have generally not been operated at full capacity for any prolonged period of time. Aquifer productivity has also not been evaluated. It is therefore uncertain to what extent the theoretical well capacities could be counted on in an emergency.

Inter-connections with Other Water Utilities. Two of the three communities that have insufficient well capacity to meet average daily usage have permanent emergency inter-connections with other water utilities. The third community that does not have sufficient

well capacity to meet average daily usage does not have any permanent emergency inter-connections or any formal agreements in place for temporary inter-connections.

Skokie is in a different situation because that community has no emergency back-up wells. In the event of an Evanston Water Utility failure, it would depend entirely on three emergency inter-connections with neighboring water utilities. The total capacity of those connections is 24% less than the average daily use for the community.

Evanston has the least amount of emergency water sources. It does not have wells, and has only three small inter-connections (dating back to the 1890's) with Wilmette which could provide only about 33% of Evanston's average daily use. A larger inter-connection with Wilmette which could provide all of the water needed by Evanston and Skokie has been designed, but is on hold due to lack of available funding.

Local Authorities to curtail water service. In the context of uncertainties related to emergency well operations, limitations on emergency inter-connections with neighboring water utilities, and other factors that could affect water availability if Evanston water service were interrupted, participants were not all convinced that they could get the cooperation necessary to effect needed water use reductions. That uncertainty led to a discussion about the need for utilities to determine what authorities exist within their own municipalities to compel reduced water use, and if necessary the shutting down of certain non-critical operations or businesses within their communities in order to preserve essential services for critical operations (such as hospitals), and for fire fighting.

Irrespective of authorities, the group agreed that discussions about water emergency preparedness and response with major water users would be beneficial, because cooperation is more likely in the event of an emergency if major users are already aware of the contingency plans that may need to be put into effect.

Emergency Response

The scenario for this Roundtable assumed that the Evanston Water Utility is unable to pump or treat water for at least a week. A common instinctive public response to a water outage is to turn to the Water Utility for emergency water. However, in the event of a problem at a water plant, the utility's first responsibility is to correct the problem; the provision of emergency water and other emergency functions generally falls to other organizations and agencies. The short verbal presentations and discussion in this section of the Roundtable were intended to clarify the roles, responsibilities, and capabilities of various groups that would participate in the emergency response.

Fire Department: The Evanston Fire Department has a contingency plan for fire suppression. Their resources include tenders (vehicles that can carry large quantities of water brought in from other locations), and they are a member of the Mutual Aid Box Alarm System (MABAS), which is a mutual aid system among fire departments in Illinois that facilitates the sharing of equipment, manpower, and other resources during

fire emergencies. The Fire Department also works with the Community Emergency Response Team (CERT) which is a group of volunteers that provides assistance during emergency situations. Some Fire Departments also have large blue fire hoses that can be used as temporary water mains in the event of an emergency. When the local Emergency Operations Center (EOC) is activated, the Fire Chief is usually in command, but for water emergencies, the Water Superintendent may be in command.

The Fire Departments of several communities that depend on Evanston water were represented at the Roundtable. One common theme that emerged was that Fire Departments have developed emergency options for a water outage, but some of these are not formalized in written Standard Operating Procedures (SOPs) or Memoranda of Agreement (MOAs). To date, the stability and expertise of the workforce has not created an urgent need for formal written documents. MABAS agreements already in place may already cover some of the water outage response procedures.

Police Department: Police Departments help to maintain order, manage traffic, and maintain communications with other agencies. Managing traffic during an emergency would include re-routing traffic around roads that are closed because fire hoses are deployed across those roads, and keeping selected roads clear of non-emergency traffic so that emergency water supplies and repair supplies can get to their intended destinations. Maintaining order in an emergency could include providing physical security, such as guarding water tankers, and providing additional security for critical infrastructure (e.g., hospitals) that have a source of water.

Evanston Ombudsman for Senior Care: The Ombudsman's office encourages and assists in the development of emergency response plans for long term care facilities and senior housing facilities. It also assists with communications between emergency response agencies and these facilities during emergency situations, assists with evacuations, and provides outreach to other social service agencies to notify vulnerable populations of emergencies.

Evanston Public Communications Officer: The public communications officer is responsible for getting emergency messages out to the community and to the media. There was substantial discussion about how to coordinate messages, so that the public in all the affected communities would get consistent messages, both through municipal communications channels and through private channels (e.g., messages sent to students at an educational institution.) Part of the objective of consistent messages is to reduce the concerns that can be generated by different messages, and also to reduce the number of phone calls that need to be fielded by the utility and by emergency response agencies. Further discussions focused on the need to have pre-scripted messages for various kinds of emergency situations, and to have them translated ahead of time into the languages used by residents of various communities.

Evanston Office of Emergency Management and Homeland Security: The primary functions of the Emergency Management Coordinator are to coordinate local resources during natural or man-made emergencies and disasters, maintain and update the City's

Emergency Operations Plan (EOP), monitor homeland security concerns, and manage the Operational Security Support Group. The position also works with the Chief Elected Official during emergencies and disaster declarations; updates emergency contact listings; develops a municipal continuity of government plan (COG); and coordinates activities of the Citizens Corps Volunteers that include the Community Emergency Response Team (CERT), and the Medical Reserve Corps (MRC) volunteers who assist during a health related emergency. The Emergency Management Coordinator maintains the City's Emergency Operations Center in a state of readiness and is also the liaison between county, state, and federal agencies for mitigation, preparedness, response and recovery.

Cook County Emergency Management Agency (Cook County EMA): They coordinate with the Illinois Emergency Management Agency (IEMA) to provide support, resources (functional assets such as pumps, heavy equipment, Unified Command mobile van, etc.), assist with disaster declarations, assist with finding funding, help identify private sector resources (such as sources of tankers that can transport potable water), and work with other collar counties to locate additional resources. Cook County EMA is not a primary source of resources – they primarily serve to coordinate efforts and locate resources that may be available to purchase, or rent, or hire.

Illinois Environmental Protection Agency (IEPA): IEPA provides several kinds of technical assistance including construction planning assistance, rehabilitation activity planning assistance, and sampling guidance and sample bottles. IEPA also works with IEMA, who in turn works with other state agencies to obtain additional assistance. For example, the Illinois Department of Public Health can help locate bulk drinking water tankers.

IEPA does not have funding to provide financial assistance for repair or reconstruction, to hire contractors, or to supply or buy equipment.

IEPA noted that a water utility has to have an IEPA permit prior to any alterations to a water system, even in an emergency situation. In an emergency, a permit can be issued verbally, with hard copy paperwork to follow. Utilities should contact an IEPA regional engineer for assistance in getting appropriate permits.

Illinois Water and Wastewater Agency Response Network (ILWARN): This is an organization of utilities helping utilities, and is not a governmental organization. Both public and private water utilities are eligible to join the organization, whose mutual aid procedures are implemented through signed agreements among the participating utilities. No disaster declaration is needed to request or provide assistance. Participants can request help in the form of personnel and/or equipment.

FOLLOW-UP OPTIONS FOR CONSIDERATION

Participants in the roundtable identified multiple follow-up actions that have the potential to enhance community resiliency and help protect public health and safety, in the event of a failure of the primary water supply. The follow-up actions are listed below, grouped into general categories. Some apply primarily to purchasing water systems, some apply primarily to various organizations and agencies involved in emergency response, and some apply primarily to customers of individual water systems. They are listed here as options for further consideration, and possible action, by various parties. The list represents major preparedness points of discussion that came up during the Roundtable.

Several ideas that were not directly related to the scenario being discussed, i.e., a failure of the Evanston Water Utility, are listed in a Miscellaneous category because they are nonetheless valuable for overall planning.

Roundtable participants, and others, should consider these options in the context of their own circumstances and priorities.

- 1) Large water users (e.g. hospitals, schools, residential facilities): Consider performing a water audit or use other means (such as installing temporary internal water meters) to track how much water is used in what locations/buildings, and for what purposes, to help develop a plan for severe water conservation in the event of a water supply emergency.
- 2) Water utilities: Develop letters of understanding with suppliers of emergency parts, chemical supplies, and emergency repairs.
- 3) Fire Departments: Develop and/or memorialize Standard Operating Procedures for emergency water practices, such as direct fire-hose hook-ups from neighboring municipal fire hydrants to critical facilities such as hospitals.
- 4) Fire Departments: Quantify how much water could be provided to critical facilities, and at what pressure, through direct fire hose hook-ups, compared with a facility's critical water needs, and document that capability so that critical facilities know how much water they could expect to get.
- 5) Fire Departments: Document which roads would need to be closed to traffic because of emergency fire-hose hook-ups to critical facilities, and share that information with the local Police Department.
- 6) Evanston Police Department: Develop and document a general traffic control plan that accounts for major anticipated road closures or limited access due to priorities for transportation of emergency water, supplies to repair the Evanston water plant and the presence of emergency water supply fire hoses (e.g. to hospitals) crossing roadways.

- 7) Police Departments: Prepare a plan to deal with the rush/traffic to stores for water purchases as well as have an escort priority plan for water truck deliveries, and a security plan for protecting hospitals.
- 8) Fire and Police Departments: Help educate the community on emergency water preparedness and conservation during school visits, and provide information available through www.Ready.gov and www.Ready.Illinois.gov.
- 9) Evanston Water Utility and Illinois EPA: Provide the protocol necessary for sanitizing (disinfecting and flushing) Fire Department tenders, hoses, and trucks, prior to using them for drinking water distribution, and provide that protocol to local Fire Departments.
- 10) Wilmette Fire Department and Evanston Hospital: Develop a letter of understanding between Wilmette and Evanston Hospital regarding providing emergency water via Fire Department hoses across municipal lines. Check that the hospital has appropriate connections so that fire hoses could feed the hospital directly.
- 11) Wilmette and Evanston Water Utilities: Consider building an emergency hard connection between the Wilmette and Evanston distribution systems, to create a dedicated emergency water line to serve Evanston Hospital.
- 12) Each Community: Formalize a priority list of facilities to receive limited amounts of water available, and a list of facilities whose water service might need to be shut off completely in the event of a water supply emergency.
- 13) Each Community: Check whether or not it has the legal authority to shut off water service to selected facilities during an emergency. If it does, discuss the plan ahead of time with water users. If it does not, consider establishing such authority.
- 14) Each Community: Investigate the availability and authority to use public and private swimming pools as alternate sources of grey water for boilers, cooling towers, and other grey water uses.
- 15) Each Community: Encourage faith-based communities to create Emergency Operations Plans for their own facilities.
- 16) Evanston and Communities that purchase water directly or indirectly from Evanston: Develop pre-scripted press releases and public service announcements to help provide a consistent message across connected communities. These messages should be coordinated ahead of time with large water users to help ensure a consistent message within a community, to help reduce the number of

- phone calls from concerned citizens, especially to the water utility that is focused on solving the water emergency problem.
- 17) Ombudsman for Senior Care: Add information about the local special needs populations to emergency plans.
 - 18) Ombudsman for Senior Care and the equivalent organization in other communities: Develop a written plan for contacting hard to reach populations, (such as the homebound, the visually or hearing impaired) via door-to-door notification, faith groups, neighbors, cable TV)
 - 19) Ombudsman for Senior Care and the equivalent organization in other communities: Advise and assist long term care and health care facilities to have up to date evacuation plans and a Memorandum of Understanding with other facilities to take relocated patients/residents.
 - 20) Evanston Community Information Coordinator: Arrange to have pre-scripted emergency messages translated into Spanish, and other major languages represented in Evanston and inter-connected communities.
 - 21) Evanston Community Information Coordinator: Develop pre-scripted public messages to notify water users and the public who is the incident commander for the emergency operations center in the event of a water emergency, and where to call for information.
 - 22) Evanston Community Information Coordinator: Check with the City Clerk for a list of condo associations and have a shorter targeted meeting with these groups regarding water emergency planning.
 - 23) Community Information Coordinators: Collectively develop pre-scripted explanations to customers about water quality issues caused by emergency water operations, e.g., commingling surface and well waters, pressure differentials and velocity changes which can cause turbidity and cloudiness, and how that may or may not be related to water safety.
 - 24) Local EMA's and water utilities: Consult with their major users (e.g., schools and health care facilities) to document their minimum water needs (e.g. for heating, cooling, sanitation, and human consumption).
 - 25) Local EMA's: Disseminate information on municipal water emergency plans and the need for individual multi-unit buildings to have a plan to conserve water and to consider emergency bottled water contracts.
 - 26) Each municipality and Water Utility: Meet with major users to discuss what they should do in the event of severe (e.g. > 25%) water service reduction.

- 27) Evanston: Continue to investigate enlarged/enhanced inter-connection with the Wilmette Water Utility.
- 28) Water Utilities with active emergency back-up wells: Determine well operability, and water quality based on local and state requirements (e.g., state monitoring requirements, contractual obligations, etc.)
- 29) Water Utilities with active emergency back-up wells: If the utility intends to rely on wells as an emergency back-up water source, consider consulting with a well driller to evaluate the state of repair of pumps and electrical systems, and the system's reliable pumping capacity.
- 30) Water Utilities: Consider joining ILWARN and/or other mutual aid organization(s).
- 31) Skokie Fire Department, Skokie Police Department, and Metropolitan Water Reclamation District (MWRD): Have a meeting to improve coordination between MWRD and the Skokie Fire and Police Departments. (**Completed** October 20, 2009)
- 32) Illinois EPA and Evanston Water Utility: Document various organizations' responsibility and/or capability for bringing in potable water (Cook County EMA, National Guard, local private companies)
- 33) DHS: Evaluate capacity of major bottled water contractor(s) to provide emergency water.
- 34) U.S. EPA Headquarters: Distribute a list of available EPA publications that are relevant to water supply emergencies, by sending the list to all Roundtable participants via email. Publications include information from Seattle - King County on templates and procedures for emergency distribution of water, Law Enforcement DW/WWTP training video w/manual, and others.
- 35) Hospitals: Need to verify emergency water connections with their fire departments to ensure that there is hose thread compatibility in order to provide emergency water to the facility.

MISCELLANEOUS (information/discussion topics that need to be memorialized, but are not directly related to preparedness for the Evanston water emergency scenario):

- 36) IEPA is notifying affected water utilities about revised testing requirements for active emergency back-up wells.

- 37) ILWARN: Look into establishing chlorine transportation protocols between water utilities.
- 38) During an emergency, the Evanston Police Department and the National Guard would need identification for emergency water trucks and deliveries of chemicals and equipment to the Evanston Water Utility, so that they can have both priority and protection.
- 39) Determine utility (gas, electric, etc.) contact person for emergency issues, i.e., if there is a water problem, notify gas and electric utilities, and vice-versa. (Evanston updates contact lists each year in mid-June and mid-January)
- 40) Determine extra manpower needed for emergency operations (Community Emergency Response Team or its equivalent) and determine volunteer availability and tasks they can accomplish.
- 41) Need to identify sources of back-up power generators which are sized appropriately for the facility/facilities that might need them.

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