

DRINKING WATER SYSTEM  
**EMERGENCY RESPONSE GUIDEBOOK**

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## INTRODUCTION

The purpose of this guidebook is to assist the drinking water system management prepare a disaster and/or emergency response plan. It is not meant to be a guide for routine complaints or system maintenance problems. These issues should be dealt with by policy established by the drinking water system management.

A disaster or emergency can strike any drinking water system at any time. In preparing your response plan keep in mind that when, **not if**, an emergency or disaster occurs, drinking water will become one of the top priorities in emergency medical services, fire fighting, sanitation, and general recovery of the emergency or disaster.

In designing your response plan keep it as simple and practical as possible. A complicated plan will only add to the confusion, and that's exactly what you don't want to happen!

After you have designed your drinking water system's "Emergency Response Plan," train the system personnel. Mistakes made during training and rehearsals don't cost much, **but mistakes made during the "real thing" could easily cost lives!** Re-training or rehearsing the emergency response plan every 6 months will help new personnel become familiar with their role in the emergency plan, and will remind the experienced personnel of their role and perhaps identify areas of the plan that need improvement. Tabletop exercises are excellent ways to rehearse each individual role.

There are excellent training resources available to assist you in developing your emergency response plan. The American Water Works Association publishes a manual entitled, **Emergency Planning for Water Utility Management (M19)**, which is available as well as an excellent video entitled, **Emergency Planning: The Big Picture for Water Utilities**. These and other helpful publications are available by contacting the American Water Works Association at 1-800-926-7337.

The Rural Water Association of Utah, the Intermountain Section of the American Water Works Association, and the Division of Drinking Water can provide additional assistance.

## *NORMAL PROBLEMS*

During the course of normal operations a drinking water system will have problems--some minor, some major.

Take, for example, a major backflow incident:

- ! What should I do? Should I notify the public? If yes, do I just notify the area that is contaminated or everyone on the whole system? And how do I go about putting out an emergency notice to my consumers?
- ! Should I flush the system now, or isolate it, or get sample results first? Should I let anyone know about the problem (Local and/or State Health Departments), or should I keep it to myself?

These are the questions that should be thought out now! And a plan must be drawn up **and used** when a problem occurs that will directly affect the safety of the drinking water system. This booklet will help design such a plan, and help you plan for a major emergency or disaster.

## *ORGANIZATION*

### **Lines of Authority**

Initial reaction to any emergency or disaster will be confusion. Therefore, a pre-planned line of authority, including alternates in case the key people are unavailable, must be designed and ready for immediate implementation, with those individuals in these positions being aware of their designated authority during an emergency operation.

An office or area should be set aside and designated as an Emergency Command Center. The Command Center should be equipped with telephones, radios, drinking water system maps and records and any other emergency equipment, which may be needed. During any emergency situation the Emergency Command Center would be activated and the personnel listed below would report for duty to the Command Center rather than their individual offices.

Types of authority positions could include:

1. **Emergency Coordinator:** This individual would coordinate all emergency actions, water system personnel and equipment within the drinking water system. The Emergency Coordinator will also coordinate with the law enforcement, fire fighting, medical personnel, and any other requests for aid, volunteer efforts, mutual assistance (other neighboring water system personnel or equipment and any contracted private assistance) (the Emergency Coordinator is usually the Water Superintendent or equal).
2. **Public Relations Coordinator:** This individual would be responsible for news releases to the media, issuing emergency information bulletins to the public, and act as liaison between the drinking water system and general public in answering questions and addressing concerns (the Public Relations Coordinator is usually the Mayor or Public Relations Specialist).  
It is essential that the Emergency Coordinator and the Public Relations Coordinator work closely together. It is also important that they be separate individuals because at the onset of any emergency a lot of people need to be mobilized in a coordinated effort (directed by the Emergency Coordinator) and the press and public need answers to their questions. Initially the Public Relations Coordinator will probably only be able to say, "This event has occurred, and we are taking the following actions, (list the actions), and we will report more as we know more". The Emergency Coordinator will then feed information from the field to the Public Relations Coordinator, who then responds to the questions and concerns of the public and news media.
3. **Assessment Coordinator:** This individual would coordinate the inspection of all drinking water system physical facilities to determine the degree of damage to the facility and in coordination with the Emergency Coordinator, prioritize the repair, replacement or abandonment of any system physical facilities.
4. **Crew Foreman:** This individual would coordinate, supervise and schedule personnel, equipment and materials to facilitate the repair or replacement of critical drinking water system facilities which have been identified and prioritized by the Assessment and Emergency Coordinators. There may be

several Crew Foremen if there are multiple sites of concern, or multiple crews working in the field.

For some very small water systems, all of these functions may be the responsibility of one individual. In those situations, Board or Council members, clerical staff or even other interested volunteers must be trained and knowledgeable about the system and the response plan in the event that the operator is unavailable to respond during an emergency.

### **Classification of the Emergency or Disaster**

Classifying the degree of the emergency or disaster will help in properly prioritizing activities and speeding the response time to implement the response plan. The classification phase, conducted during a training exercise will also be helpful in designing the training of the drinking water system personnel in their part of the emergency plan.

**Remember that mistakes made during the training don't cost much, but mistakes made during the "real thing" could cost lives!**

The classification of the emergency or disaster will be the decision of the Emergency Coordinator, which will be communicated by radio and/or telephone to the other personnel of the drinking water system:

LEVEL I - NORMAL (ROUTINE): Personnel and equipment presently on duty can handle system problems. The "Emergency Command Center" not activated or manned.

LEVEL II - ALERT (MINOR EMERGENCY): Personnel and equipment presently on duty can handle system problems, but may require off duty or additional personnel to be put on alert, be re-routed to other than their normal working areas, or work additional shifts. The "Emergency Command Center" activated and manned.

LEVEL III - MAJOR EMERGENCY: Problems somewhat beyond the capabilities of the drinking water system personnel and equipment, and may require a "Declaration of Emergency" to authorize shortcut procedures. Requires employees to work additional shifts and may need additional assistance of

personnel and equipment, either by mutual aid or private contracts. The "Emergency Command Center" activated and manned.

LEVEL IV - DISASTER: Problems clearly and immediately beyond the capability of the drinking water system. Recovery time will exceed one week, costs will be great, large amounts of assistance of personnel and equipment by mutual aid or private contracts will be required, extended shifts will be needed for at least one week. A "Declaration of Emergency" will be required; the "Emergency Command Center" activated and manned.

### **Facility Damage Assessments**

The "Assessment Coordinator" will determine the preliminary damage assessment priorities. The physical status of **all** physical facilities must be assessed. The need to repair, replace, or abandon drinking water physical facilities is required at this point. Be sure to include an estimate of cost, including manpower and equipment, to restore the facility in order to help prioritize the repair work.

**The Assessment Coordinator must consider the possible after effects of the repairs or replacement of the facilities, on the integrity of the drinking water system itself after the emergency.** For example, a structural repair to a water storage tank may introduce chemical or bacteriological contamination into the drinking water.

Reservoirs: Check for seepage, leaks, cracks or problems with the reservoir itself. Landslides, embankment slumps, broken inlet-outlet pipes or underdrains could effect the stability of the reservoir itself. Estimate the remaining amount of water in the reservoir.

Deep Wells and Booster Pumps: Check power supplies, pump or motor failures, physical damage to piping or electrical controls. Check the building or structure for integrity of pump operations.

Distribution and Transmission pipelines): Check all air vacuum relief valves. Check for visible leaks, cracks, breaks, and pressure loss in pressure zones. Check automatic valve failure (pressure reducing, pressure sustaining, pressure relief, high altitude, solenoid controlled, etc) and all other facilities that would be useful

in gauging the integrity of underground piping, including fire hydrants. Identify pressure zone valves and isolation valves in order to supply, divert, or isolate drinking water in the system.

Drinking Water Treatment Plant: Check the quality of the influent and surrounding water shed for signs of chemical spills or releases, and any changes in the raw water quality, dosage rates of chemicals, disinfection levels and all equipment. Also check for any structural damage within the facility along with the power supply, electrical equipment and the condition of the mechanical equipment.

After the completion of the preliminary damage assessment the Assessment Coordinator and the Emergency Coordinator will then decide which damaged drinking water facility receives priority repair or replacement. This process of assessment and response coordination is usually quite informal and is facilitated by the nature of the emergency. For example, a staff member is informed of, or discovers a situation; he then reports it to his supervisor (the Emergency Coordinator) who then agrees with or expands the assessment and directs the employee to do some action. The Emergency Coordinator then works on mobilizing additional resources and sets up the command center.

The determination of priorities should be based on:

1. The unique design of the drinking water system.
2. Medical/emergency care requirements.
3. Drinking water and sanitation needs of the public.
4. Fire fighting requirements.
5. How much good drinking water is remaining in the system reservoirs?
6. How to transport that water to where it is needed the most.

Pre-planning in this area could save the Assessment and Emergency Coordinators a lot of worry and hassle. If the situation is thought through clearly now, rather than during an emergency, much better decisions will be made.

## MAP OF THE DRINKING WATER SYSTEM AND FACILITIES

# MAP SECTION

In your emergency response plan, inventory your system and identify the elements that would be most susceptible to damage in any emergency situation. Consider the different types of emergencies such as earthquakes, floods, explosions, traffic accidents, sabotage, and fires. Also consider susceptible facilities such as: underground storage tanks, booster pump stations, high pressure zones or areas, or any other facilities that are readily susceptible to damage and are also of a high repair priority. Also identify pressure zone valves and isolation valves to be used to divert, supply or isolate drinking water.

### *IMPLEMENTATION*

#### **General Information**

Announce to employees the activation of the Emergency plan, using radio, telephone, or by any other means and have employees meet at their designated staging areas.

Maintain a **written** log of messages and directives given during the emergency. This will help reduce confusion in the Emergency Operation Center and will also help in preparing the "After Emergency Follow-up Report", particularly if outside aid and assistance were requested.

Plans should be in place for the use of volunteers who may show up to help. Water system personnel should supervise volunteer work so that it can be done safely.

Document the cost for supplies and equipment. Tracking all of the labor performed by system personnel and volunteers is essential in the event an emergency is declared a disaster. This will help in receiving reimbursement money from State and Federal agencies.

Individuals responding to telephone and other contacts must be briefed on the proper response to give customers and concerned callers. All information released must be coordinated through the Emergency Coordinator. Everyone contacting the agency should receive the same information.

Ensure that radio communication is limited to vital messages only. Direct and control radio channels by stating call number and announcing an emergency message is to be sent.

Liaison personnel should report to the proper Emergency Operation Center (City, County, District). Maintain communication with the EOC by making status reports at least once per hour during the emergency, however, some emergencies may require more frequent reporting.

### **Emergency Medical Facilities**

Maintain a roster of emergency medical treatment facilities in your area for ease of maintaining drinking water supplies, transporting drinking water from another source, or transporting injured personnel. A source of drinking water (even bottled water) will be critical to emergency medical centers.

### **Emergency Assignments**

Ensure all personnel are aware of the drinking water system emergency response plan, and their part in it. Personnel must be aware of the level of the emergency, staging areas, lines of authority, and their direct place within the organization.

In the event of an emergency or disaster, the employees will naturally take care of their families first. Provisions should be made to assure water system personnel that their immediate family members have been accounted for. Plans should include assisting employee's families in getting food, water, shelter and clothing. Employees will be better focused once their families have been taken care of.

Staging areas should be set up so all personnel know where to report to work when they are able. Alternate areas should be assigned in the event a staging area is unsafe.

### **Emergency Personnel Roster**

Maintain a roster of personnel within the drinking water system for emergency response notification. This list must be updated with the individual's name, address, phone number, emergency job assignment, and primary staging area. Issue identification cards to those employees who may require access to private property, cross police or fire lines, or who are authorized to request or grant mutual aid. This roster will ensure proper lines of authority and communication is being used.

*During the emergency, be sure ALL personnel working in the drinking water system are placed on a duty roster, and appropriately tracked. This will ensure that they are being rotated for rest and food, and to keep track of where they are within the drinking water system should they be needed elsewhere, or should they get injured and need help.*

### **Fire Fighting/Law Enforcement Agencies**

Maintain an updated listing of contacts within the local and neighboring fire fighting and law enforcement agencies, including their phone numbers and Emergency Operation Center personnel, radio frequency, radio call signs and the EOC phone numbers. This listing and coordination will be critical for cooperation of the limited facilities and materials, particularly personnel, during the emergency.

Maintain a current State and County Emergency Operation Center listing within your area. These agencies can help provide technical expertise, personnel,

equipment and laboratory liaison.

If the local fire department or law enforcement agency is going to respond to an emergency for your system, each agency should know what hazards are at the site, what chemicals are stored at the facility and MSDS sheets for each chemical should be readily available.

### **Local Emergency Planning Committee (LEPC)**

All emergency response plans and courses of action should be discussed with the LEPC. This will facilitate communications and response efforts with the agencies with agencies that could be involved in the emergency.

## ***PRIORITIZE WORK/REPAIR NEEDED***

### **General Information**

Be aware that fire-fighting activities will seriously deplete drinking water supplies. This may mean that drinking water will have to be imported from other systems into your area. It can also mean that contamination could be drawn into the drinking water system due to low or negative pressures. Consequently, the drinking water system management should consider this situation and plan for contingencies. As a worse case scenario, **preserve the remaining water in storage!** If need be, limit fire fighting capabilities in critical water shortage areas. The fire fighters won't like it, but drinking water is top priority.

Isolate areas that will take the longest to restore service and arrange for emergency water distribution:

- ! Establish drinking water distribution points and ration remaining water.
- ! Locate bottled water distribution points to serve immediate water needs.
- ! Arrange for trucks and trailers with water tanks (National Guard Units) for water distribution.

Identify the areas that can be served with a minimum of repair and then prioritize

the other service areas that will need more extensive repair.

Every area has its own general type of emergency or disaster, earthquake, periodic flooding and etc. Therefore, you can identify areas that will be more susceptible to damage and even, to an extent, what type of damage the area will have.

Set priorities on the repair work. In so doing, consider the following:

- ! Prepare a plan to restore each service area.
- ! Plan to restore the service areas one by one, not the entire system at once.
- ! Get input and advice from other agencies (local, county and state) on essential uses.
- ! Take into account the condition of the transmission lines from the water sources.
- ! Keep in mind the need for fire fighting (even if it will be limited).
- ! Determine if imported water is available and how to distribute it.
- ! When the repairs exceeds the capabilities of your water system, notify the County or State Emergency Operation Center for assistance and coordination of assistance.

### **Possible Emergency Materials and Equipment**

Maintain a current listing of those agencies, private companies or manufactures within your local area that can provide assistance during an emergency. This assistance can be in materials, equipment, vehicles and/or trained personnel. Maintain emergency agreements or contracts with these private companies so they are aware of their part of your emergency plan, and that basic costs of materials or equipment have been agreed upon, and who is authorized to activate those agreements or contracts. Maintain these agreements and contracts at the Emergency Operation Center for quick access. Willingly agree to assist neighboring water utilities in the event they have an emergency.

### **Maps of Critical Water Needs by Service Areas**

Maintain an updated map of critical water needs within each service area and maintain the maps at the Emergency Operations Center. The maps should include the locations of fire fighting equipment, medical facilities, preplanned imported

water distribution points, pressure zones, booster pumps stations, and drinking water sources.

## *DISPATCHING PERSONNEL AND EQUIPMENT*

### **Emergency Assignments**

Ensure every affected individual is aware of the drinking water system's emergency response plan and their part in it. Personnel must be aware of the level of emergency, staging areas, lines of authority, and their direct involvement within the emergency organization.

The Emergency Coordinator will advise the Crew Foremen as to the work assignments. The Crew Foremen will assign additional personnel (including volunteers) to the work crews, as needed.

### **Emergency Personnel Roster**

Maintain a list of personnel within the drinking water system's emergency response plan and their slot within the emergency organization. This list must be kept updated with the individuals home phone number, address, and primary and alternate staging areas.

Issue identification cards to those employees who may require access to private property, cross fire or police lines, or those who are authorized to request or grant mutual aid and assistance. This procedure ensures proper lines of authority are being used.

Ensure that **every person** working within the drinking water system, including all volunteers, are placed on a personnel roster which is organized by work crews, and maintained at the Emergency Operation Center. This will help ensure all personnel are being rotated for rest, food, and to keep track of where they are within the system should they be needed elsewhere, or if they get injured.

## *REQUESTS/RESPONSE FOR EMERGENCY AID*

### **Authorization to Request and to Provide Assistance**

Pre-authorization of the position to request or to provide emergency assistance within the drinking water system would enable the Emergency Coordinator the latitude to ensure all possible areas of assistance have been involved within the response effort. The elected officials of the drinking water system should do this pre-authorization, with advice from legal council. It should be passed as an ordinance or policy so that the designated person has the authority in writing for confirmation if needed.

### **Commercial Suppliers of Equipment Materials**

A listing of commercial suppliers of equipment and materials within your local area should be kept up-to-date and available to the Emergency Coordinator.

### **Neighboring Agencies and Agreements**

A listing of neighboring drinking water systems and government agencies and contact people within them should be kept at the Emergency Operation Center. This list should include the types of specialized equipment, vehicles and trained crews that would be available if needed during an emergency. A bilateral agreement of Emergency Aid and Mutual Assistance should be negotiated with these systems and agencies.

## ***PUBLIC NOTIFICATION/PRESS RELEASES***

### **General Information**

The release of information to the public and news media must be accurate and issued through the Public Relations Coordinator. The type of information given will vary with the drinking water system and the type of emergency, but a generalized list must include:

- ! Centralized New Releases and statements to avoid contradictory or confusing statements.
- ! When responding to questions make only factual responses, **never guess, speculate or exaggerate**. If you don't know the answer to a question, tell the reporters "I don't know", and then give them an indication of when you might know or an explanation as to why the answer is unknowable.

- ! Inform the public of any possible contamination of the drinking water and resulting boil orders.
- ! Inform the public of the availability and location of alternate sources of drinking water.
- ! Implement drinking water rationing.
- ! Arrange for an **escorted** news media tour. Only those media representatives who have proper identification should be allowed within the work areas or facilities, and only with an escort. These tours must be pre-authorized by the Emergency Coordinator and Public Relations Coordinator. For safety reasons, do not allow the news media to wander around the work sites.

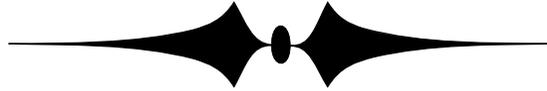
### *RECOVERY CHECKLIST*

#### **Designate a Post Emergency Coordinator**

The Post Emergency Coordinator's duties would include the following:

- ! Document all contracts, agreements and emergency work or materials used during the emergency to ensure proper payments and reimbursements.
- ! Conduct a detailed safety inspection of the drinking water system facilities.
- ! Coordinate the completion of all emergency repairs and schedule permanent repairs to the service area.
- ! Notify key agencies (local and state health departments) of emergency repair status and the scheduled completion of the system repairs.
- ! Release repaired facilities and equipment for normal usage.

- ! Replace or authorize replacement of materials and supplies used during the emergency.
- ! Complete permanent repairs and replacements of the system facilities.



This emergency response guidebook was written as a guide for the drinking water system personnel to help them prepare and maintain their own emergency/ disaster response plan. Because each drinking water system is so unique, it does not cover every aspect of a response plan; therefore, a response plan must be designed by those individuals who are directly involved in maintaining that particular drinking water system.

If we can be of any service or assistance, either in the design of the emergency response plan or the implementation of it please call us any time. Our emergency phone number is:

**(801) 536-4200 or 536-4123**

Good luck, and let's hope we never have to implement a response plan, but let's be prepared just in case!

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