

Best Management Practices

Emergency Response Planning

Developed by



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for



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Emergency Response Planning

Your water system—whether large or small—could be negatively impacted by an emergency situation. It's important, therefore, to be aware of potential emergencies and to develop an appropriate emergency response plan.

What is emergency response planning?

An emergency is anything that interrupts the delivery of safe drinking water. An emergency response plan (ERP) is a document that provides response, recovery, and remediation guidance for actions in response to man-made, technological, and/or natural disaster emergencies. More simply, ERPs outline what owners and operators must do and who to contact during an emergency. Good business practices suggest that every utility have an ERP that is coordinated with local emergency response organizations, regulatory authorities, and local government officials. For some water systems, emergency response planning is a requirement under the *Drinking Water Protection Act* and, subsequently, their operating permits.

Why should BMPs be applied to emergency response planning?

An emergency response plan that reflects BMPs:

- reduces risk to public health;
- reduces stress and confusion during an emergency;
- requires networking (e.g. identifies resources/allies);
- increases customer confidence;
- reduces liability;
- meets compliance requirements;
- ensures proactive rather than reactive emergency response;
- creates a need to review inventory;
- improves/supports links with other plans;
- sets framework for staff development;
- helps to integrate internal/external stakeholders; and
- improves communication with public and media.

An emergency response plan that reflects BMPs also helps build consistency throughout the province.

Information Links

Emergency Response Planning Guide for Small Waterworks Systems
(PDF File)

Recommended Reading...

AWWA Manual M19 (1999b)
American Water Works Association
(303-794-7711) www.awwa.org

Response Protocol Toolbox: Planning for and Responding to Drinking Water Contamination Threats and Incidents
USEPA, December 2003
(1-800-832-7828) or www.epa.gov

Guidance for Water Utility Response, Recovery and Remediation Actions for Man-Made and/or Technological Emergencies
USEPA, 2002
(1-800-832-7828) or www.epa.gov

Security Vulnerability Self-Assessment Guide for Small Drinking Water Systems
Association of State Drinking Water Administrators
(202-293-7655) www.asdwa.org
National Rural Water Association
(580-252-0629) www.nrwa.org

What BMPs should be applied to small systems?

Small water systems (e.g. those servicing a trailer park or subdivision) can implement an emergency response plan by following these steps:

1. Download B.C.'s *Emergency Response Planning Guide for Small Waterworks Systems* (see Information Links).
2. Consult with Drinking Water Officer (DWO) to discuss regulatory requirements.
3. Define what would constitute an emergency (e.g. water main break, well pump failure, hazardous spill).
4. Develop an appropriate response to and contacts for each type of emergency (e.g. local jurisdiction, fire department, PEP, media).
5. Develop a communication plan with sample notices; check phone numbers quarterly.
6. Prepare a system distribution map for accurate locations of works (e.g. valves, rights of way, access roads, pump houses).
7. Submit the plan to the DWO for review and comment.
8. Circulate the plan and system distribution map to all appropriate personnel.
9. Practice the plan annually and document results.
10. Revise the plan annually.
11. Undertake regular system inspection and maintenance.

If you need help...

Small Systems

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- **Small Water Users Association**

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- **Water Supply Association of BC**

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What BMPs should be applied to larger systems?

1. Conduct Initial Research

- Research successful ERPs in other communities
- Consult with regulatory authorities
- Explore potential scope

2. Build Program Framework

- Identify objectives and targets
- Determine governance approach
- Identify participants and their roles
- Outline responsibilities
- Develop procedures/templates
- Create budget
- Set schedule
- Establish authority
- Develop incident command structure
- Prepare business plan
- Evaluate and refine plan (ongoing)

3. Garner Support and Funding

- Present business plan to senior staff and council or board (include regulatory requirements, liability considerations, recommended approach, and funding requirements)
- Provide frequent updates (ongoing)

4. Inventory Assets

- Gather appropriate information
 - source (watershed, surface water, wells)
 - treatment
 - transmission
 - distribution
 - storage (refer to WHMIS)
 - pumping facilities
 - ancillary (records, SCADA, energy sources, standby power, lab facilities)
- Identify users (residential, ICI, wholesale)

5. Conduct Hazard or Vulnerability Assessment

(see corresponding article)

- Identify hazards
 - distinguish between natural and human-triggered hazards
 - distinguish hazard level
 - consider security
- Determine probability of occurrence
- Prioritize customer needs
 - assess level of service required (e.g. hospitals, day cares)
 - assign performance criteria

- o consider system components and customer service levels
- o understand stakeholder requirements and dialogue with customers regarding their planning and requirements
- Inform decision-makers (e.g. council/board)
 - o may help acquire funds for preventative/mitigative measures
 - o need their support for planning process
 - o need to keep security issues in mind (some information should be confidential)
- Provide broader context on how these impact/relate to other parts of operation
- Integrate ERP with Official Community Plan and regional plans

6. Develop Hazard Management Plan

- Define management options to “reduce, prevent, accept, avoid”
 - o reduce—reservoir hatch cover lock
 - o prevent—call before you dig
 - o accept—contractor waterman break
 - o avoid—on-site chlorine generation instead of chlorine gas
- Assign costs to options and select appropriate option
- Review existing case studies/information available re: possible solutions

7. Identify Response and Recovery Measures

- Select and prioritize measures
- Assign required resources (e.g. staff, equipment, materials)
- Identify safety equipment and location
- Set timeline/implementation plan
- Develop standard operating procedures, if required
 - o can be internal and external
- Develop up-to-date materials/protocols
 - o list staff, HR issues, suppliers, spare parts
 - o list/summarize relevant policies
- Develop mutual aid agreements and standing offers with suppliers/others (e.g. helicopter company) and list of telephone contacts
- Develop accounting plan to track costs, funding applications, etc.
 - o ensure understanding of financing (e.g. what will PEP pay for?)
 - o link to PEP and claim protocol
 - o ensure an appropriate expert is involved
- Create event log (e.g. notes, instructions, forms for record keeping, incident reporting)
- Link to incident command structure
- Define timelines of service restoration to normal conditions
- Refer to Aquifer Protection Plan and/or Dam Safety Review, if applicable

If you need help...

Large Systems

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8. Create Communication Plan and Materials

- Identify internal and external audiences' specific communication needs
- Prepare a written plan
- Educate all appropriate staff about ERP
- Access/prepare information and education materials for external audiences
- Educate external audiences
- Evaluate and refine plan (ongoing)

9. Conduct Training and Exercises

10. Review and Refine Plan

- Review incident command structure
- Review communication plan
- Review financial plan
- Review record keeping procedures
- Review reporting/debriefing procedures

Vulnerability Assessment

An ERP is often preceded by a vulnerability assessment, which the U.S. Environmental Protection Agency says, “helps a utility evaluate susceptibility to potential threats and identify corrective actions that can reduce or mitigate the risk of serious consequences from adversarial actions (e.g. vandalism, insider sabotage, terrorist attack).

The *National Guide to Sustainable Infrastructure* expands on that definition to say, “Water distribution systems are susceptible to disruption of supply as a result of physical disruption and cyber attacks against SCADA systems. Water distribution systems are also vulnerable to biological, chemical, and radiological contamination. Various vulnerability reduction measures can be implemented in the form of physical protection systems, operation systems, and consequence mitigation.”

An assessment—which considers the vulnerability of the water supply and transmission, treatment, and distribution systems—also considers risks posed to the surrounding community related to attacks on the water system.

The vulnerability assessment process will range in complexity based on source water, the size, design and operation of the water system, and the population affected. Security and safety evaluations will vary based on knowledge and types of threats, available security technologies, and applicable local, provincial, and federal regulations.

The EPA says, “An effective vulnerability assessment serves as a guide to the water utility by providing a prioritized plan for security upgrades, modifications of operational procedures, and/or policy changes to mitigate the risks and vulnerabilities to the utility’s critical assets.” It also provides a framework for developing risk reduction options and associated costs.

“Utilities should review their vulnerability assessments periodically to account for changing threats or additions to the system to ensure that security objectives are being met. Preferably, a vulnerability assessment is “performance-based,” meaning it evaluates the risk to the water system based on the effectiveness (performance) of existing and planned measures to counteract adversarial actions.”