



Water and Wastewater System Emergency Response Plan Template

This template is designed to be a guide for Emergency Response Planning. It is not an all inclusive document.

Kentucky Rural Water
Association
3251 Spring Hollow Ave.
Bowling Green, KY 42104

Phone: (270) 843-2291
Fax: (270) 796-8623

July 2003

Emergency Response planning should be a coordinated and planned process. Proper planning can lessen the impact of an emergency. All staff should be trained as to their responsibility within the plan and how it will be implemented. This template was designed to address various emergency hazards that may occur in rural and small systems. It incorporates emergencies that may be the result of terrorism. Regardless of the type of emergency whether natural or man-made each system has the responsibility to be prepared to protect the public health and to restore services that may be impacted.

This plan should incorporate information from the Security Vulnerability Self-Assessment. Assistance is available from your State Rural Water Association.

While the process of planning may vary depending on the size of your system it is suggested that the following steps be utilized in the planning process:

Step 1 – Prepare a Governing Body/Staff Briefing - A briefing should be prepared to acquaint the Governing Body/Staff with risks and vulnerabilities to their Utility. Also a part of this step is to make some estimate of what personnel resources will be required to assist in the planning effort and for what lengths of time.

Step 2 – Obtain Management Commitment - Obtain from the Governing Body a commitment to allocate the appropriate resources and personnel to the planning effort. A mission statement should be obtained to provide direction for the effort.

Step 3 – Form a Coordinating Committee - This committee will be a working group and will develop a detailed work program and schedule. A list of assumptions should be prepared by this committee with the goal to establish a set of minimum standards for the plan.

Step 4 – Assign the Planning Responsibilities - This task will help to identify individuals that will have a specific responsibility during the planning effort. One person should be designated as Emergency Director for the Utility and should assume the lead in plan preparation and execution.

Step 5 – Document Procedures - Document the administrative procedures to account for and manage the planning process, including plan development and plan implementation.

How to Use this Template

This document is designed for use by water system personnel. There are three sections to this document.

The first part provides instructions and process for completion of the planning process. The second part is the emergency response plan and the third part is miscellaneous and resource information.

Keep this Document

This is a working document. Its purpose is to start your process of emergency response planning. It should be reviewed and updated on a regular scheduled basis. Don't forget this is a sensitive document. It should be stored separately in a secure location.

Access to this document should be limited to key water system personnel and local officials and others on a need-to-know basis.

Acknowledgements:

The foundation of this template is the Rural and Small System Emergency Response Manual, which was developed in 1994 in response to, increased man-made and natural disasters. The manual was developed through Georgia Rural Water Association with input from a host of state and federal agencies.

Index Page

Introduction	I-1
Instructions for completion of template	I-2 – I-5
Certification Letter Template and Law Language	I-6
Template Contents	
General Information	1
Plan Goals	2
Classification of Emergency	3
Critical Information for Emergency Response Management	4 & 4a
Immediate Actions and Procedures to Lessen Impact of Identified Emergency	5
Communication Log	6
Contact List	7-12
Work Order Log	13
Location of Critical Information	14
Recovery Checklist	15
Preliminary Damage Assessment	16
Plan Distribution List	17
Record of Changes	18
Emergency Hazard Identification Ranking Form	19
Critical Components and Vulnerabilities	20
Plan Evaluation	21
Mitigation/Prevention Possibilities	22
Miscellaneous Information	
Utility Mutual Agreement Sample	24-25
Flood Debris	26
Solid Waste Handling	27
Household Chemicals	28
Disinfections of Unsafe Drinking Water	29-31
Water Pollution	31
Septic Tanks	31
Underground Storage Tank	32
Wastewater Treatment Plans	33
Trapped Flood Water	33
Dealing with the Media	37

Instruction for Completion of Template:

These instructions are not provided in numerical page order. They are designed so that if the instructions are followed, the completed plan will be in a logical sequence for ease of use if there is an emergency.

1. Complete page 4 – Critical Information

This form provides critical information that will be immediately needed in case of an emergency. It defines general information about the system and 1st priority contact information. The designated officials to manage the emergency should be involved in the planning stage of this plan. In any emergency the news media will be involved. It is important to designate one individual as the spokesperson. Additional resource material on dealing with the media is provided on page 37.

2. Complete page 2 – Establishment of Goals

A system is considered a lifeline because water and wastewater is essential to the safety and health of the population it serves. Each system service area should develop specific goals and acceptable levels of service under hazards and recovery conditions. Establish a state of goal for each essential area. If there is more than one goal they should be prioritized to provide direction for the planning process and response to an emergency. The following are specific goals to consider.

Life Safety - A system's primary goal should be to preserve the health and safety of its personnel and the public. Meeting this goal should be considered a continuous function of the system before, during and after the effects of a hazard are experienced. Examples of life-threatening or injury-causing conditions could be:

- Failure of distribution system
- Failure of dams
- Distribution of contaminated water
- Release of hazardous materials, especially chlorine
- Collapse of structures such as water towers

Fire Suppression - Most fire suppression activities depend on the potable water distribution system. During disasters, there may be many fires to fight. Fire suppression capabilities should be made available immediately after a disaster, or as soon as possible.

Public Health Needs - Water is essential to life and health. However, some needs are more immediate than others. The following list is of public health needs and the allowable time without potable water being available. Times are guidelines only and depend on the magnitude of the disaster.

- Hospitals – Continuous need
- Emergency Shelters – Immediate need
- Kidney Dialysis – 24 hours
- Drinking Water – 72 hours
- Personal Hygiene, Waste Disposal – 72 hours

Commercial Business Uses - Many businesses depend on water for their operation; for example, restaurants, car washes and many manufacturing companies. However, nearly all businesses could not function for long without potable water for drinking, waste disposal and cooling water for air conditioning and other process systems. Also, many commercial structures are protected with fire sprinkling systems that should not be left without a water supply.

Establishing priorities for service is an important part of completing this step of vulnerability analysis. Most medical facilities need continuous service; contact them to determine approximate daily needs or estimate their needs from utility records. Other priorities should be police and fire departments, and the

emergency operations center. For medical facilities and other priority customers, it is a good idea to have a record of a contact person or persons, their phone numbers, reasons for needing priority service, approximate daily needs and an alternative on-site source if one is available.

Water Requirements - Water requirements under disaster conditions can be assumed or estimated only in terms of the nature and magnitude of the disaster, user needs and capabilities of the system. An attempt to approximate water demand for each type of hazard should be made using whatever local expertise is available. Research conducted by state and federal agencies may provide useful information by drawing on the expertise from like disasters.

3. Complete pages 7, 8, 9, 10, 11 and 12 – Emergency Response Contacts

These pages contain names and contact information that may be needed during an emergency. Once the plan is completed this listing should be reviewed to ensure that all available resources that may be needed are listed.

4. Complete page 19 – Emergency Hazard Identification and Ranking

This form is designed to identify the types of emergencies the system may be subject to. Although it may be a guess, an effort must also be made to predict the probability of a disaster or emergency for your service area.

After identifying the type of emergency, determine the probability of it occurring and if it did the most likely magnitude of the event on your system.

The final step on this form is to rank each emergency hazard. Remember to spend your time planning for those disasters and emergencies that will most likely affect your service area.

5. Complete Page 20 - Critical Components to Utility

At the completion of the hazard analysis, the effect a specific hazard will place on the different components and on water quality and quantity should be determined.

A separate form should be completed for each of the hazards identified on Page 19.

Each water system is different, but can be described and analyzed in terms of its components. Look at each critical area and determine what critical components are vulnerable for each hazard identified on page 19. The **Security Vulnerability Assessment** should be incorporated into the completion of this form

6. Complete page 5 – Immediate Actions and Procedures to Lessen Impact of Identified Emergency

A separate form should be completed for each of the hazards identified on Page 19.

With any emergency there are immediate steps that can be taken. This listing provides the management team a quick reference for consideration to immediately lessen the impact of the emergency hazard.

Each emergency hazard may have different immediate notification needs. For example, if it is a terrorist act the law enforcement authorities would be a priority; if the emergency is a hazardous waterborne disease outbreak the medical community and public would be a priority.

Complete each section with the focus on what is needed to immediately lessen the impact of the identified emergency hazard.

7. Complete page 14 – Location of Critical Information

During an emergency, various agencies and authorities that are unfamiliar with the system will need information. This listing should identify information that is available and its locations for quick access as the need arises.

8. Complete pages 17, 18 & I-6 – Plan Distribution List & Certification

Once the plan is completed it will include sensitive information and its distribution should be controlled for security purposes and to insure that any modifications are kept up-to-date on

9. Certify you have completed the plan to the EPA – Page I-6

At this stage the pre-planning for each potential emergency hazard is complete. The remaining components of your plan are implemented during an emergency. The remainder of these instructions is intended to provide information and explanations for consideration and training.

Page-by-Page Overview

Page 1 – General Information

This page provides a quick reference to focus the response actions to an emergency.

Page 2 – Goals of Emergency Response

These goals establish clear objectives to achieve in responding to an emergency.

Page 3 – Classification Guidelines to Determine Impact of An Emergency

When an emergency occurs, an initial assessment of potential impact should be made. This determines the extent of the response.

Page 4 - Critical Information for Emergency Response Management

Provides the critical system information, 1st priority contact of system officials and 1st priority law and emergency response entities. This page also identifies who will be the media spokesperson for the system.

Page 5 – Immediate Actions and Procedures to Lessen Impact of Identified Emergency

This page should have been completed for each potential emergency hazard identified in the planning process. It provides the emergency response management team with guidance developed from the scenario planning. These scenarios form the response to each emergency that may be experienced by the system.

Page 6 – Communication Log

When an emergency takes place and outside agencies appear on the scene, it is important to document the activity that takes place. Remember it is your system and you are in charge and responsible to the community. Documentation of communication, request and actions are critical for the assessment that will take place after the emergency.

Pages 7 – 12 – Contact Listings

These pages break down contacts and resources that may be needed during an emergency. They provide a quick access to critical and support contacts. These listings should be reviewed and updated on a regularly scheduled basis.

Page 13 – Work Order Log

An emergency will require multiple responses and actions to take place simultaneously. If the emergency is pro-longed different shifts will be needed. This work order form allows for all personnel involved to know the work that is being done and by whom.

Page 14 – Location of Critical Information

Information will be needed as various personnel and agencies respond to an emergency. Knowing the information that is available and where it is located will benefit the emergency response time and provide for a better decision making process.

Pages 15 – 16 Recovery Period Checklist & Preliminary Damage Assessment

Returning to normal operations is vital to rapid restoration of clean, safe water and sanitary facilities to the community and is essential to the assessment and recovery process of your service area.

In the aftermath of any disaster such as a flood, hurricane, earthquake or other emergency, the following actions should be taken as soon as possible.

1. Conduct an on-site inspection of all treatment facilities;
2. Check and examine the condition and operation of all process equipment;
3. Check for structural and other damage to facilities and chemical storage tanks;
4. Conduct an inspection of the plant for leaks in the piping system;
5. Prepare a preliminary damage report; and
6. Report conditions to appropriate officials.

Most primary plant processes can continue to operate during brief periods of power outage. However, for extended periods of power loss, it may be necessary to take additional steps to return the service. Temporary power by generators may be possible until full service and power is returned. Contact your designated Emergency Management official to request emergency power. When power is restored, take the following actions:

1. Restart process equipment, one at a time, that was shut off or off-line during the power loss;
2. Before returning dirty filters to service, filters must be backwashed;
3. Plant flow should be increased as appropriate;
4. Inspect all process equipment and performance of equipment and treatment processes;
5. Processed and treated water must be verified;
6. Survey all damage and make sure all water is being properly treated. Any areas where contamination of the water system may have occurred should be reported immediately to the local state office so bacteriological and/or chemical samples can be taken and analyzed.

Identify and document all costs related to each specific emergency. All or a portion of costs due to a disaster may be recovered through federal or state disaster-relief funding. To clearly identify costs related to a disaster, insure costs related to any specific operation are charged to the work order number for the project. To restore the entire system service area, many work orders may be used during a natural disaster. However, all emergency work orders should be specifically coded to identify them as being related to the emergency.

Use proper record keeping procedures to keep track of the work. These records will be invaluable for assessing damage and evaluating the response. The records also indicate follow-up activity needed. Video and pictures are excellent ways to document actions.

Predicated upon the concept that emergency operations will begin at the level of government most appropriate to provide effective response, state assistance shall be provided upon request when emergency or disaster needs exceed the capability of county and municipal governments. Federal assistance is supplemental to that of state and local governments and is available upon approval of a request by the Governor of the appropriate federal agency or the President.

Federal disaster assistance programs available with or without a Presidential Declaration have been identified in FEMA Manual 8600.2, *"Digest of Federal Assistance Programs"*. Each federal program identified lists the primary implementing federal agency. Requests to such agencies will be made through the director or state emergency management agency/state disaster coordinator. Federal assistance subsequent to a presidential declared emergency or major disaster may be made available under either emergency or major disaster provisions of Robert T. Stafford Disaster Relief and Emergency Assistance Act, PL 93-288, as amended by PI 100-707, dated November 1988.

Pages 17 – 18 – Distribution of Plan and Record Changes

Key system officials must have access to the plan; thus, there will be multiple copies. It is important to keep track of who has a copy of the plan to ensure that all plans are kept updated.

The Emergency Response Plan elements will change over a period of time. It should be reviewed on a regularly scheduled basis.

Pages 19-20 – Emergency Hazard Identification/Ranking Form and Critical Components Identification

These are worksheets utilized for completion of the plan and should be retained and used when the plan is reviewed.

Pages 21 – 22 – Plan Evaluation and Mitigation/Prevention Possibilities for Utilities

An evaluation of the plan should be undertaken after it is completed to assess any mitigation actions that may be taken and other activities such as operational drills that may benefit a response to an emergency hazard.

After an event an evaluation team should be assembled to assess how the plan performed and to determine modification needed.

Pages 23 – 33 Miscellaneous Resource Information

These pages contain resource information to provide an overview of how to handle specific issues that may be experienced during an emergency. Be sure that any actions taken comply with state regulatory requirements.

Certification

The law “(b) Each community water system serving a population greater than 3,300 shall prepare or revise, where necessary, an emergency response plan that incorporates the results of vulnerability assessments that have been completed. Each such community water system shall certify to the Administrator, as soon as reasonably possible after the enactment of this section, but not later than 6 months after completion of the vulnerability assessment under subsection (a) that the system has completed such plan. The emergency response plan shall include, but not be limited to, plans, procedures, and identification of equipment that can be implemented or utilized in the event of a terrorist or other intention attack on the public water system. The emergency response plan shall also include actions, procedures, and identification of equipment, which can obviate or significantly lessen the impact of terrorist attacks or other intention actions on the public health and the safety of supply of drinking water provided to communities and individuals. Community water systems shall, to the extent possible, coordinate with existing local emergency planning committees, established under the Emergency Planning and Community Right to Know act (42 U.S.C. 1101 et seq.) when preparing or revising an emergency response plan under this subsection”

Sample Letter of Certification:

June 7, 2002

Christine Todd Whitman
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW.
Washington, DC, 20460.

Dear Governor Whitman:

Option 1 – complete a plan:

We are pleased to inform you that we have completed an emergency response plan that can be implemented in the event of a terrorist or other intentional attack on our drinking water system. We have used the security vulnerability assessment as a tool to develop the emergency response plan, which includes actions, plans, procedures and identification of equipment that can be used to mitigate a terrorist attack. In accordance with Section 1433(b) of the Safe Drinking Water Act, please accept this letter as formal notification that we have completed the required emergency response plan. Should you need further information please contact me at _____.

Option II - revised current plan:

We are pleased to inform you that we have revised our current emergency response plan that can be implemented in the event of a terrorist or other intentional attack on our drinking water system. We have used the security vulnerability assessment as a tool to modify the existing emergency response plan which includes actions, plans, procedures and identification of equipment that can be used to mitigate a terrorist attack. In accordance with Section 1433(b) of the Safe Drinking Water Act, please accept this letter as formal notification that we have completed the required emergency response plan. Should you need further information please contact me at _____.

Sincerely,

GENERAL INFORMATION

A. Act to Protect Life

B. Notify Employees of Implementation of Emergency Operating Plan:

- Act to ensure safety of employees and families.
- Maintain, to a practical extent, records and logs of actions taken and ask all supervisors to do the same.
- Attempt to coordinate efforts with other regulatory agencies.

C. Preserve Water in Storage:

- Consider what can be saved, what can be sacrificed.
- If damage is apparent, lower water in dams to prevent structural failure.
- If applicable, assess damage to sewer system which could contaminate water supplies.
- Secure well houses against unauthorized entry and possible contamination.

D. Isolate Areas That Will Take Longest to Restore Service and Arrange for Emergency Water Distribution in Those Areas:

- Establish collection points and ration water.
- Locate source of water containers (plastic bottles, jerrycans, etc.)
- Spot containers at locations to serve immediate needs.
- Locate trucks with water-carrying capabilities.
- Start reserve pumping facilities.
- If needed, provide information to public on emergency disinfection of drinking water.

E. Set Priorities on Repair Work:

- Plan to restore service by area.
- Prepare and keep current a plan to restore service
- Get input from appropriate agencies on essential uses.
- Take into account condition of existing facilities.
- Take into account the public's need for protection—determine if other water sources are available.
- When work exceeds capabilities, notify agency.

Goals For Emergency Response

Priority

Statement of Goal

Life Safety

Fire Suppression

Public Health

Commercial and Business

Service Priorities

Water Requirements

CLASSIFICATION GUIDELINES TO DETERMINE IMPACT OF AN EMERGENCY

Date: _____

Emergency Hazard: _____

Initial assessment classification: _____

Level 1 – NORMAL TROUBLE - Trouble, which can be handled routinely. This would include normal operator activity.

Level 2 – ALERT (Minor Emergency) - Trouble that can be handled by a system with oversight and guidance from the state primacy agency and/or Rural Water Association. This could be the early sign that a system or part of a system could be lost.

Level 3 – MAJOR EMERGENCY - Problems that are somewhat beyond the capability of system personnel and association capabilities may require a declaration of emergency to authorize shortcut procedures.

This level would require the mobilization of all Utility personnel who might seek additional help by activation of mutual aid agreements or contracts.

This level of emergency leaves no doubt that outside help is required because of a serious threat to health or facilities of a member system.

Level 4 – PROBLEMS CLEARLY AND IMMEDIATELY BEYOND THE CAPABILITY OF THE UTILITY

Recovery time will exceed one week, cost will be great, large amounts of mutual aid will be required and a request for declaration of emergency will be required.

This level would normally affect many different services that may be lifelines to the water and wastewater systems. These natural or man-made disasters will cause disruption over a large area of service and cause a severe health risk.

Critical Information for Emergency Response Management

System Name:
PWS Number:
Population:
Address:
Source(s) of water:
Amount of Storage available for use:
Types of treatment:

1st Priority contact information -System officials responsible for management of an emergency:

Name	Position	Address	Phone #	Cell #	Pager #

Local Law Enforcement Numbers

Name	Position	Address	Phone #	Cell #	Pager #

Local Emergency Response Entities

Name	Position	Address	Phone #	Cell #	Pager #

Primary and Secondary Media Spokesperson:

Name	Position	Address	Phone #	Cell #	Pager #

Critical Information for Emergency Response Management Continued

Alternate Sources of Water Supply

Source	Contact Person	Phone Number	Cell #	Pager #

Mutual Aid Agreement(s)

Entity	Contact Person	Phone Number	Cell #	Pager #

Immediate Actions and Procedures to Lessen Impact of Identified Emergency
 (Complete one for each identified Emergency Hazard)

Emergency Hazard: _____

Immediate Action and/or procedures to lessen impact of emergency

1. _____
2. _____
3. _____
4. _____
5. _____

Immediate Agency Notifications Needed

Name	Location	Contact Person	Phone Number	Pager Number	Cell Phone Number

Critical Local Business Contacts for Health and Safety to Lessen Impact of Emergency

Name	Type of Business	Contact Person	Phone Number	Pager Number	Cell Phone Number

Critical Equipment Needs to Lessen Impact of Emergency

Equipment	Company	Phone Number #1	Phone number #2

Media Contact List

Local Radio Stations				
Call Letters	Frequency	Contact Person	Home #	Office
Local Television Stations				
Call Letters	Frequency	Contact Person	Home #	Office
Local Newspapers				
Name of Paper	Distribution Schedule	Contact Person	Home #	Office

RECOVERY PERIOD CHECKLIST

- Perform in-depth damage assessment of system to determine long-term effects of damaged areas.
- Notify appropriate agencies of system status and situation.
- Prepare written documentation of emergency work performed for possible compensation by emergency agencies.
- After completion of emergency repairs, rest the crews and return, if possible, to more normal work schedules.
- Notify appropriate insurance carriers. Provide written and photo documentation of damage.
- Assist in the survey of emergency repairs and scheduling of permanent repairs.
- Assist in the inventory of repair supplies and replacement stock.
- Implement complete record keeping of time and expense
- Recommend when able, servicing of emergency equipment.
(oil changes, lubrication, etc.)
- Make sure the public is kept informed throughout the extent of the emergency.

PRELIMINARY DAMAGE ASSESSMENT

General Overview

- Determine need to repair, replace, or abandon facilities

- Estimate cost to repair damage
- Evacuate buildings in danger of collapse
- Confirm that field crew does the following:
 - Closes and tags
 - Damaged Facilities; and
 - Equipment

Reservoirs:

- Check for:
 - Seepage
 - Cracks
 - Embankment slump
- Leaks
- Landslides
- Broken inlet/outlet pipes & underdrains

Notify DNR if problems are found.

- Lower water levels to reduce possibility of structural damage

Wells:

- Check for physical damage to facilities
- Test for contamination
- Name, address, phone # for private lab
- Check for pump or motor failure
- Check power source

Treatment Plants:

- Check if power available and condition of mechanical and electrical equipment
- Check for quality of outflow
- Check for chemical spills or releases
- Check for need of emergency purification
- Check for structural damage

Tanks:

- Check for evidence of failure of sub base
- Check for:
 - Leaks
 - Cracks
 - Broken inlet/outlet pipes, underdrains
- Check for buckling

Distribution System:

- Check for:
 - Leaks
 - Breaks
 - Pressure loss in lines
 - Cross-connections between water and sewage
 - Overflows in streets
- Check for mechanical couplings

Emergency Hazard Identification / Ranking Form

Type of Emergency Hazard	Probability			Magnitude			Ranking
	High	Moderate	Low	Severe	Moderate	Light	
Construction Accidents							
Earthquakes							
Densification							
Fault Rupture							
Ground Shaking							
Landslide							
Liquefaction							
Tsunami and Seiche							
Floods							
Forest or Brush Fires							
Hazardous Material Release							
Hurricane							
Flooding							
Storm Surge							
Wind							
Nuclear Bomb Explosions							
Nuclear Power Plant Accidents							
Other Severe Weather							
Extreme Heat							
Lightning							
Snow or Ice							
Wind							
Other							
Riots							
Strikes							
Structure Fires							
Tornados							
Transportation Accidents							
Air							
Rail							
Road							
Water							
Vandalism, Terrorism							
Treatment Facilities							
Storage Facilities							
Distribution or Collection							
Contamination							
Threats							
Volcanic Eruptions							
Waterborne Diseases							

Critical Components to Utility

Emergency Hazard: _____ (complete one for each identified hazard on previous page)

Critical Area	Critical Component listing for each area
Source Water	
Storage & Holding Tanks	
Distribution System	
Collection System	
Treatment Facilities	
Equipment & Supplies	
Internal Communication	
External Communication	
Administration Facilities	
Access to Records and information	
Scada systems	
Computers	
Power Supply	
Other	

PLAN EVALUATION

Each Utility will have different procedures for plan evaluation depending on the available resources. The testing of the emergency response capability is important particularly in those geographic areas where the risks of major disasters are greatest.

Step 1—Training

Training should focus on increasing the knowledge of the Utility's personnel about disaster hazards and the effect they will have on the system. An opportunity to practice disaster response should also be incorporated in the training.

Training can be in-house or through outside sources. Consideration should be given to the idea to train the trainer. Train those that will be in a position to train others and will make decisions during an actual response.

Step 2 -- Conduct Operational Drills

Many areas conduct Emergency Response drills. These drills are often at local levels, sponsored by city or county governments, fire and police departments, and other affected agencies.

State and federal drills are conducted also, many times addressing a specific hazard. Get involved; find out by asking when and where drills are scheduled. Go and observe other state and community drills, note what goes right or wrong. There is a lot happening in Emergency Response. Find out what's happening in your area or a larger system near you and get involved. You will find most people in emergency assistance have a genuine desire to help. Don't be afraid to conduct your own drills by acting out one of your scenarios used to determine vulnerability.

Step 3 – Occurrence Evaluation

At the conclusion of the event, the Utility should assemble and prepare an after-event evaluation report. The report should address issues, background, recommendations, and conclusions. This report assesses actions, responses, and evaluates the Utility's response. This report can serve as a model for future emergency response and appropriate actions.

Mitigation/Prevention Possibilities for Utilities

Personnel Shortages

- Safety Education
- Cross Training
- Proper Equipment
- Use of Other Agencies

Agency Contacts & Agreements

- Rural Water Association
- State Emergency Management
- Local Government
- Neighboring Utilities
- Equipment Suppliers
- Material Suppliers
- American Red Cross
- Law Enforcement
- Lifeline Utilities
- Alternate Communication Sources
- Emergency Water Production
- Water Haulers
- Salvation Army

Educational Areas for Utility Personnel

- Family Safety Plans
- Source Water
- Watershed Hazards
- Chemical Storage
- Piping
- Equipment
- Process Basin
- Storage Tanks
- Ground Water and Well Hazards
- Treatment Facilities
- Electrical Power & Instrumentation
- Hazardous Materials Spills
- Reservoir Hazards
- Dams
- Intake Structures
- Interconnection Possibilities
- Valves and Appurtenances
- Economics of Mitigation

Miscellaneous Information

The Miscellaneous Information section of the Emergency Management Manual is a compilation of extremely useful material that can be utilized by the State Association in development of its own plan. It also provides appropriate information to utilities for inclusion in the Utility's Response Plan.

Utility Mutual Aid Agreement

Purpose

Emergency situations could arise in a community's water and/or wastewater system that would require assistance from an adjoining community to restore normal operation. The purpose of this Mutual Aid Agreement is to formalize and define the extent of this assistance between the two communities identified herein.

If an emergency situation arises in one of the participating communities, the authorized officials in each community identified below, agree to support each other during the emergency, to the extent possible, upon request as initiated by authorized personnel from the affected community. Each community will provide the name(s) and emergency telephone numbers(s) of personnel authorized to initiate a request for aid.

Agreement to Render Aid

WHEREAS the governmental units of _____ and _____ in the State of _____, have rendered mutual aid to one another in the past, and anticipate a continuing demand for such mutual aid and cooperation in the use of their personnel and equipment in the future, for the safety, health, and welfare of the people of their governmental units during a time of emergency, hereby agree to become part of the _____ RURAL WATER ASSOCIATION EMERGENCY RESPONSE SYSTEM, in conjunction with the Department of Emergency Management of the State of _____.

THEREFORE, the parties hereby agree that their water/wastewater department and/or department of public works, will render mutual aid to each other under the following conditions:

1. In the event of a serious man-made or natural emergency, the parties of this agreement shall cooperate in any effort to provide service, subject to the terms and conditions prescribed in this agreement, and to the extent possible.
2. The city manager/mayor, or the water/wastewater superintendent, or the director of public works, or other such individual serving as a governing or managing party of the participating governmental unit, shall have the authority, in the event of a serious emergency, to determine whether manpower and/or equipment shall be sent beyond the jurisdictional limits of its governmental unit.
3. It is the intention of this agreement to vest in each party the sole right to determine when its needs will permit it to respond to a request by another governmental unit, and it is further agreed by the parties hereto, that if the water/wastewater department refrains from sending any manpower and/or equipment beyond its jurisdiction, that such unit thus failing to respond, shall not be liable for any damages to the requesting party or any third party.
4. The superintendent of the water/wastewater utility, director of public works, or such person acting in that capacity, SHALL BE IN TOTAL COMMAND of the responding party. All personnel and/or equipment of the respondents shall be under the immediate command of the person(s) attached to the responding community. All commands or orders for the use of such personnel and/or equipment shall be made by the superintendent of the water/wastewater utility, or such person acting in that capacity, of the requesting community, through the person(s) in charge of the responding community's personnel and/or equipment, whenever it is practical. However, the person(s) acting in authority for the responding community shall, at all times, have the authority to recall the responding water/wastewater personnel and/or equipment from an emergency assistance mission upon direct notice to the person(s) in authority for the requesting community or governmental unit.
5. It is understood that personnel and equipment of the responding governmental unit shall be utilized in the capacity for which they are intended, and further, SHALL NOT be held in "stand by" capacity for a period exceeding _____ hours. If the requesting party does not need the said personnel and/or equipment in the emergency area, it will be returned to the responding community.

6. Each governmental unit entering into this agreement shall continue to provide the same salaries, compensation for death or disability, and retirement and furlough payments, to their respective employees or volunteers who are assigned to render aid or other assistance to the requesting governmental unit, as that employee or volunteer would receive if on duty within the jurisdictional limits of the governmental unit by which he or she is employed.
7. Cost of repairs and employees or volunteers of the responding governmental unit operate maintenance of equipment used or expended while rendering assistance under this agreement will be borne by the governmental unit owning the equipment, if said equipment is operated by employees or volunteers of the responding governmental unit for a period not exceeding 24 hours. If said equipment is operated by personnel from the requesting community, or is requested for a period longer than 24 hours, then the requesting governmental unit or community will assume the expense of any repairs and/or maintenance required by the said equipment. It is further agreed, that if said equipment is required by the requesting community or governmental unit for a period exceeding 24 hours, that the requesting community or governmental unit will be responsible for returning the requested equipment, in good condition, to the responding governmental unit.
8. It shall be the responsibility of the requesting community or governmental unit to notify the appropriate state or other agencies of governmental authority, in accordance with all applicable laws and/or policies, the nature and extent of the emergency.
9. To prevent haphazard and/or unauthorized response to a request by a community or governmental unit's water/wastewater department to emergencies outside of the jurisdiction of the responding party, NO PERSONNEL OR EQUIPMENT WILL BE DISPATCHED, except by the direct request of authorized person(s), identified in this agreement, from the responding governmental unit or community, an authorized representative from the State Department of Emergency Management, or an authorized representative of the _____ Rural Water Association.
10. Cost of meals, lodging and/or fuel, expended or consumed by personnel or equipment of the responding government unit, shall be borne by the requesting party to this agreement, unless otherwise expressly stated in a separate, attached mutual aid agreement between the parties to this agreement.
11. There will be no costs incurred by the requesting community for any meals, lodging, fuels or other needs for any staff person(s) or members of the Board of Directors of any participating Rural Water Association, or the State Department of Emergency Management.
12. No participating Rural Water Association to this agreement shall be held liable for any injury or damages incurred by or caused by personnel working, or equipment operated, under the authority of either governmental unit to this agreement.
13. Any party to this agreement may, upon thirty days written notice to all parties to this agreement, withdraw from further participation.

Execution of Agreement

IN WITNESS WHEREOF, the parties do sign and execute this Mutual Aid.

Appropriate Assignees

What to Do with Flood Debris

All debris must be managed to avoid future environmental problems

In General

All solid wastes which cannot be recycled or reused must be ultimately disposed of in municipal solid waste landfills, construction/demolition landfills or inert landfills. For the location of the disposal site nearest you, contact your local state regulatory agency. The only exception to landfill disposal will be open burning of trees, limbs, stumps, other vegetative debris caused by the flood and clean lumber/plywood.

The EPD encourages the recycling of waste if practical. Trees, limbs, and stumps can be chipped for mulch if equipment is available.

White goods (appliances), batteries, tires and metals should be separated for recycling.

All household garbage, such as food and other putrescible waste, must be disposed of in municipal solid waste landfills. Household items such as furniture, carpet, drapes, clothing, bedding, mattresses, etc. may be disposed of in construction/demolition landfills.

All construction/demolition type wastes (lumber, siding, shingles, sheetrock, etc.) may be disposed of in inert waste landfills.

Inert wastes (mud, dirt, concrete, bricks, cured asphalt, tree stumps, limbs, leaves) may be disposed of in inert waste landfills.

Local governments may establish temporary locations for transfer stations, convenience centers or stockpiling areas which have been established to handle the large volumes of wastes which cannot be directly transported to recycling or disposal sites. These established sites need to be convenient as possible, provide for the separation of wastes for appropriate handling and should be closely supervised to prohibit mixing of waste materials.

Burning Flood Waste:

Only trees, limbs, stumps, other vegetative debris, and clean lumber/plywood can be burned without specific approval. Call your regulatory agency prior to burning any other materials.

Do not burn asbestos containing waste, tires, shingles, painted lumber, insulation, plastics, plastic sheeting, carpeting, draperies, linens, kitchenware, furniture, mattresses or household chemicals. These materials cause serious pollution and health effects if burned.

If debris is to be burned, take the following steps:

Call your local government to determine if a central burning location has been established. If so, use that location. If not, then coordinate the burn with the local fire department and the Forestry Commission.

Conduct the burning when the wind is blowing away from roadways, railroad tracks, airfields, and populated areas.

- Provide supervision on the burn site.
- Avoid exposure to the smoke.
- Please burn between 9 a.m. and 6 p.m. to achieve the best natural dispersion of smoke.

For Asbestos-Containing Waste:

Asbestos-containing waste, such as boiler/pipe insulation, fireproofing, floor tiles, asbestos roofing, transite boards:

Where possible, and especially for large projects, asbestos waste removal and disposal should be performed by licensed asbestos abatement contractors. When this is not possible, follow the following guidelines:

1. Keep all suspected asbestos-containing materials wet.
2. Collect and place wet asbestos in bags or covered, pre-lined (two or more layers of plastic) metal bodied trucks, commercial dumpsters, or containers.
3. Place asbestos warning labels on all bags and containers.
4. Transport waste in enclosed or covered vehicles to landfills.
5. For information on removal, disposal, or the location of approved landfills, contact your local regulatory agency.

Household Chemicals and Hazardous Waste

- Homeowners returning to their homes after floodwaters recede may find products used to care for home and property that are damaged and unusable.
- Products labeled with words such as POISON, DANGER, WARNING or CAUTION contains hazardous chemicals. These wastes, commonly referred to as “household hazardous wastes”, should be separated from other wastes before disposal.
- Use extreme caution when cleaning up household products in leaking or damaged containers. Wear rubber gloves and avoid breathing any fumes or dust. Do not work around these damaged products in confined or poorly ventilated areas.
- The U.S. Environmental Protection Agency is in the process of setting up local household hazardous waste collection sites to receive flood-damaged wastes. Use of these collection programs will ensure that wastes are disposed of in a safe and environmentally sound manner.
- Check with your local officials and use a household hazardous waste collection program if one is available in your area. If a collection program is not available, some of this waste may be disposed in a municipal solid waste landfill with the landfill operator's permission. For your own safety, do not burn these materials as they may produce toxic smoke.

Drums -----Tanks -----Barrels

- Most barrels that wash up in the flood are open – burn barrels, trash barrels, or dock barrels.
- There may be danger in sealed barrels, drums, or tanks with unknown contents. These should be handled by trained persons. If you find sealed drums, barrels, or tanks of unknown contents, call your local regulatory agency.
- If a propane tank is in flood debris, a company distributing gas may be able to identify the tank and return it to its proper location. Propane tanks have serial numbers that help to identify owners and locations.
- If propane tanks are found there is reason to believe they may be unsafe, contact the local emergency management coordinator or the state emergency management agency.

Restoring Drinking Water

If you are on a Community Water System

As long as adequate water pressure has been maintained through the flood, and the disinfections treatment system has been intact, you may only need to flush your water pipes.

Disinfection of Unsafe Drinking Water

The following procedures will destroy the usual bacteria and other microorganisms that may be present in water obtained from a contaminated public water supply system or from alternate emergency sources. IF YOUR WATER SYSTEM IS UNDER A "BOIL WATER NOTICE", YOU SHOULD CONTINUE TO BOIL YOUR WATER UNTIL YOU ARE NOTIFIED BY YOUR WATER UTILITY THAT THE WATER SYSTEM HAS BEEN RESTORED TO FULL OPERATION AND THAT THE MICROBIOLOGICAL QUALITY OF THE WATER IS SAFE FOR HUMAN CONSUMPTION.

HEAT DISINFECTION (boiling)

Boil the water for at least one minute after reaching a rolling boil.

CHEMICAL DISINFECTION

If boiling your water is not possible, consider chemically disinfecting your water. Follow the steps outlined below:

1. Strain water through a clean, tightly woven cloth into a clean container to remove any sediment or floating matter.
2. Purify the water with one of the following chemicals (choice of chemical is based on availability).
 - a. Hypochlorite solutions (PUREX, CLOROX or other household bleach).

Read the label to find the percent of available chlorine in the solution and determine the number of drops needed to disinfect each quart of water from the table below.

Available Chlorine	Drops of Bleach To add to each quart of clear water	Drops of Bleach To add to each quart of cloudy water
1%	10	20
4 to 6%	2	4
7 to 10%	1	2
If not known	10	20
Mix thoroughly by stirring or shaking water in container. Let stand for 30 minutes. A slight chlorine odor should be detectable in the water.		
If not, repeat the dosage and let stand an additional 15 minutes before using.		

- b. Iodine: Use USP tincture of iodine; iodine from the medicine cabinet should be suitable. Add two to three drops to each quart of clear water (or eight to ten drops to each quart of cloudy water). Mix and let water stand for 30 minutes before using.

WATER STORAGE

Water purified by boiling should be stored in clean, non-corrosive, tightly covered containers. Containers suitable for water storage include empty vinegar bottles, soft drink jugs and plastic milk containers that have been thoroughly washed and rinsed with purified water. Freezing does not disinfect water; ice cubes must be made from water that is properly disinfected.

FLUSHING HOME WATER LINES

- A. The best and easiest way to begin flushing your water lines is to use a garden hose and wash off your patio or driveway for half an hour.
- B. Water pipes in homes that have been submerged in water may be extremely dirty. Clean the exterior of pipes and faucets with regular household cleaner. Briefly run hot and cold water at all faucets to remove dirt that may have settled just inside the faucets. Next, squirt a 50 percent water, 50 percent household bleach solution into the faucets. Then flush ALL water pipes as described in Step C below.
- C. Sequentially flush out all water pipes inside the house. Begin at the faucet nearest the point where the water line enters the house. This is usually the sink nearest the water meter. Turn on both hot and cold faucets at full blast for three to five minutes. **IF AFTER THIS AMOUNT OF TIME YOUR WATER DOES NOT BECOME CLEAR, DO NOT USE IT FOR CONSUMPTION.** (You may wish to catch water in buckets if you are concerned about overloading your septic tank.)

IF YOU HAVE A PRIVATE WELL

Wells that are totally filled with mud or have suffered extensive damage will need major repairs. You will need to contact a State licensed water well contractor. A list of licensed water well contractors can be obtained from your State contractor licensing board.

A licensed water well contractor can clean out wells that are only partially damaged or partially filled with mud. A pump installer can also do the job, but only after electric power has been restored to your area. The water well contractor or pump installer can also determine if other repairs are necessary.

Wells that are undamaged should be disinfected following the procedures listed below. If muddy water is present, contact your licensed water well contractor or a pump installer for use and start-up procedures to protect your pump.

PRIVATE WELL EMERGENCY DISINFECTION PROCEDURES

1. Pump well until water is clear. Use this water to clean outdoor facilities. Do not allow it into the house plumbing.
2. When water is clear, wash down the inside of the well casing and pump again until the water is clear.
3. Drop 2 cups of chlorine tablets or pour 2 gallons of liquid bleach into the top of the well. Let well sit for 2 hours. For more specific information, call your health department.
4. Pump chlorinated water through all household water lines until there is a noticeable chlorine odor at taps. If chlorine odor is not detected, add additional chlorine until you smell it.

5. Wash down interior and exterior of well with chlorinated water using a hose.
6. Let chlorinated water stand in the well and in pipes for 24 hours.
7. Run water until chlorine smell is no longer detectable.
8. Have water tested for bacteria. Any water for temporary use should be boiled for 1 minute until you receive a satisfactory bacteria test.

CAUTION: *Use caution when working on your well to avoid electrical shock from wiring and pump.*

Page 30

LABORATORIES FOR TESTING PRIVATE WELLS

A network of water quality laboratories should be established to perform bacteriological tests for private well owners in flooded areas. Arrangements for the collection of samples should be made through county sanitarians.

Private well owners in the flooded areas should first contact their county health department. The county health department will collect a sample and send it to a cooperating laboratory. The laboratories will notify the county health department on the results.

WATER POLLUTION

CONTAMINATED SURFACE WATER

- Contact with floodwaters should be kept to a minimum. Flooded rivers and streams are contaminated with sewage, animal wastes, and other harmful contaminants.
- Stay out of floodwaters, do not swim, wade, tube, or have other recreational contact.
- Avoid recreational boating on rivers and streams in flood stage. Rapidly flowing floodwaters can contain unpredictable currents and eddies and can conceal submerged or moving objects that can damage a boat.
- If contact with floodwaters is unavoidable, shower or bathe with antibacterial soap afterward.
- If you are injured while working floodwaters, contact your doctor to see if you need a tetanus shot.
- After floodwaters recede, wash flooded buildings with clean water and biodegradable detergent. Thoroughly check and clean all natural gas, electric, drinking water, and sewage disposal systems prior to returning to service. Outdoor areas should be washed with clean water.
- Floodwaters trapped behind levees or pooled in low areas may be released or pumped back to the adjacent river or stream without special permission or permits. Use care to avoid damage or harm to neighbors.
- If you suspect floodwaters may be contaminated with petroleum products or other chemicals, contact your local emergency management agency.

Septic Tank Failures

Many septic tank systems at individual properties have been flooded. Most of these systems will remain inoperable until the floodwaters recede and the ground dries out somewhat. Some of these systems may be so damaged that repairs will be required before they will work.

One big problem with a septic tank that doesn't work is the release of untreated sewage onto the top of the ground or into stagnant pools left behind by the flood. The pooled sewage from these tanks can be a significant health hazard. The other big problem is the backup of sewage into the building; caused by a blockage that results from the damaged tank system or piping, or the fact that the system is full of water

which cannot drain into saturated ground.

Underground Storage Tanks (UST)

A. A UST Contact Center should be established for handling calls concerning UST problems in the flood impacted areas.

B. Because of the potential for releases of gasoline or diesel fuel from damages sustained from flooding, the following steps should be taken to return impacted UST Systems to operation. These steps will help to avoid future liabilities.

1. Visual Observation: Check for obvious indications of released gasoline or diesel or damage to the UST System.

2. Document all findings and maintain records of visual observations and any gasoline or diesel loss indicated through inventory records. For example, if the UST previously contained 6,000 gallons of gasoline and subsequent visual observations indicate the UST is now filled with water, detailed information should be maintained. This information will be critical for submitting request for assistance.

3. Utilize an approved precision tightness test employing overfill or vacuum test methods for evaluating the integrity of the tanks and piping prior to returning them to service. This is recommended because of future liabilities that may occur in the event that problems are not corrected at this point.

Your state may have a program to provide assistance in scheduling and conducting approved UST System tests.

Financial assistance for the required system testing in flood-impacted areas may be available through your state regulatory agency.

Assistance for Facilities with EPD Permits

Local officials are encouraged to rely upon the knowledge and expertise of their own staff. Operations specialists and engineering staff should be available for on-site consultation and advice. Contact the state regional offices if services in your area cannot respond to your needs regarding drying and overhauling motors; repairing electrical components; and repair of treatment plants, water distribution and sewage collection systems.

WASTEWATER TREATMENT PLANTS

State regulatory agency review and approval should not be required of proposed emergency measures to return sewage collection or treatment facilities to service or to replace identical parts or components to sewage collection or treatment facilities.

State regulatory agency review and approval should be required for facilities that are repaired or rebuilt to a design different from the previous facility for new facilities.

State regulatory agency review and approval should not be required for restoring power supply, including raising electrical service and equipment to a higher elevation. The repair of washed-out stream crossings, repairing or replacing existing water mains, and repairing or replacing water distribution systems will be considered maintenance. Repair of flooded water supply wells and water treatment plants using identical parts and components should not require review and approval.

Other improvements such as raising portions of the water treatment plants, water supply wells or backwash discharge lines will require review and approval by your state regulatory agency.

TRAPPED OR PONDED FLOOD WATERS

Flood waters trapped behind levees or ponded in low-lying areas may be pumped or released back to the adjacent river or stream without obtaining a discharge permit from EPD. If there is reason to believe that the trapped flood waters is contaminated with agricultural fertilizers or pesticides, petroleum, products or other chemical contaminants, contact your state regulatory agency.

Contact your state regulatory agency for approvals of new landfills or expansions. Inert landfills and transfer stations do not need site specific approval. An inert landfill can accept mud, concrete, broken asphalt, brick, and sandbags.

Information for Operators of Public Water Systems
Contact your State Primacy Agency to ensure regulatory compliance

BOIL WATER NOTICE

In order to protect the public from a potential health hazard caused by the flooding of public water utilities, all citizens that have experienced water outages or low water pressures are advised to “boil” all water prior to use for drinking, cooking, or preparing baby food. The water should be boiled for at least one minute after reaching a rolling boil. Citizens should continue to boil their water until they are notified by their water utility that the water system has been restored to full operation, and that the microbiological quality of the water in the distribution system is safe for human consumption.

This public advisory should be issued to all customers connected to those public water systems that experienced water outages or low water pressures. The boil water notice can be issued by using radio and TV, by newspaper and/or by hand delivery, and should remain in effect until acceptable corrective measures are taken and the microbiological quality of the water has been monitored to ensure it is safe to drink.

PUBLIC WATER SUPPLY WELLS

1. Wells that are destroyed, totally filled with mud, or suffered extensive damage should be plugged because they may cause further damage to the ground water supply. If you want to have the same well re-drilled, you must contact a licensed well driller. For further technical advice or for a list of licensed well drillers, contact your state regulatory agency.
2. Wells that are partially damaged or partially filled with mud can be cleaned out, repaired and disinfected by a licensed well contractor. For any technical assistance or for a list of licensed water well contractors, contact your state regulatory agency.
3. Wells that are undamaged should be disinfected following the procedure below. If muddy water is present, contact a licensed water well contractor for use and start-up procedures. Should you have any questions or need a list of licensed water well contractors, contact your state regulatory agency.
4. Make sure the water disinfection system (chlorination equipment) is functional and is operating when the well is running.
5. Repair or replace damaged water lines in the distribution system. Flush all the distribution lines until the water is clear. Disinfect the distribution lines with a strong chlorine solution, as needed, so that after a 24 hour holding period in the main there will be a free chlorine residual of not less than 10 parts per million. After 24 hours, discharge the chlorinated water from the pipes to waste, and replace it with fresh water until the free available chlorine residual is not greater than 2 parts per million in the mains.
6. Make sure the water storage tank is structurally safe and functional. Drain it to waste and disinfect it, as deemed necessary.
7. Collect representative water samples from the distribution system and the storage tank for microbiological analysis. Acceptable results must be obtained. If not, water lines and/or the water storage tank must be re-disinfected and re-tested until acceptable results are obtained.

8. Make sure traceable amounts of free available chlorine residuals are present throughout the distribution system. Verify this with field tests.
9. Expedite the rehabilitation of flooded or damaged equipment. However, do not overlook the need to fully attend to the rehabilitation (such as re-packing bearings) to avoid repeated equipment failure.

Page 34

WATER SUPPLY WELL DISINFECTION

A. USE CAUTION WHEN WORKING ON THE WELL TO AVOID ELECTRICAL SHOCK FROM THE PUMP.

B. Pump well until water is clear.

C. If well is undamaged, introduce and mix disinfectant, such as chlorine, through the entire water column. In most cases, disinfectants that are poured from the top of the well will not reach the entire water column.

For best results, the pump should be pulled, contaminated water should be removed from the well, proper quantities of disinfectant should be thoroughly mixed and surged within the well; and the mixture pumped to waste. Proper contact time must be allowed between the contamination and the disinfectants.

If contaminated water has flowed into the well and entered the aquifer, a single application of disinfectants may not be enough. In these cases, water may be pumped from the well to waste for one to three days to evacuate the well and in adjacent aquifer sediments before introducing disinfectants.

D. Introduce a prepared chlorine solution into the well in sufficient quantity to produce a minimum of chlorine residual of fifty (50) parts per million in six (6) hours after such an application.

E. Disinfect the well pump and pumping equipment with a strong chlorine solution prior to being placed into service.

F. Let the chlorinated water stand in the well and the pipes for 24 hours.

G. Pump the well to waste until no trace of chlorine (chlorine smell) is detectable.

H. Collect water samples at the wellhead and have them tested for coliform bacteria by a division approved laboratory. If water fails bacteria test, re-disinfect the well. EPD will assist in testing.

I. Before placing the well into service as a drinking water source, acceptable microbiological water quality results must be obtained.

OPERATORS OF PUBLIC WATER SYSTEMS

QUICK REFERENCE *(to prepare Chlorine Solution)*

A. Use the following number of ounces of chlorine compounds of a given available chlorine content (generally marked on the outside of the can or package) required to provide a concentration of 50 parts per million in 1000 gallons of water:

100% liquid chlorine	6.7 oz.
15% chlorine compound	44.7 oz.
25% chlorine compound	26.7 oz.
30% chlorine compound	22.3 oz.
70% chlorine compound	9.6 oz.

B. Use the following amounts of chlorine compounds required to dose 100 foot water-filled well at 50 mg/l

Well Casing Diameter	Volume per 100 feet of Water Depth 100%	Amount of Chemical Compound		
		Calcium Hypochlorite 65%	Sodium Hypochlorite	Liquid Chlorine
4	65.28	0.7 oz.	3.5 fl. oz.	0.03 lb.
6	146.9	1.5 oz.	7.8 fl. oz.	0.06 lb.
8	261.1	2.7 oz.	13.9 fl oz.	0.11 lb.
10	408.0	4.2 oz.	1.4 pt.	0.17 lb.

This information material is provided as background knowledge and information. Systems should ensure compliance with proper state regulations by contacting appropriate authorities.

Dealing with the Media: Some Tips

PLAN AHEAD

Media relations start before a disaster occurs. Take steps to familiarize yourself with your local media representative on an ongoing basis. The best way to do this is for your water or wastewater systems to be active in various public relations programs. Regular press releases and articles on routine operations not only keep the public informed on your system, but serve to open a dialogue between you and the various local news organizations. Before a disaster strikes, you should know them and they should know you.

WHEN DISASTER STRIKES

If a disaster occurs, the press will be on the scene relatively quickly. Make preparations before meeting the media. Check your facts and organize the information you plan to release prior to your interview.

AVAILABILITY

Don't hide from the media. The public has a right to know the situation. Take a pro-active approach and establish your association as the spokesperson for your member systems, help keep the pressure off the system where possible. Schedule a meeting with the media at the first reasonable time and at a location you choose. Familiar surroundings can ease the situation for you. After your initial report, schedule regular updates. Adapt these to your schedule, not the reporter's.

ACCURACY

This is extremely important. Be sure of your facts and give only the facts. Don't be drawn into expounding on your present story or speculating on situations where you have no confirmed information. Avoid ad-libbing. Be brief and to the point. If injuries are involved, numbers are okay, but avoid specifically naming the injured parties.

RESPONSIBILITY

If the crisis situation is your responsibility, say so. If not, the same rule applies.

MONITOR

If practical, monitor the finished news report whether electronic or in print. Make sure the facts are presented as reported and immediately take steps to correct the record if inaccuracies are noted. Misinformation can be more damaging than no information.