Security for Small Water Systems

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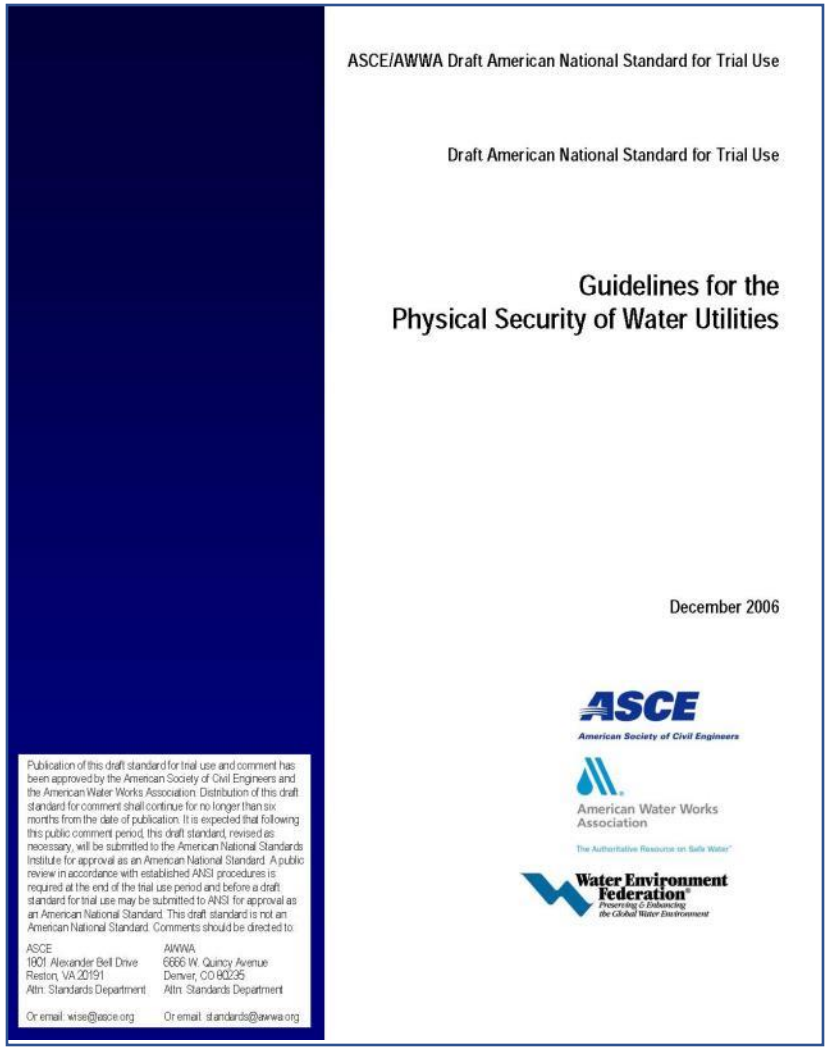
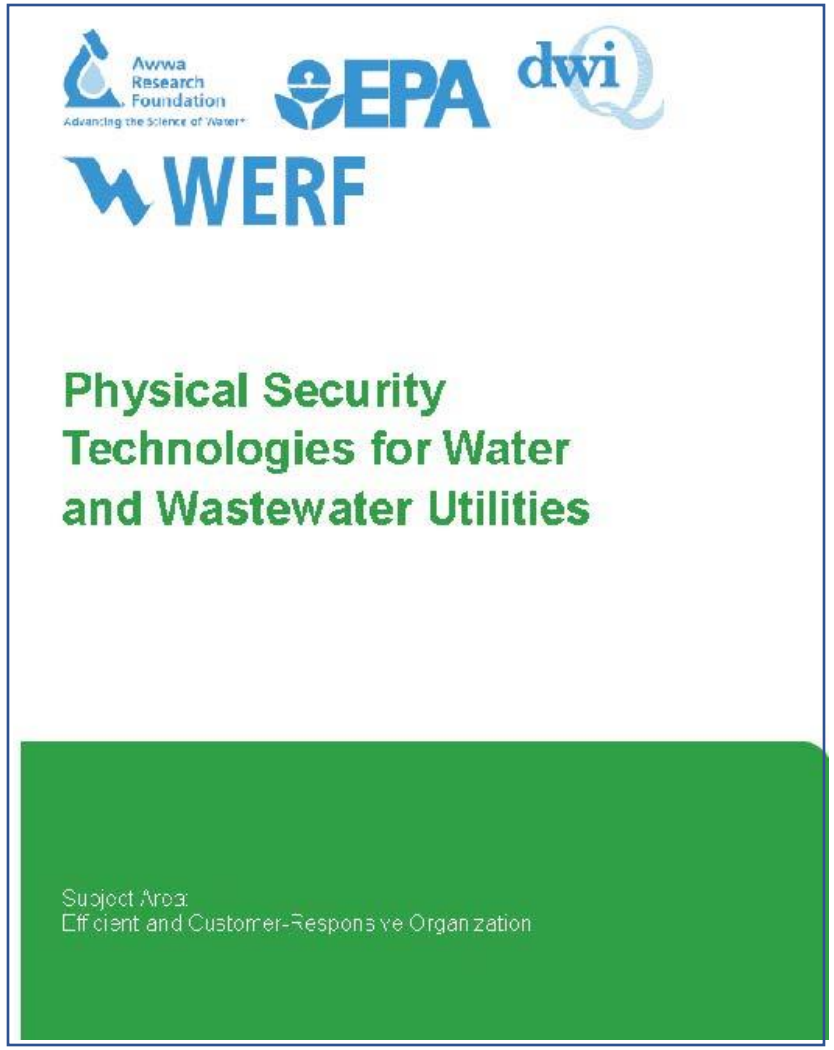
Northwest Washington Subsection PNWS-AWWA

Primary Resources:





Other Resources & Guidelines:

May 2011

DOH 331-199
(Updated)

Water System Security and Emergency Response Planning

Security and emergency response planning are more important than ever

Security and emergency response are essential in managing drinking water systems and high priorities for the Department of Health Office of Drinking Water.

Historically, water system security and emergency response activities focused on vandalism, contamination, and natural disasters. However, after the September 11, 2001 terrorist attacks, the idea of what constitutes a credible threat to drinking water supplies changed.

The attacks and recent natural disasters heightened concerns among drinking water professionals and citizens about the security of safe and reliable drinking water. Natural events and intentional acts of destruction that used to seem unlikely or "low risk" are now important considerations.

This heightened emphasis on emergency planning and infrastructure security is evident throughout the nation. The federal government set requirements for assessing system vulnerabilities and developing emergency response plans. Water systems, federal and state agencies, and industry associations such as the American Water Works Association are developing training and technical assistance materials to better prepare to deal with emergencies.

Vulnerability assessment and emergency response planning requirements

Federal law requires all community water systems serving more than 3,300 people to complete a vulnerability assessment. Within six months after completing a vulnerability assessment, systems must also develop or revise their emergency response plans to incorporate the results of the vulnerability assessment.

Do not submit your vulnerability assessment to the Office of Drinking Water. The law requires water systems to submit their vulnerability assessments directly to the U.S. Environmental Protection Agency. Instructions for submitting a vulnerability assessment are online at

http://cfpub.epa.gov/safewater/watersecurity/index.cfm

Washington State Department of Health

HELPING TO ENSURE SAFE AND RELIABLE DRINKING WATER

Security Vulnerability Self-Assessment Guide for Small Drinking Water Systems

Washington State Department of Health

Washington State Department of Health, Division of Drinking Water

Evergreen Rural Water of Washington

Design Threat Basis

Typically four classifications

- Vandal
- Criminal
- Saboteur/terrorist
- Insider

Characteristics

- Objective
- Motivation
- Planning/system knowledge
- Weapons
- Tools and implements of destruction
- Contaminants
- Asset damage
- Injuries
- Fatalities

Design Basis Threat Capability Matrix

TABLE 1-1
Design Basis Threat Capability Matrix

Characteristic	Vandal		Criminal		Saboteur		Insider[1]	
Objective	Damage, deface, or destroy targets of opportunity		Theft of valuable assets		Disruption, destruction, or contamination; destroy public confidence in utility/governmental agency		Property damage, theft, disruption, destruction, or contamination	
Motivation	Thrill, dare, grudge		Financial gain, grudge		Political, doctrinal, or religious causes, grudge		Revenge, financial gain, political cause, collusion with outsider	
	Base	**Enhanced**	**Base**	**Enhanced**	**Base**	**Enhanced**	**Base**	**Enhanced**
Planning/system knowledge	Little or none	Possible	Little, opportunistic	Definite	Definite	Definite	Limited access to equipment, facilities, SCADA, or networks	Extensive access to equipment, facilities, SCADA, networks, and security systems; greater system knowledge
Weapons	None	None	Unlikely	Knives, hand guns, or rifles	Knives or hand guns, toxic materials	Automatic and semi-automatic weapons, toxic materials	Unlikely	Knives, hand guns, or rifles, toxic materials
Tools and implements of destruction	Readily available hand tools or equipment available at the facility, spray paint	Basic hand tools (e.g., pliers, wire cutters, hammers, crowbars), baseball bats, or firecrackers.	Hand tools or readily available tools or equipment at the facility (as needed)	Sophisticated hand and/or power tools	Basic hand tools (e.g., pliers, wire cutters, hammers, crowbars)	Unlimited variety of hand, power, and thermal tools (including tools such as cutting torches, contaminant agents, IEDs and IIDs)	Tools or equipment available at the facility.	Tools or equipment available at the facility.
Contaminants	None	Possible	None	None	Probable	Probable	Possible	Possible
Asset damage	Minimal	Possible	Minimal	Possible	Possible	Significant	Significant	Significant
Injuries	None	Possible (unintentional)	Possible	Possible	Possible	Possible	Possible	Possible
Fatalities	None	Possible (unintentional)	Possible	Possible	Possible	Possible	Possible	Possible

[1]The insider may possess similar objectives or motivations to the other DBT categories, but will have access to facilities without causing suspicion. Insiders include: employees, vendor representatives, delivery persons, consultants, and onsite contractors.

Table 1-1 from "Guidelines for the Physical Security of Water Utilities" – Design Basis Threat Capability Matrix

Design Basis Threat Capability Matrix

TABLE 1-1
Design Basis Threat Capability Matrix

Characteristic	Vandal		Criminal	
Objective	Damage, deface, or destroy targets of opportunity		Theft of valuable assets	
Motivation	Thrill, dare, grudge		Financial gain, grudge	
	Base	**Enhanced**	**Base**	**Enhanced**
Planning/system knowledge	Little or none	Possible	Little, opportunistic	Definite
Weapons	None	None	Unlikely	Knives, hand guns, or rifles
Tools and implements of destruction	Readily available hand tools or equipment available at the facility, spray paint	Basic hand tools (e.g., pliers, wire cutters, hammers, crowbars), baseball bats, or firecrackers.	Hand tools or readily available tools or equipment at the facility (as needed)	Sophisticated hand and/or power tools

Table 1-1 from "Guidelines for the Physical Security of Water Utilities" – Design Basis Threat Capability Matrix

Cost / Benefit

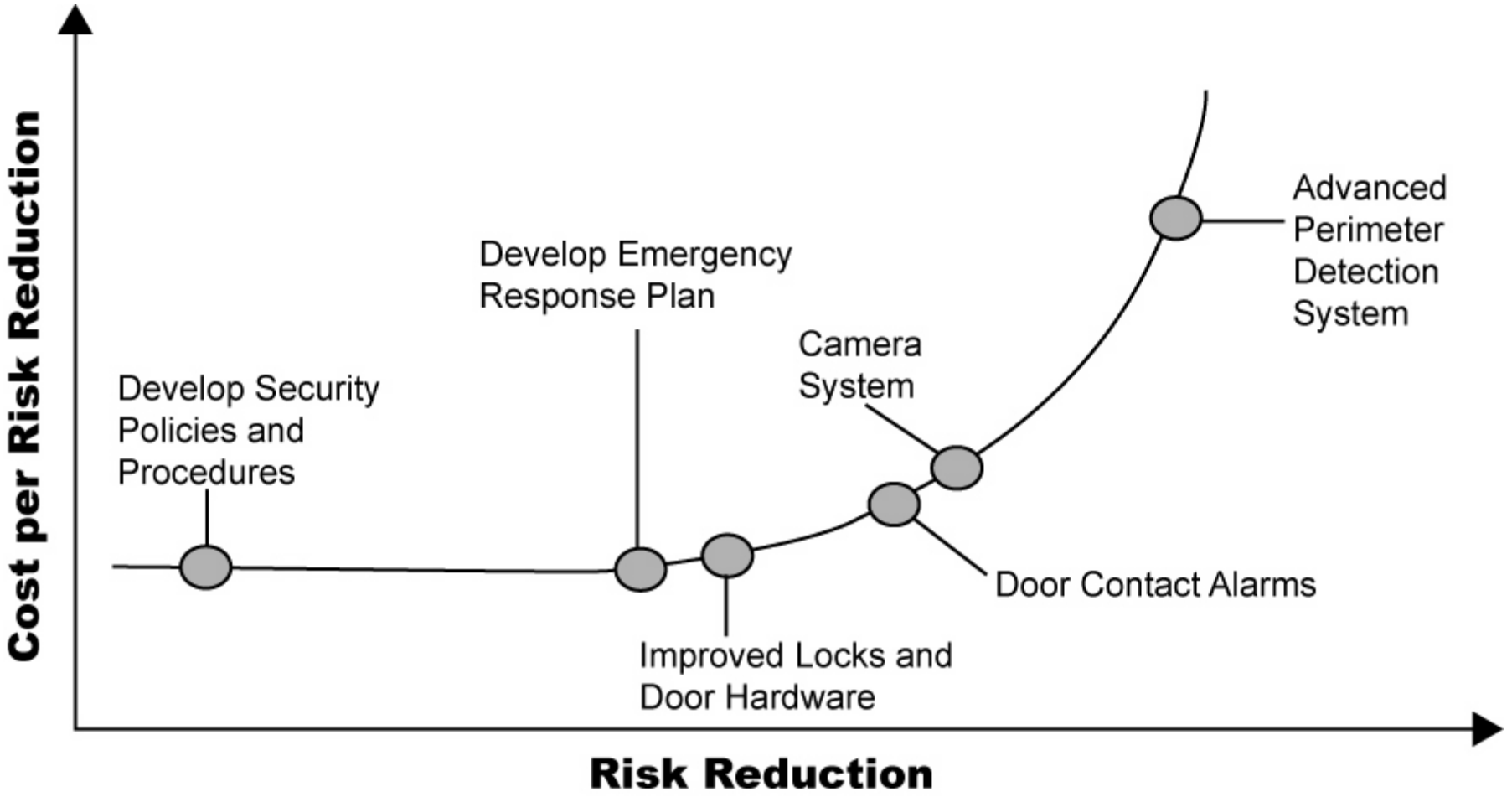


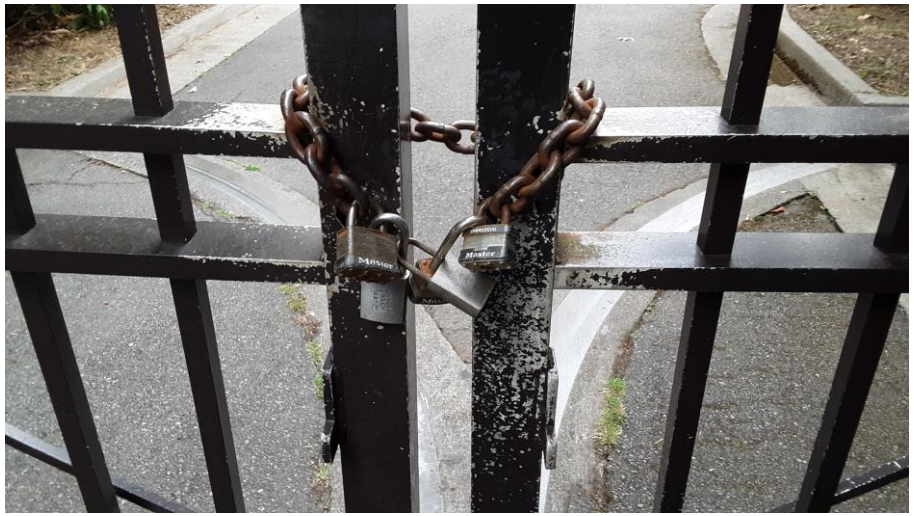
Figure 1-3 from "Guidelines for the Physical Security of Water Utilities" – Typical Cost-to-Risk Reduction Curve

Establish Goals, Look at Vulnerabilities

- General goals
  - Deter
  - Delay
  - Detect
  - Respond
- Unstaffed facilities
- Regular/irregular inspection
- Minimal requirements
  - Locked
  - Fenced
  - Signed
  - Monitored?

What to do

- Get the biggest bang for your buck
- Security policies and procedures
- Emergency response plan
- Locks are good, more locks are better!
  - Lock at each level of entry
    - Fence gate
    - Storage tank ladder
    - Storage tank hatch
  - Multiple users - daisy chain
- Fire & police access



More what to do

- Fences & gates
- Signs
- Screens over glass
- Steel doors, in-swing or security hinges
- Vegetation management
  - Nothing between 6 inches and 4 feet from grade
  - Avoid shrubs and trees next to structures
  - Spacing for vision in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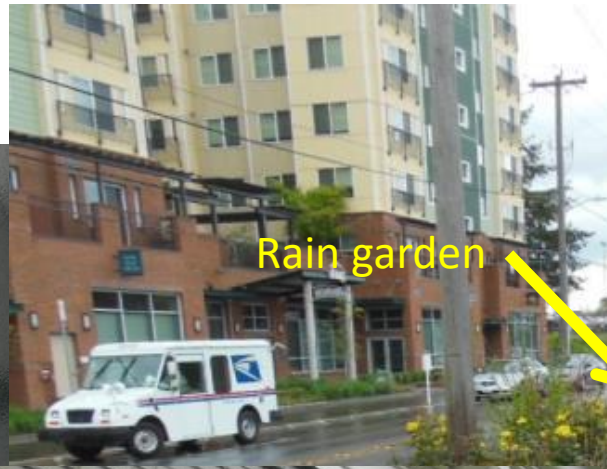
Rain garden


Deep swale
Curved access road

Not a good example

Keep in mind, there is no single or best solution. The only wrong approach is to do nothing