

Tapping into Water Security: Practical Solutions for Water Suppliers (Part III)

Shondra M. Neumeister

EDITOR'S NOTE: The following article is the final installment of a three-part series from "Tapping into Water Security: Practical Solutions for Water Suppliers," a presentation at November's FSAWWA Conference. Part 1 on distribution-systems protection and Part 2 on treatment-facility protection are available for viewing on the Journal's Web site, www.fwrj.com.

Source-Water Protection

In Florida, protection of both ground-water and surface-water sources must be considered. Groundwater supplies are inherently protected due to their underground location. The danger to groundwater supplies lies mostly in the vulnerability of the withdrawal equipment, such as wells, pumps, and transmission mains. Because many wellfields are in remote locations, it is more difficult to provide security through surveillance and territorial reinforcement; therefore, access control is recommended to protect these facilities.

Access control can be provided in three primary ways—natural, mechanical, and organized. Natural access control is accomplished through spatial definition (i.e., the perception of “does this belong” within a certain environment). Mechanical access control is provided by physical barriers such as fences and locks. Finally, organized access control involves installing systems such as guards, access cards, and keypad access devices to allow and monitor access to facilities.

For a remote location like a wellfield, mechanical access control will provide the most cost-effective protection for facilities. Suggested mechanical access control devices include:

- Gated access to the wellfield. The gate should be, as a minimum, padlocked and the fence connected to the gate should surround the entire wellfield, if practical, or end at a location that provides a natural barrier to entry, such as a forest, a steeply sloped bank to a ditch or canal, or an area of soft or wetted ground.
- A physical barrier such as a fence with barbed wire on top of a pump house, to discourage access to the wellhead. The door or gate access through the barrier should be, as a minimum, padlocked. If the wellhead is located in an area with trees and a fence is used, tree limbs should be cut back so they can not be used as a means of access to the wellhead.
- A lock on well pump control panels and switches so that panels cannot be easily opened and switch positions cannot be readily changed.
- Backflow prevention devices on wellhead sample tap lines to minimize the potential for these lines to be used to introduce foreign substances into the well.

Figure 1 provides a rendering of the suggested security measures in use.

Protecting surface-water sources is more difficult because access to these waters can rarely be controlled; therefore, surveillance and terminal reinforcement techniques are commonly used. As with access control, there are natural, mechanical, and organized means for providing surveillance. Territorial reinforcement is accomplished by giving users of a particular area a sense of “ownership” over the area. Where territorial reinforcement is used, potential offenders are deterred by the risk of

Shondra M. Neumeister, P.E., is a client service manager for LBFH Inc., a consulting civil engineering firm headquartered in Palm City.

being observed or apprehended. Since surface waters used as drinking-water supplies are commonly open to the public, both surveillance and territorial reinforcement should be used to provide security, along with limited access control.

The following security measures are suggested:

- Provide an unobstructed view around the area of the surface water intake so passersby can observe activities in the area.
- Post signs encouraging anyone noticing unusual and suspicious activity in the area of the water intake to notify law enforcement officials.
- Install lighting (photoelectric or motion-sensing triggered) where possible and practical that will activate and illuminate nighttime activity around the intake.
- Install floating and submerged barriers around the intake to discourage access near the intake.

Figure 2 provides a rendering of a surface water intake in a lake where suggested security measures have been implemented.

References

- Crowe, Timothy D. "Crime Prevention Through Environmental Design: A Basic Training Manual."
- Hach. "Distribution Monitoring System." Hach Solution #101, Informational Brochure.
- Siemens. "Microtox®-OS Test System." Informational

Figure 1. Wellfield Security Measures

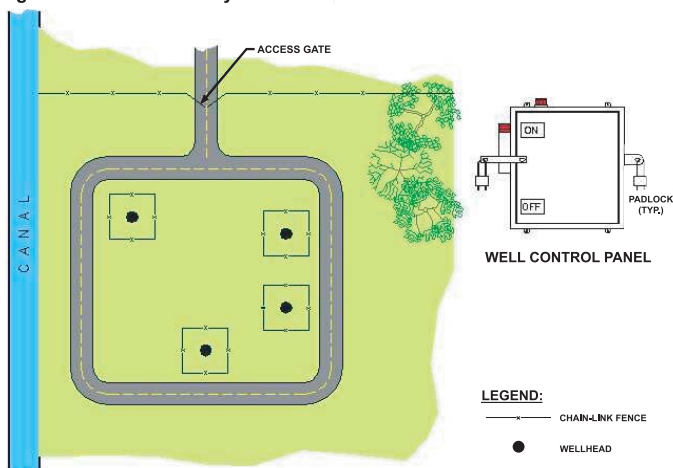


Figure 2. Surface Water Intake Security Measures

