

White Paper on Critical Facilities



The Executive Perspective

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Abstract

A lack of all-hazards preparedness has led non-federal healthcare providers in general and the hospital industry in particular, to be the target of mounting media criticism, liabilities and reduced financial performance during water emergencies. This was evidenced and painfully acute during the 2004 and 2005 hurricane seasons. The recent settlement of \$25,000,000.00 by a major healthcare organization for “failing to adequately prepare for a foreseeable emergency” has awakened the industry to the very real liability of not adequately being ready for likely emergencies. The provision of clean water during not only major natural disasters, but man-made disasters and localized emergencies like water main breaks, boil-water bans and low pressure situations require hospitals to have reliable cost-effective water emergency solutions in place.

This document has been developed for all executives, as all critical infrastructures can be faced with emergencies where water is compromised or unavailable. Whenever an emergency impacts the ability to have clean water for drinking, food preparation, sanitation, decontamination, bathing or a myriad of other uses, facilities are faced with the painful choices of going on diversion, evacuation and/or closure. New technology to purify available non-potable water can keep a facility operational through extended water bans for weeks or longer. Through a discussion, return on investment analysis and actual deployment references, the reader will be introduced to this new and proven technology that will ensure cost effective continued operations.

Operational Realities

Maintaining the bottom line, accreditation, long-term financial health, community needs and public relations demands that hospitals be prepared in these four essential emergency preparedness elements:

1. Mitigation
2. Preparedness
3. Response
4. Recovery

It is critical that healthcare executives, governing bodies and medical staff have a comprehensive all-hazards plan addressing these four elements to respond to any type of incident in their community.

Clearly, water emergencies need to be considered a primary concern because of the extensive operational, financial and legal exposures. Without the ability to have clean water it may become necessary to cancel elective surgeries, elective procedures, discharge patients, go on diversion, evacuate and/or close until clean water is available.

Further, the failure to be prepared with adequate supplies of water has been repeatedly shown to lead to life and death decisions for individual facilities and their organizations during natural and manmade disasters.

Central to successful emergency hospital operations are your employees and their ability to function under extreme and stressful conditions. Imagine your staff working 18 hours and not being able to have a cup of coffee or being able to provide a cold drink to their patients. In addition, these personal realities also need to be considered:

- maintaining the standard of care
- the need for unavailable additional staff
- reduced normally available resources
- concern for families at home

There are also non-incident impacts on financial performance that must be considered in water emergency planning. As current requirements list water availability for 4 days without re-supply for sustainability, most facilities rely on bottle water contracts. This is an expensive solution due to:

- the cost of the water itself
- delivery surcharges during emergencies
- replacing the stock every 6 months due to plastic jugs degenerating
- large storage space requirements
- inability of water contractors to deliver upon contracts
- inability to use bottled water for ice production, food preparation, sanitation, bathing, dish washing, laundering, etc.
- leaking plastic jugs

Any solution to a water related emergency needs to rely on portability, flexibility and ease of use for a successful outcome, especially in the event that the facility would need to be evacuated or if there is a requirement for alternate care sites. During nearly any imagined scenario, non-potable water such as compromised water mains, wells, pools, shuttled water from fire departments, ponds, detention areas, etc, can be purified to supply all the water a facility needs to maintain operations. Also during the recovery process, readily available clean water from purification technology enables a facility to begin normal operations more quickly, impacting the profitability of the organization as well as reduced staff and patient stress and a positive community perspective of the facility.

The Technology

Water purification technology developed to address medical requirements has been successfully relied upon by hundreds of hospitals across the country, as well as scores of first responders, government emergency management agencies, disaster medical assistance teams and the military. Systems are in place in virtually every country on earth, nearly every state in the US, and even the US Capitol Building through the U.S. Secret Service.

With successful deployments ranging from Hurricane Katrina to local water main breaks to tsunami and Haiti earthquake emergency field hospitals, the technology exceeds bottled water benefits by improved flexibility to meet *all* the needs for clean water - not just drinking water - and at significantly lower costs.

The water purification and distribution solutions create microbiologically safe water during emergency operations. In addition, they are chemical free and durable enough to meet military specifications. All First Water systems possess Certificates of Analysis attesting to their ability to meet U.S. EPA protocols for microbiologically safe water. While powerful, they have been designed to address the hospital reality of minimal storage space, indeed a fraction of the space required for pallets of bottled water.

A variety of systems designed for the various special areas of need should be considered and available. The following are some critical locations in a hospital facility where different water purification products can provide sustainability through locally available compromised water:

The FW-60™



- ▶ Powered by AC, DC or Solar
- ▶ 60 gallons per hour
- ▶ The size of a small suitcase, including spare filters
- ▶ Application Areas:
 - Ice machines
 - Scrub Stations
 - Kitchens and food preparation
 - Beverage machines
 - Laundry and dish washing facilities
 - Central locations on floors
 - In-place Decontamination Showers
 - ER and equipment sterilization
 - Triaging Victims Outside of Facility
 - Critical Care and Remote Clinics or Facilities
 - Mobile Medical Trailers
 - Rapid Ad-hoc Community Deployment

The FW-720-M™



- ▶ Powered by AC (solar available)
- ▶ 720 gallons per hour
- ▶ Portable enough to be moved by one person around a campus or building
- ▶ Stores on end to fit in a closet
- ▶ Easily hooks up to a hose bib or well
- ▶ Application Areas:
 - General drinking water for several thousand people
 - Dialysis requirements (when used in advance of existing RO system)
 - Mobile Decontamination Showers

Financial Analysis

When looking at financial impacts, the analysis is obvious for major events. If water is unavailable for a period of days, diversion is typically required, with significant financial losses associated. When subjected to prolonged water outages due to hurricanes, tornadoes, earthquakes, droughts, etc, current options require closing the facility at exceptional costs to the organization. The solutions discussed here enable a facility to stay open and maintain near-normal operations as long as practical. As such, the financial benefits are obvious. While exact numbers are organization dependent, keeping a facility open, or even not having to cancel elective procedures for even a few days during typical water main breaks, can save organizations hundreds of thousands of dollars.

This was the situation at Northside Hospital in Atlanta, GA in February, 2007. A water main break caused the facility and a neighboring hospital to use bottled water, which ultimately ran out. By using one FW-720™ for drinking water and several FW-60's™ for ice production, beverages, dietary, OR and ER water, Northside maintained its normal schedule and had no significant financial impact. The neighboring facility relied on bottled water and had to go on diversion, cancel elective surgeries, and take other measures that significantly impacted its ability to service the community and be profitable.

Other hospitals that experienced major water emergencies learned that many staff would take water home, and some non-staff persons caught in the disaster were taking precious water and leaving the facility. With this technology, abundant water is available, and staff can easily take water home to take care of family, friends and pets.

Even without major disasters, just the normal, annual costs to maintain the mandated emergency water in bottles is a more costly option. Four days of bottled water for all staff, patients, and surge, contained in ecologically unfriendly plastic containers, is costly to buy, must be replaced every six months due to deteriorating plastic, and requires a very large amount of physical space. The discussed technology eliminates these costs, and has no recurring costs other than inexpensive filter replacement after the event.

Considering the substantial hard and soft cost savings, as well as the reality of having to shut down completely or go on diversion and the legal and public relations implications of not having the mandated water supplies, the decision to implement this approach is apparent. Appendix A of this White Paper is a table showing recommended configurations for four categories of hospitals based on bed count and surge requirements. The reader can easily determine the amount of cost-saving systems required to deploy this technology based on the size of facility.

In addition, all First Water systems qualify under grant guidelines to make them even easier to cost justify. HRSA, ASPR and other grants can be used for all costs associated with all products. For situations where grant money is unavailable, or the need to deploy quickly is important, leasing options are also available.


The Bottom Line

The First Water technology represents an opportunity to save money compared to current methods, but also respond more efficiently, more thoroughly, and most effectively to ensure adequate supplies of clean water are always available.

References and Contact Information

The following provides points of contact for the leaders of the Northside Hospital Incident Management Team, the Georgia Mutual Aid Group that supported Northside during the event, and First Water Systems, Inc.

Name	Organization	Telephone	E-mail
John McDonald	Northside Hospital	404.851.8784	john.mcdonald@northside.com
Bill Lewis	Georgia Mutual Aid Group (GMAG)	404.320.1505	blewis@gema.state.ga.us
Tom Flaim	First Water Systems, Inc.	770.844.8950	tomf@firstwaterinc.com

	www.firstwaterinc.com	HEALTHCARE FACILITIES RECOMMENDED CONFIGURATIONS		
	770-442-8257			
PRODUCTS		HCF-1	HCF-2	HCF-3
<p>These recommended configurations relate to typical needs for emergencies when water is either unavailable or compromised. Additional purification or dissemination systems may be helpful to meet a particular facility's needs. Please contact First Water for assistance in the optimum configuration of any type facility.</p> <p>All product bundles include a complement of filters to ensure sustainability, spare UV and UV protective sleeve.</p>	up to 250 Beds	250 to 500 Beds	500 to 1,000 Beds	
	Facility emergency population of less than 2,000 persons	Facility emergency population of less than 4,000 persons	Facility emergency population of less than 8,000 persons. Contact First Water for larger facilities.	
FW-60-B™ Bundle, including enough spare filters for complete filter changes up to two events	3	6	9	
FW-60-S™ Bundle, including enough spare filters for complete filter changes up to two events	1	1	1	
FW-60™ Extra Filter Kits including three complete filter replacements	1	2	3	
FW-720-M™ Bundle, including enough spare filters for complete filter changes up to five events	1	2	3	
FW-720™ Extra Filter Kits including three complete filter replacements	1	1	1	
24 Hr. Water Test Kits (quantity of 100)	1	1	1	
Filling Station 4 (4 taps)	1	2	3	
Supply Station 3,000	1	2	3	
Supply Station 300	1	2	3	
AquaBags (in lots of 1,000)	2	3	4	
On-site Training and Deployment Consultation	<i>included</i>			
includes all travel, per diem, time and materials				