



2019 **SOURCE WATER** PROTECTION CONFERENCE

Building Successful Programs: Past, Present, and Future



America's Water Infrastructure Act and Source Water Protection

Lindsey Kerkez, PE



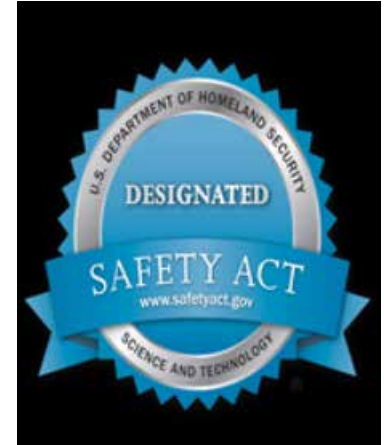
AWWA Resources

- G430-14 Security Practices for Operation and Management
- Cyber Security Risk Management Tool
- Water Sector Cybersecurity Risk Management Guidance Document



AWWA Resources

- Standard: G300 – Source Water Protection
- Manual: Operational Guide to G300
- Standard: J100-10 (R13) Risk and Resilience Management of Water and Wastewater Systems
- Risk and Resilience Certificate Program



**American Water Works
Association**

Dedicated to the World's Most Important Resource®

EPA & DHS Resources

Infrastructure Protection Gateway

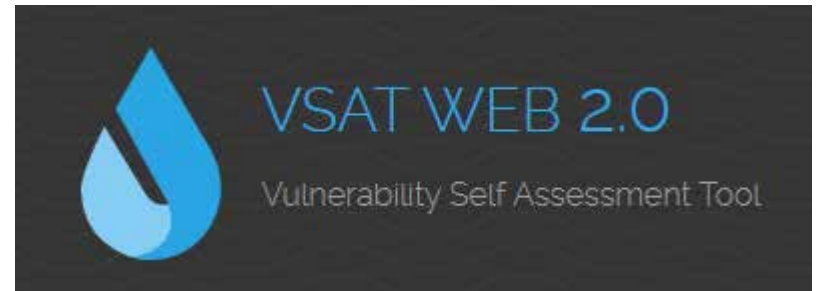
<https://www.dhs.gov/cisa/ip-gateway>

Vulnerability Self Assessment Tool

<https://vsat.epa.gov/vsat/>

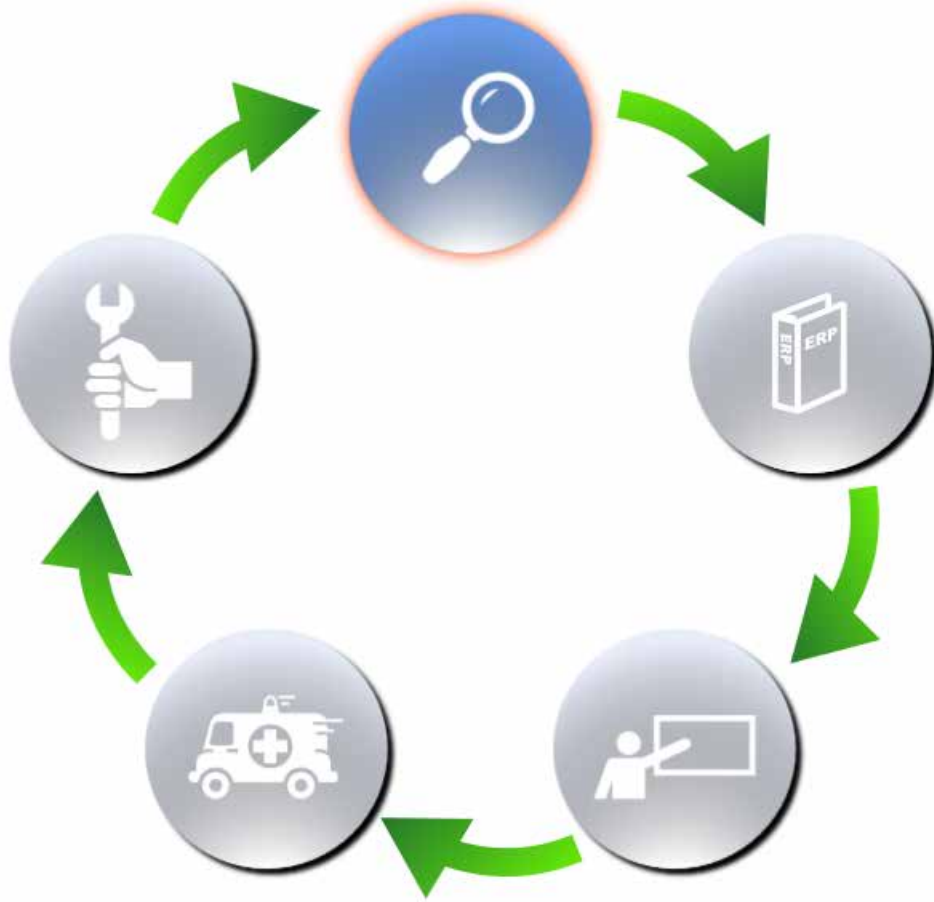
Route to Resilience Tool

<https://www.epa.gov/waterresilience/route-resilience-2018-drinking-water-and-wastewater-utilities#Overview>



Route to Resilience Tool

- Assess
- Plan
- Train
- Respond
- Recover





Michigan Resources

MiWARN

<http://www.miwarn.org/>

LEPC – Local Emergency Planning Committees

https://www.michigan.gov/egle/0,9429,7-135-3307_29894_4161-61779--,00.html

Michigan Intelligence Operations Center (MIOC)

https://www.michigan.gov/msp/0,4643,7-123-72297_72370_72382---,00.html

MI-AWWA: Water System Security and Emergency Preparedness Committee (WSSEP)

RAMCAP



Risk Analysis and
Management for Critical
Asset Protection

Asset Characterization

Threat Characterization

Consequence Analysis

Vulnerability Analysis

Threat Analysis

Risk & Resilience Analysis

Risk & Resilience Management

RAMCAP



Risk Analysis and
Management for Critical
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Threat Characterization

Consequence Analysis

Vulnerability Analysis

Threat Analysis

Risk & Resilience Analysis

Risk & Resilience Management

Asset Characterization

- Which assets perform or support utility's critical functions?
- What are existing protective countermeasures and mitigation features?
- Worst reasonable consequence from destruction or loss of asset?
- Prioritize



RAMCAP



Risk Analysis and
Management for Critical
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Asset Characterization

Threat Characterization

Consequence Analysis

Vulnerability Analysis

Threat Analysis

Risk & Resilience Analysis

Risk & Resilience Management

Threat Characterization

- Natural Hazards
- Dependency and Proximity Hazards
- Contamination
- Sabotage
- Theft
- Boat, Air, Land Assaults



Pair Threats with Critical Assets

RAMCAP



Risk Analysis and
Management for Critical
Asset Protection

Asset Characterization

Threat Characterization

Consequence Analysis

Vulnerability Analysis

Threat Analysis

Risk & Resilience Analysis

Risk & Resilience Management

Consequence Analysis

- Injuries and Fatalities
- Financial Loss to Utility
- Economic Loss to Community



Worst Reasonable Case?

RAMCAP



Risk Analysis and
Management for Critical
Asset Protection

Asset Characterization

Threat Characterization

Consequence Analysis

Vulnerability Analysis

Threat Analysis

Risk & Resilience Analysis

Risk & Resilience Management

Vulnerability Analysis

Ability of assets to
withstand each threat



RAMCAP



Risk Analysis and
Management for Critical
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Consequence Analysis

Vulnerability Analysis

Threat Analysis

Risk & Resilience Analysis

Risk & Resilience Management

Threat Analysis

Likelihood of malevolent attack, natural hazard or dependency/proximity hazard

US Attacks Per
Year

Metro Region

Target Type

Regional
Number in
Class vs Total

This Facility

This Threat-
Asset Pair

EPA Baseline Info Forms

Crosslink to AWWA J100-10 Standard Reference Threat Scenarios	Default Threat Likelihood	
	Water	Wastewater
Accidental contamination of source water is not included in the J100-10 Standard.	0.05	
	<p>Basis:</p> <ul style="list-style-type: none"> Accidental contamination through spills, untreated causes. The contamination Reported spill data (average of 1,100 spill Occurrence varied v Upstream contamination or public health impact attenuation and upstream affected intakes. If contaminated source infrastructure and af Conservative estimate utilities experience a water quality. 	<p>Systems with a Groundwater Source</p> <p>9. Does the utility have multiple sources of drinking water, such that if one were contaminated supply the system? <input type="radio"/> Yes <input type="radio"/> No</p> <p>10. Is the utility's groundwater aquifer confined or protected from infiltration? <input type="radio"/> Yes <input type="radio"/> No</p> <p>11. Is the utility's groundwater protection area relatively pristine and free of significant sources listed in Question #3, above)? <input type="radio"/> Yes <input type="radio"/> No</p> <p>12. In the event of a spill, release, or other source of contamination, are there procedures for soil and other measures to prevent contamination of the utility's aquifer? <input type="radio"/> Yes <input type="radio"/> No</p>

RAMCAP



Risk Analysis and
Management for Critical
Asset Protection

Asset Characterization

Threat Characterization

Consequence Analysis

Vulnerability Analysis

Threat Analysis

Risk & Resilience Analysis

Risk & Resilience Management

Risk & Resilience Analysis

Risk=Consequence*Vulnerability*Threat Likelihood

Resilience=Duration*Severity *Vulnerability *Threat
Likelihood

RAMCAP



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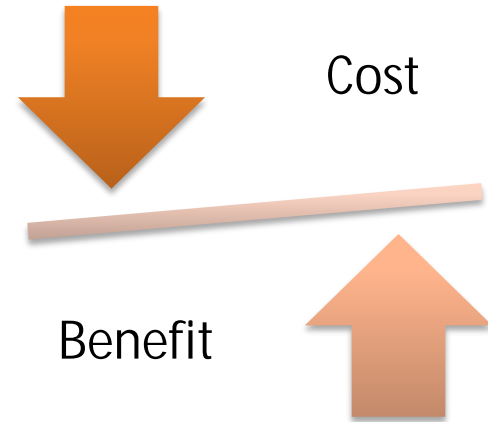
Risk & Resilience Management

Risk & Resilience Management

Are actions needed?

Mitigation Strategies

Monitor and Verify



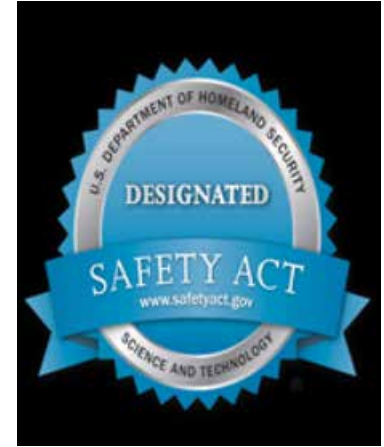
Emergency Response Plans

- System Specific Information
- Utility Roles and Responsibilities
- Communication Procedures: Who, What, and When
- Personnel Safety
- Identification of Alternate Water Sources
- Replacement Equipment and Chemical Supplies
- Property Protection
- Water Sampling and Monitoring



ERP AWWA Resources

- Standard: AWWA G440-17 Emergency Preparedness Practices
- Manual: M19 Emergency Planning for Water and Wastewater Utilities



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ERP Template

https://www.epa.gov/sites/production/files/2019-07/documents/190712-awia_erp_template_instructions_kab_508c_v6.pdf

Coordinate with
local agencies



Certification of Community Water System Risk and Resilience Assessment in Compliance with America's Water Infrastructure Act of 2018

Part (A): Community Water System Identification

Community Water System Name: _____

Community Water System Complete Mailing Address: _____

Public Water System Identification Number: _____

Population Served: _____

Part (B): Certification Date

Date of the certification: _____

Part (C): Certification Statement

I, _____

[Name of certifying official]

hereby certify that the community water system named under Part A, above, has (select all that apply)

conducted reviewed reviewed and revised

an assessment of the risks to, and resilience of, its system. This assessment included an assessment of:

1. The risk to the system from malevolent acts and natural hazards;
2. The resilience of the pipes and constructed conveyances, physical barriers, source water, water collection and intake, pretreatment, treatment, storage and distribution facilities, electronic, computer, or other automated systems (including the security of such systems) which are utilized by the system;
3. The monitoring practices of the system;
4. The financial infrastructure of the system;
5. The use, storage, or handling of various chemicals by the system; and
6. The operation and maintenance of the system; and
7. Optionally, may include an evaluation of capital and operational needs for risk and resilience management for the system.

[Signature of certifying official - click to add a digital signature, or print and sign]

Certification Form

- Online Portal
- Email
- Mail

Self - Certify



Thanks for your
attention!
Any questions?

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