

# Securing a Precious



# Resource

By Steven Turney

Optimizing utility  
operations & security  
through a holistic  
approach to protection

**O**f all our precious resources in the world, none is as critical to the survival of mankind as water. Consider for a moment what it would mean if we did not have ready access to a safe, clean water supply. The loss of quality water resources impacts crop production, takes away the ability to fight fires and threatens the availability of clean drinking water, resulting in an overall inability to perform tasks that are crucial to basic survival. Thus, we must take the steps to protect our nation's water supply from anything that threatens its safety.

While everyone agrees on the importance of these assets, the technology utilized to protect our infrastructure has greatly changed over the past several decades. In the past, water utilities relied on “low-tech” solutions such as chain link fences, manual gates and even padlocks to keep their facilities secure. Then we experienced the tragic events of 9/11, a day that changed our perspectives on many things—including how we should protect the important assets and natural resources that are critical to our viability as a nation.

### Protection Efforts

As a result, the U.S. water supply now is considered critical infrastructure, and organizations such as the Department of Homeland Security and the U.S. Environmental Protection Agency are developing policies and regulations to help ensure safe drinking water. Policies, however, can only take protection efforts so far, which is why it is important for water utilities to enhance the overall effectiveness of their security measures.

Post 9/11, security evolved from a luxury to a crucial requirement, and the water and wastewater industry quickly moved to further protect its infrastructure with the installation of advanced security technology. Today, this technology has progressed to not only provide the highest levels of protection through a holistic approach with integrated solutions—but it also has the potential to help water and wastewater departments prepare for future government mandates, while increasing operational efficiencies and eliminating the disparate processes that often consume organizational resources.

For example, when it comes to protecting the perimeter of a large water facility, a variety of standalone technologies can be considered. One

tactic could include attaching a physical device to a perimeter chain link fence, which then alerts security staff that a breach is being attempted—but does not provide the operator with any way to verify the situation. By taking a more holistic approach and incorporating strategically placed security cameras to work with the fence detection system, operators can immediately verify whether the breach is an actual security concern, such as a person climbing the fence to gain access to the facility, or if the alert was triggered by an animal digging around the fence.

Many water utilities have limited security staff resources, and some cannot afford the luxury of a dedicated security staff at all. Taking steps to create a more integrated security system like the one described above can help utilities with limited security support to further streamline their operations centers, enabling plant staff to remain focused on their traditional duties while still keeping a close eye on security situations. It also empowers security officers to quickly and efficiently respond to security breaches and rule out scenarios that may not require a response.

In addition to creating organizational efficiencies, operational savings can be realized by working toward a solution that serves both security and operational functions. For example, many water utilities deploy staff to take manual readings of valves, tanks and gauges at main and remote plants. Through the use of a quality video surveillance system, these tasks now can be centralized, allowing one or a few operators to perform the role remotely. Among other benefits, this results in a lower carbon footprint by reducing and potentially eliminating the need for an employee to use a petroleum-based vehicle to drive to the remote facilities and take the readings, and increases overall organizational efficiency, allowing staff to move to other tasks at hand.

### Steps to Better Security

So, how can utilities better secure their facilities and take a more holistic approach to security to reduce operational costs and prepare for government mandates?

The first phase is to conduct an assessment of the criticality of the site, survey assets at the site, and audit the current security policies and technologies in place. This process should be

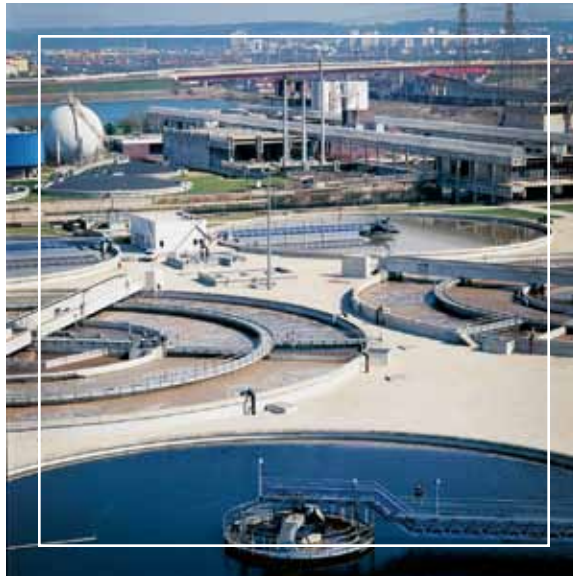
## INFRASTRUCTURE SECURITY & MANAGEMENT

completed for every facility within the water and wastewater network, allowing for commonalities to be identified and capitalized on. At this point in the survey, it also is very important to consider and review written policies, staffing resources, potential budget allocations and the availability of teaming and support agreements with surrounding businesses and water utilities in addition to specific security technologies. These considerations are critical to the overall effectiveness of the final solution and without them, any technologies deployed will fail. For example, if a water utility decided to deploy a perimeter alarm system, there must be staff to interact with the system and monitor for potential breaches—or else they will go unnoticed, possibly compromising the security of the facility.

Once the first phase is completed, it is time to move to the planning phase, where a review of solutions to threats and weaknesses must be developed regardless of financial viability. At this point, no return on investment (ROI) models should be considered, as they will diminish the true intent of the initiative. The results of this planning phase will vary between each site, but some level of commonality will emerge in the recommended solutions, such as perimeter detection, access controls or increased security patrols.

Some important results that should come out of the planning phase include:

- A security plan that can be supported and implemented quickly;
- Measures that focus on three key aspects



**Water treatment facilities are critical to the nation's infrastructure, therefore, proper security measures should be taken to protect the water supply.**

- of a security plan: to detect, delay and deter threats;
- Steps to react to a situation with clear actions to ensure business continuity; and
- Identification of support mechanisms (budget and people) to help ensure the plan and its execution are supported.

One common thought process that is beneficial to sites such as water utilities is the “box-in-a-box”

theory. The theory suggests that multiple layers of protection should exist between the perimeter and a critical asset located inside the facility. Each layer of protection should increase in complexity to assist in the three Ds of a security plan: detect, delay and deter. As an example, if a facility is required to store sensitive chemicals to support the purification process, the application of the theory would suggest those containers be stored behind a secured door within a controlled space that is behind a secured perimeter.

### Gaining Awareness

Simple awareness that a more holistic approach is possible also can result in operational savings and organizational efficiencies. It is key to identify the areas of importance from the outset of the project, consider pending security regulations that can be solved through an integrated approach, and consult a trusted partner that can help maximize the potential of a truly integrated system. Ultimately, the savings and ROI of an integrated security model can help fund the deployment of security technology and also can serve as a vehicle to help sustain the effectiveness of the solution now and in the future. **WWD**

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