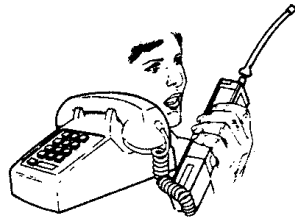
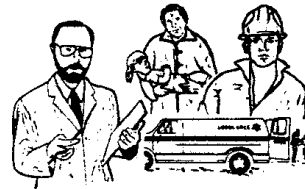


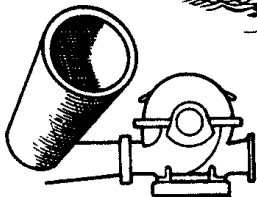
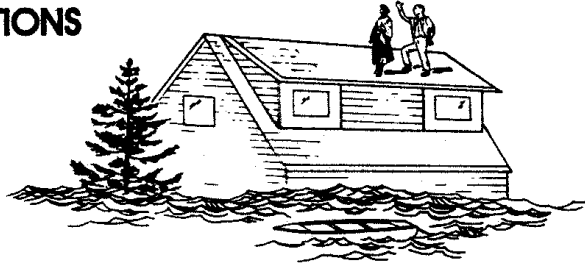
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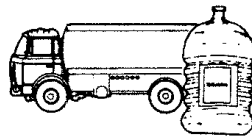
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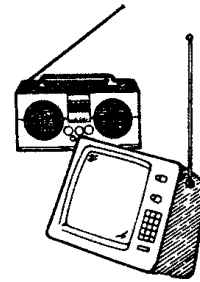
PERSONNEL



EQUIPMENT/SUPPLIES



POTABLE WATER



PUBLIC NOTIFICATION

PART VI EMERGENCY RESPONSE



COMMONWEALTH OF PENNSYLVANIA
Department of Environmental Protection

Tom Ridge, Governor · James M. Seif, Secretary

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or through the Pennsylvania homepage at www.state.pa.us

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Water Supply Management

Document Number: 383-5900-111

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Emergency Response

Authority: Pennsylvania's Safe Drinking Water Act (35 P.S. §721.1 *et seq.*) and regulations at 25 Pa. Code Chapter 109.

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Policy: Department of Environmental Protection (DEP) staff will follow the guidance and procedures presented in this document to review and evaluate public water supplier's Emergency Response Plans under the drinking water management programs.

Purpose: The purpose of this document is to provide guidance for public water suppliers to develop their required Emergency Response Plans and to support staff decisions which will promote quality, timely and consistent service to the public and regulated community.

Applicability: This guidance will apply to Emergency Response Plans.

Disclaimer: The guidance and procedures outlined in this document are intended to supplement existing requirements. Nothing in this document shall affect more stringent regulatory requirements.

Page Length: 30 pages

Location: Volume 25, Tab 04

Definitions: See 25 Pa. Code Chapter 109

PUBLIC WATER SUPPLY MANUAL USER'S GUIDE

The Public Water Supply Manual is a comprehensive publication designed to provide necessary, useful information to public water suppliers concerning Pennsylvania's Safe Drinking Water Program administered by the Department of Environmental Protection (DEP). The manual contains essentially everything the public water supplier will need to know about the Safe Drinking Water Program, including: design and construction standards; water quality standards; monitoring, reporting and operating requirements; emergency measures; and information on government agency programs and contacts.

Technical guidance documents are on DEP's world wide website (www.dep.state.pa.us) at the public participation center. The "Final Documents" heading is the link to a menu of the various DEP bureaus and from there to each bureau's final technical guidance documents.

The "Draft Technical Guidance" heading is the link to DEP's draft technical guidance documents.

Ordering Paper Copies of DEP Technical Guidance

DEP encourages the use of the Internet to view guidance documents. When this option is not available, persons can order a bound paper copy of the latest inventory or an unbound paper copy of any of the final documents listed on the inventory by calling DEP at 717-783-3795.

The following is a summary of the Public Water Supply Manual Parts. Following the summary is a Table of Contents for each part in the Public Water Supply Manual.

Part I - Summaries of Key Requirements

Part I is no longer published as a compilation of all the summaries of key requirements. The summaries of key requirements are available as individual documents. Additional summaries are added as new rules and regulations are adopted.

Part II - Community System Design Standards

Part II provides detailed design and construction standards for all community water systems except bottled water systems, bulk water haulers, vended water systems and retail water facilities. Part II also contains instructions for submitting a public water system permit application.

Part III - Bottled Water, Bulk Water Hauling, Water Vending Machines and Retail Water Facilities

Part III provides detailed design and construction standards for bottled water systems, bulk water haulers, vended water systems and retail water facilities including information on submitting a public water system permit application.

Part IV - Noncommunity System Design Standards

Part IV provides detailed design and construction standards for noncommunity water systems, including information on the procedures to be followed to obtain DEP's approval.

Part V - Operations and Maintenance

Part V provides the needed information to develop an Operations and Maintenance Plan as required under Section 109.702 of DEP's Safe Drinking Water Regulations. This is a comprehensive guidance document covering all aspects of public water system operations including operation and maintenance standards.

Part V has been developed as two separate documents. Each is designed for specific type systems:

- Sections I and II is for surface water systems and the larger groundwater systems.
- Appendix A, Operations and Maintenance for Small Groundwater Systems, is a condensed version containing information needed by small groundwater systems having limited treatment (disinfection and corrosion control).

Part VI - Emergency Response

Part VI discusses the measures which a water supplier should take to prepare for emergency circumstances and explains how to prepare an emergency response plan.

Part VII - Cross-Connection Control/Backflow Prevention

Part VII provides the basic information needed by a public water supplier to establish an effective cross-connection control program.

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PART VI EMERGENCY RESPONSE

Introduction

Under the provisions of the Pennsylvania Safe Drinking Water Act and Section 109.707 of 25 Pa. Code Chapter 109, each community water supplier shall develop and maintain a plan for the provision of safe and adequate drinking water under emergency conditions. The following guidelines are provided to aid the owners/operators of public water supply systems in establishing an effective contingency plan to deal with anticipated emergencies which may be associated with the operation of a water supply and distribution system and/or material failure.

As each emergency has its own characteristics and as different owners/operators have varying means and resources at their disposal, it is impossible to outline specific measures to cover all emergency situations. Therefore, water suppliers should not restrict their plans to the information provided in this guideline. Other guidelines such as the American Water Works Association's Manual M19 "Emergency Planning for Water Utility Management" should be referred to when developing the Emergency Response Plan.

PART VI

CHAPTER 1 - CHARACTERISTICS OF EMERGENCY CONDITIONS AND GENERAL PROTECTION MEASURES

1.0 General

The question and answer format presented in Chapter 2 will help owners/operators of water supply systems to assess their present capability to deal with a variety of emergency issues. It is clear, however, that a more detailed discussion is necessary relating to the significance of specific types of emergencies and their consequences on an affected facility. Some of the factors that may affect the water works or its components are listed below and further discussed in Sections 1.1 to 1.8.

- A. Contamination of Supply
- B. Disinfection Failure
- C. Power Outages
- D. Distribution System Problems
- E. Equipment Failure
- F. Loss of Supply
- G. Strikes
- H. Structural Failure
- I. Vandalism and Sabotage

1.1 Contamination of Supply

Bacteriological, chemical or biological contamination of a water supply and distribution system or any of its parts can occur. Because it is impossible to enumerate all potential sources of contamination and outline needed equipment and procedures, it is necessary that the water supplier assess the contamination potential of each source(s) of supply. The assessment of the contamination potential of the source of water supply should identify all possible contaminants and their sources. Contamination from one or two sources will be more probable than some of the others, and the utility should, as a minimum, develop priority procedures to deal with these.

To control bacteriological contamination it is imperative that chlorination of the supply be accomplished at all times. In this regard, standby chlorination facilities must be available for all water supply systems to meet possible emergency situations. In this context, chlorination facilities are understood to mean a chlorinator and all necessary appurtenances to place it in operation as well as a supply of suitable chemicals (i.e., chlorine gas, calcium hypochlorite, etc.) for adequate disinfection of the water supply.

In general, chemical contaminants will either be toxic (i.e., heavy metals, cyanide, etc.), interfere with the normal treatment process, or create tastes and odors in the finished water.

In the case of contamination by toxic substances, the water intake should be shut down immediately and alternate sources of supply placed into service, if available, until it is determined that the hazard has passed. Water rationing probably will be required, and the utility should have an emergency plan of operation to ensure that the high priority users (i.e., hospitals) have

sufficient water to meet their basic needs. A well organized program of public information also will be needed to deal with this type of emergency.

Other chemical contamination will probably result in a finished water of reduced quality. In order to minimize the effect of this contamination, plans for additional or alternate treatment methods should be developed. Emergency supplies of certain chemicals such as activated carbon probably will be required. Again, an effective public information program will be of value.

Biological contamination, such as excessive aquatic plant growth, generally will interfere with the treatment process and, therefore, plans for alternate means of treatment should be devised.

Potential sources/causes of contamination of a water supply include, but are not limited to:

- A. Proximity to municipal or industrial waste treatment systems (i.e., process upsets, bypassing, etc.);
- B. Land use in the adjacent watershed (i.e., industrial, agricultural, etc.);
- C. Proximity to land and water transportation corridors (i.e., collisions, accident spills, derailments, etc.);
- D. Abnormal meteorological conditions (i.e., excessive precipitation/run-off, drought, etc.).

1.2 Disinfection Failure

Failure of the disinfection facilities at a water supply should be extremely rare if the water supplier has complied with DEP's requirements respecting standby disinfection equipment as outlined in Part II of the Public Water Supply Manual. It also is assumed that a supply of the more common replacement parts of the chlorinator(s) will be maintained by the operating authority.

It is of prime importance, in the case of disinfection failure, to promptly notify residents of the community of possible health hazards and advise them to boil the water prior to consumption. Once the disinfection facilities have been returned to service, flushing and/or increased disinfection of the distribution system may be necessary. The "boil water" notice shall not be removed until it has been established, by bacteriological sample results from representative points in the distribution system, that the water is bacteriologically safe.

1.3 Power Outages

Since power outages are inevitable, the water supplier must deal with them on a preventive basis rather than as an emergency. Sufficient standby power and/or auxiliary power must be provided to assure the operation of all essential water treatment and distribution equipment and processes in the event of a power outage.

In assessing standby power requirements, the supplier should not only evaluate source pumping/treatment process needs but also consider items such as fire flow pumping and available water storage capacity.

1.4 Distribution System Problems

The major problem under this heading would be water main breaks. Factors, such as the number and location of dead end water mains, accurate maps of the water distribution system showing the types of pipe and sizes, a preventative maintenance program, an adequate supply of repair parts, and a skilled, well equipped repair team will facilitate repairs and minimize the interruption of service.

It should be noted that cross-connections in the distribution system can be a significant source of contamination and must be eliminated as quickly as possible following detection. In addition, all

new connections to the water system should be inspected by properly trained staff in order to ensure that no cross-connections are made.

1.5 Equipment Failure

As water treatment and distribution is a continuous process, the continued operation of all equipment in service or available for service is essential. Mechanical equipment is subject to wear and will require routine maintenance and periodic replacement of parts. Therefore, it is essential that the public water supplier maintain an inventory of all equipment and parts for all units which may cause a plant or pumping station shutdown in the event of unit failure. Critical items should be stocked continuously because of the lengthy delivery time that could be experienced.

Public water suppliers should have an adequate stock of essential parts, lubricants, hand tools and miscellaneous items to handle emergency situations as well as routine maintenance programs. This latter function is essential to minimize the frequency and severity of emergency situations. In addition, water suppliers should document emergency equipment which is available from or which could conceivably be utilized by other suppliers during specific emergencies.

1.6 Loss of Supply

The loss of supply water is probably the single most important problem facing a water supplier and, in many ways, is the most vulnerable link in the operation of the water supply system.

Complete or partial loss of supply could occur through structural failure, weather changes, or contamination. To deal with this type of emergency, all alternate sources of supply should be inventoried, including the chemical and bacteriological quality and capacities of each source. Plans should be developed for emergency connection of these sources to the water supply system. The pumps, piping and fittings that may be required to implement the plan should be available from either the utility or prearranged sources. Water rationing probably will be required, and a priority list of water users should be established. While reduced chemical and physical water quality may be tolerable under such emergency conditions, it should be noted that chlorination of the emergency sources of supply will be necessary in order to ensure the bacteriological safety of the supply. Consideration also must be given to the laboratory facilities needed to test the quality of the source before and during its use.

1.7 Strikes

Strikes by plant operating staff can be anticipated by utility management in advance of their occurrence, since most labor contracts are renewed at set time periods. Hopefully, labor and management will agree that the water supply facilities are essential to the health and safety of the community and, therefore, should not be subject to a strike. However, assuming the inevitable, each water supplier should ensure that supervisory staff have been trained in the operation of the facilities to permit the continued supply of safe potable water.

1.8 Vandalism and Sabotage

Acts of vandalism or sabotage probably would create problems that have been discussed under one or more of the foregoing headings. Improved security at water treatment plants and reservoir sites through the use of fencing, burglar alarms, security guards, etc., will greatly reduce the chances of emergencies arising because of acts of vandalism or sabotage.

Also, initial design of such facilities should be undertaken with the view to reducing the potential of such acts, (i.e., minimize windows, security locks/doors, adequate fencing, good lighting, etc.).

1.9 Structural Failure

Most of the structural failures can be attributed to fire, flood and wind.

Fire can often be prevented if adequate precautions are taken at all plant installations during design and operation (i.e., automatic sprinklers, etc.). Routine inspection of wiring, care in storing flammable materials, and proper venting of explosive gases are vital to minimize the fire threat. Sufficient fire fighting equipment must be available and staff must be trained in its use. The public water supplier should coordinate their fire protection capabilities with the municipal fire officials.

Flooding of a portion of a water system is often possible, especially when the source is a surface water supply necessitating low lift pumping stations and water treatment plants adjacent to the watercourse. In these cases, the water supplier should work closely with state, federal or local health or environmental agencies. These agencies can supply information on critical water levels which can be used by the water supplier to determine what components require permanent flood protection measures. In addition, a communication link should be established between the water supplier and each agency so that up-to-date information on an impending flood can be obtained and possibly a combined work force arranged to deal with emergency measures to protect threatened system components.

PART VI

CHAPTER 2 - HAZARD ANALYSIS AND VULNERABILITY ASSESSMENT

2.0 General

An important aspect in the development of an emergency response plan is to identify the types of disasters that may impact your water supply system. However, in order to be effective, a vulnerability assessment also must be conducted for all key components of the water supply system at the same time. In this way the “weak links” in the system can be identified which will allow the company to prioritize repairs or implement preventive measures.

2.1 Hazard Analysis

One method in which a hazard analysis can be done is by reviewing the history of previous disaster occurrences for your area. If a certain kind of disaster occurred in the past, records may reveal the hazardous conditions which existed and led to the cause of the disaster. A further review of these records also may indicate the frequency in which these hazardous conditions occurred, thus providing a pattern of events or circumstances which may need to be guarded against. Unless the conditions no longer occur or have significantly changed, a similar disaster may happen again. It should be noted that historical records must be used with caution. Because no record of a specific incident can be found does not mean the hazard or disaster potential does not exist.

Another method is to review the following list of hazards and evaluate each type with respect to the impact it would have on your water supply system.

TABLE VI-2.1
TYPES OF HAZARDS

Man-Made	Natural
Civil Disorders and Riots	Drought
Energy Disruptions or Shortages	Fires
Epidemics	Flood
Hazardous Material Accident	Extreme Cold
Fixed Site	Land Shift
Transport	Earthquakes
Major Gas and/or Water Main Breaks	Mud Slides
Major Transportation Accidents	Mine Subsidence
Mine Disasters	Sinkholes
Nuclear and Radiological	Snow and Ice
Fixed Site	Wind
Transport	Hurricane
Pipeline Contamination	Tornado
Reservoir and Dam Breaks	Cyclone
Source Pollution	Severe Fog and Smog
Surface Water	
Groundwater	
Strikes	
Terrorism	

Certain kinds of information are important to the hazard analysis. Information such as the number and frequency of incidents, flood stages, wind speeds, Richter scale intensity, etc., are

critical and should be collected. As this information is analyzed, a ranking of the types of hazards your water supply system is vulnerable to can be developed.

2.2 Vulnerability Assessment

Technical ability can solve most problems which arise during emergency conditions, but the effective application of that knowledge under stress conditions requires advance planning and coordination to ensure that the problems are corrected quickly and effectively. The probability of errors being committed increases greatly when there is poor organization and untrained personnel.

To aid in the assessment of a public water supplier's preparedness to meet emergencies, the following questionnaire can be used. The results of this evaluation will aid in establishing the most vulnerable components in the water works. Once these have been isolated, you can prepare for the most likely and most significant emergencies.

2.2.1 Vulnerability Assessment Questionnaire

2.2.1.1 General

- a. What type of emergencies can be expected and what can be realistically planned for?
- b. Is the owner/operator aware of the state or local emergency response coordinator's role in emergency planning? What emergency plans already exist?
- c. Has planning taken into consideration the relationship and interdependence of the various utilities (i.e., water, electricity, gas, transportation, etc.)?
- d. Is there close liaison with utilities in neighboring municipalities?

2.2.1.2 Inventory of Water Resources

- a. Has an inventory been made of all available water resources? Does the inventory include:
 - (1) Groundwater and surface water supplies?
 - (2) Public and private ponds, reservoirs, swimming pools and water available through connection to other systems?
 - (3) Water available from industrial sources (i.e., bottling plants, industrial supply wells, etc.)?
- b. Does the inventory show the quantity, the quality, and the location of the resources?
- c. Does the inventory include information on the size and length of pipe, connectors, pumps (and their capacity) needed to pump water into the system from other sources?

2.2.1.3 Facilities

- a. Have potential bottlenecks in quantity production, which might result in emergency conditions, been identified?
- b. Have plans been made for their elimination?

- c. Has the maximum capacity of the water works, which might be used under various emergency conditions, been determined? What are they?

2.2.1.4 Protection

- a. Have measures been taken to safeguard the facilities and resources:
 - (1) Against acts of vandalism?
 - (2) By developing plans and procedures for physical protection of facilities and resources in an emergency?
 - (3) By providing night lighting and fencing?
- b. What measures have been taken to operate the facility during a strike? Are they adequate from both a personnel and training point of view?

2.2.1.5 Communication

- a. In the event of an emergency, will a communications system, such as radio or mobile telephone, be available for maintaining contact between:
 - (1) Community utilities (i.e., sewage, gas, electricity, etc.)?
 - (2) Operating, maintenance and repair crews?
- b. Is a communication system available to inform the public of the measures to be taken by the water authority and the public itself if the supply of potable water is affected by an emergency situation? What is this system, who is responsible for it, and who is the communicator?

2.2.1.6 Emergency Priority for Water Use

- a. Is there a list assigning an order of priority to essential and non-essential water users? (Hospitals and nursing homes should have first priority).
- b. Do you have emergency authority to forbid use of water for non-essential purposes? Residential, commercial and industrial (i.e., car washing, lawn watering, cooling water, process water, etc.)?
- c. Do you have contract obligations respecting the supply of water or specific volumes or qualities? (i.e., film processing, fire flows, industrial processes, etc.)?
- d. Is your water distribution system equipped with sufficient valving to enforce water priorities?
- e. Have alternative sources of water supply for industrial and firefighting uses been identified? (Example: well water of nonpotable quality.)
- f. Do you have the authority to curtail the domestic supply?

2.2.1.7 Repairs, Rebuilding and Construction

- a. Has authority been assigned to the various departments to carry out major repairs, rebuilding or new construction?
- b. Does the owner/operator have quick access to heavy equipment such as bulldozers, tractors, earthmovers, concrete mixers, etc.? Where is this equipment located?

- c. Have plans been made to provide for financing of emergency water activities?
- d. Have sources of supply been identified for construction, repair and replacement materials (i.e., cement, sand, steel, electrical wire, pipes, valves, fittings, portable pumps, generators, appurtenances, etc.).

2.2.1.8 Basic Documents

Are the following documents available:

- a. Municipal maps of practical scale with pertinent points marked?
- b. "As Built" engineering drawings of water treatment, distribution and storage facilities, and of interconnections with industrial and other water supplies, where applicable?
- c. Detailed drawings of the distribution system, with pipe sizes, fittings, couplings, valve locations?
- d. Written normal operating procedures?
- e. Written procedures to deal with the various potential emergency situations?
- f. Mutual aid agreements (see Section 2.2.1.15)?
- g. An up-to-date list of your current chemical suppliers, their names and addresses, together with alternate sources of essential chemicals such as coagulants and chlorine?
- h. Lists of trained personnel and their emergency assignments?
- i. A current list, by name, home address, and telephone numbers, of key personnel and alternatives who are familiar with the nature and location of the above basic documents and have access to them?

2.2.1.9 Personnel

- a. Are trained auxiliary personnel available to your water supply?
- b. Is there a sanitary engineer available? What is his/her name, address, and telephone number?
- c. Is there an identification system for water works personnel to pass through police, fire or emergency lines?
- d. Have provisions been made for protection and emergency medical care of operating personnel under dangerous conditions?

2.2.1.10 Transportation

- a. Are there, in your community, vehicles that could be used to collect and transport emergency equipment?
- b. Have arrangements been made to make these available during emergencies?
- c. Are there plans for a system of central water distribution point(s) in the event of partial distribution system failure?

- d. Do plans provide for the use of local dairies and other bottling facilities to bottle and transport water?

2.2.1.11 Reserve Supply and Standby Equipment

- a. Is your reserve stock of chemicals and spare parts sufficient for a 30-day emergency?
- b. Is there a preventive maintenance program in effect?
- c. Is standby equipment available and, if so, is it tested periodically?
- d. Is an inventory available of your community's reserve mobile equipment such as chlorinators and pumps that could be moved quickly to emergency sites?
- e. Are there adequate spare parts and equipment for water main repairs? For each size and type of pipe?
- f. Has there been any consideration given to sharing emergency equipment with other municipalities or water suppliers?

2.2.1.12 Emergency Power

- a. Is a substitute source of power available if the prime source is made ineffective?
- b. Are standby generators and pumps with alternate power available?
- c. Is there an accessible fuel reserve for operation of auxiliary power facilities in case of an extended power failure?
- d. To the extent practicable, has standby generating equipment been provided with protection from hazards (i.e., in a separate fire-proof room, etc.)?

2.2.1.13 Disinfection

- a. Is a standby chlorinator available? Is it adequate?
- b. Is an adequate supply of chlorine available to meet a lengthy emergency?
- c. Are essential spare parts available on-site to repair chlorination facilities?

2.2.1.14 Laboratory

- a. Do you have immediate access to laboratory facilities to provide emergency analyses for all chemical, physical and biological parameters? Where are these laboratory facilities?

2.2.1.15 Mutual Aid and Assistance

- a. Do agreements provide for assistance from/to other water systems, utilities or municipalities for trained personnel, materials and equipment if required during emergencies?
- b. Have plans been made for the rotation of personnel to provide on-the-job training in the various water systems or operating facilities?
- c. Is there close contact with county health departments, DEP, and county emergency response agencies?

PART VI

CHAPTER 3 - DEVELOPING EMERGENCY RESPONSE PLANS

3.0 General

The development of an emergency response plan may appear to be a very difficult task. Keep in mind, however, that the water works could be affected by a variety of disasters. Therefore, time spent developing and practicing a concise and sound plan may prevent an emergency from becoming a catastrophe. It must be emphasized again that each water supply system will have its special needs when drawing up a contingency plan to meet emergency situations based on the size and location of the system. The outline provided below may be used as a format for preparation of such procedures. In any event, an emergency response plan should address all the points noted in the outline.

In addition, the personnel used in an emergency will depend on their training. It is not the purpose here to outline the educational requirements needed for the water works personnel, but rather to stress the need for organizing courses and field exercises in dealing with emergency conditions. ***Remember that the contingency plan is only as effective as the expertise of the personnel and their capability to assess an emergency and to act accordingly.*** When developing an emergency response plan, water suppliers should consider the following issues to ensure the plan's proper implementations.

- A. Have the personnel been trained in the detection of problems and corresponding corrective operating procedures?
- B. Are emergency operations exercises conducted periodically? They should be.
- C. Are personnel (regular and auxiliary) trained in emergency water treatment and sample collection techniques?
- D. Is there a program for training supervisory and operating personnel in emergency management and operation?
- E. Is the training program designed to provide personnel with on-the-job experience?

3.1 Contingency Plan Outline

3.1.1 Purpose

- a. To have an orderly and efficient transition from normal to emergency operations.
- b. To appoint an emergency authority.
- c. To assure the continuity of water works operation.
- d. To give explicit direction on when to execute emergency procedures.

3.1.2 Organizational Structure

- a. Development of a continuously updated functional emergency organization chart.
- b. Delegation of authority and responsibility in accordance with emergency classification.
- c. A current list of federal, state, county and municipal officials to contact during an emergency.

3.1.3 Types and Probability of Anticipated Disasters

- a. Contamination of Supply
- b. Disinfection Failure
- c. Power Outages
- d. Distribution System Problems
- e. Equipment Failure
- f. Loss of Supply
- g. Strikes
- h. Vandalism and Sabotage

3.1.4 Assessment of Water Works and Components

- a. Develop a plan(s) showing physical layout of the source, pumping stations, treatment works and distribution system. Indicate most vulnerable elements in the system and determine resources requirements needed to deal with these in an emergency.
- b. Identify and describe associate systems (e.g., power supplies, communications, present emergency plans and mutual-aid agreements and/or interconnections with other municipalities).
- c. Take an inventory of existing equipment and their capabilities during emergency situations. Determine equipment needed to have on hand for such emergencies.
- d. Study and coordinate all means of communication between authorities, emergency crews, and the public.
- e. Determine protection needs of plant equipment inventories and records.
- f. Assess the competency of staff to handle emergency conditions.
- g. Estimate effects of disasters on each system component as well as on the public.

3.1.5 Mutual Aid and Cooperative Arrangements

- a. Provide agreements with related utilities, local municipalities, local industries and government agencies for exchange or assignment of personnel, equipment or materials.
- b. Consider legal and financial aspects of operating an equipment and personnel pool.

3.1.6 Emergency Measures

- a. Establish a policy and procedure for timely release of factual information and warning of an emergency situation. Assign a single responsible person to this task.
- b. Develop an Emergency Rationing Plan which identifies all essential (i.e., hospitals, nursing homes, etc.) and non-essential users.
- c. Draft control and emergency cooperation procedures that will maximize efficiency in utilizing available resources.
- d. Specifically assign tasks to designated personnel with respect to handling the emergency repair and clean-up operations.

3.1.7 Training

- a. Determine degree of competence of employees to handle work other than their normal jobs.
- b. Develop an accelerated training program for employees to increase their flexibility in handling emergency operations.

APPENDIX A

Example Emergency Response Plan **Winding Creek Public Water System** **Winding Creek, Pennsylvania**

Attached is an ***example*** emergency response plan which has been developed using information from an American Water Works Association training seminar and a model New York emergency response plan. The contents of this example should not be considered rigid or comprehensive. Changes or modifications most likely will be needed to adapt it to the needs of your specific water supply system. Some areas that are not covered in this plan but should be emphasized in each emergency response plan are:

- A. The capability of water system personnel to repair critical facilities such as pumps and chlorinators;
- B. An inventory of spare equipment and/or parts needed to replace/repair key equipment;
- C. The availability of standby or emergency equipment with information on where it is stored and how it must be transported.

APPENDIX A
Example Emergency Response Plan
Winding Creek Public Water System
Winding Creek, Pennsylvania

- A. Organizational Structure
- B. Emergency Organizational Chart
- C. Anticipated Emergencies
- D. Background and Assessment
- E. Communications
- F. Power Supply
- G. Assessment of Available Equipment
- H. Emergency Measures
 - 1. Distribution System Problems
 - 2. Pump Failure
 - 3. Disinfection Failure
 - 4. Power Outages
 - 5. Depletion of Well Source
 - 6. Source Contamination
 - 7. Prolonged Water Outage

A. Organizational Structure

The following persons will be in charge of the public water system during any type of emergency.

1st in charge - Superintendent John Brooks

Office phone _____

Home phone _____

2nd in charge - Chief Operator Doug Snow

Office phone _____

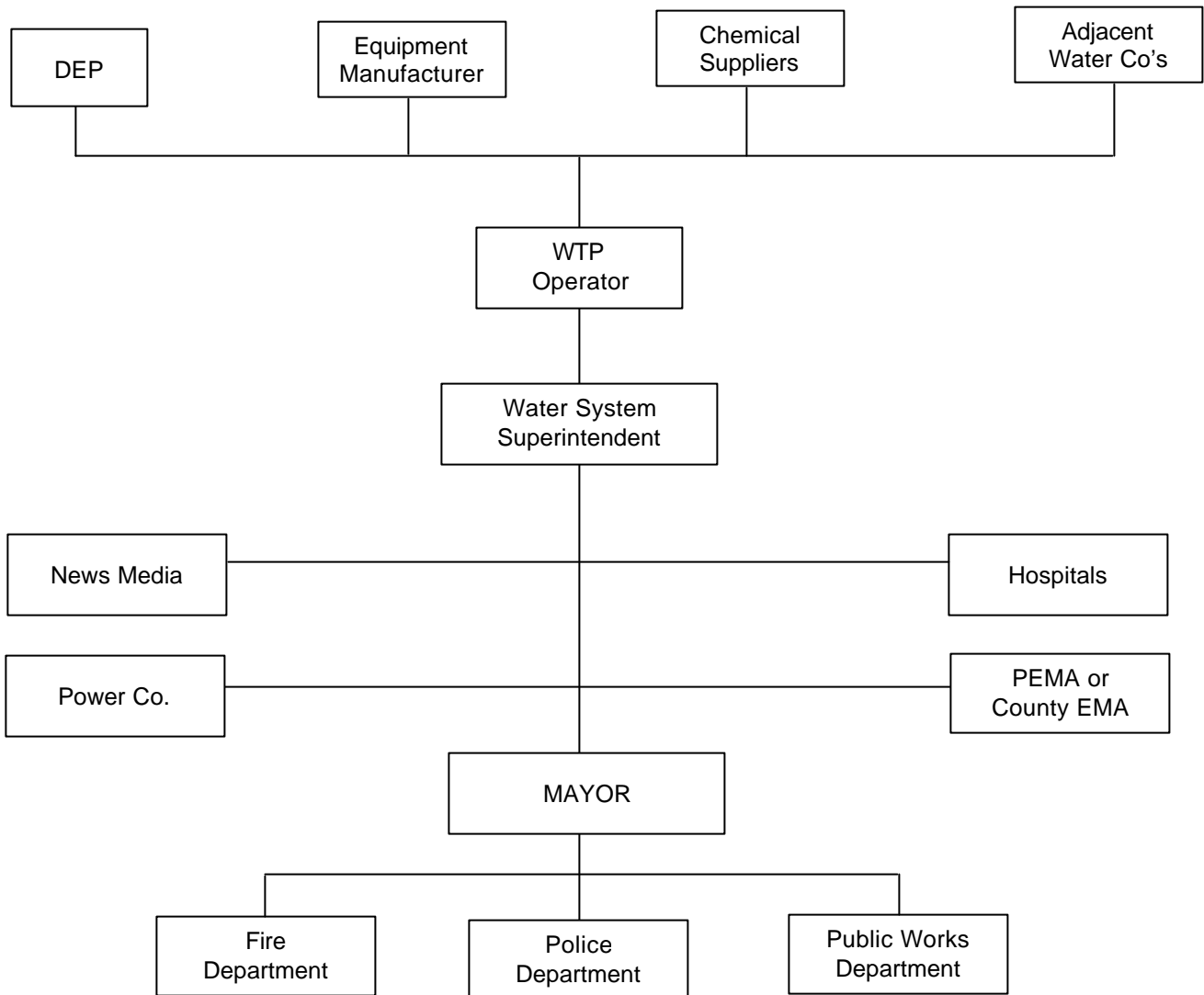
Home phone _____

3rd in charge - Assistant Engineer Joe Wood

Office phone _____

Home phone _____

In the event the above individuals are unavailable, Mayor _____ will designate the person to be in charge.



Government Agencies:

Local DEP

Contact: _____
Telephone No.: _____

Pennsylvania Emergency Management Agency

Contact: _____
Telephone No.: _____

County Emergency Management Office

Contact: _____
Telephone No.: _____

News Media:

TV Station Contact

Contact: _____
Telephone No.: _____

Radio Station

Contact: _____
Telephone No.: _____

Newspaper

Contact: _____
Telephone No.: _____

Other Important Contacts:

Power Company

Contact: _____
Telephone No.: _____

Fire Department

Contact: _____
Telephone No.: _____

Police Department

Contact: _____
Telephone No.: _____

Hospitals/Nursing Homes

Contact: _____
Telephone No.: _____

Public Works Department

Contact: _____
Telephone No.: _____

Equipment Manufacturers
(i.e., pumps, chlorinators, pipe, etc.)
Chemical Suppliers

Contact: _____
Telephone No.: _____

Bulk Water Haulers

Contact: _____
Telephone No.: _____

Adjacent Water Systems

Contact: _____
Telephone No.: _____

C. Anticipated Emergencies

The following list includes, in the order of probable occurrence, those emergency situations most likely to occur in the Winding Creek public water system.

1. Distribution System Problems
2. Pump Failure
3. Disinfection Failure
4. Power Outages
5. Depletion of Well Source
6. Source Contamination
7. Prolonged Water Outage

D. Background and Assessment

A distribution map of the Winding Creek System is located in the superintendent's office which shows the complete layout of the two wells, chlorination building, valves and pumping station. Detailed plans for the chlorination building and pump station also are in his office along with the manufacturer's technical manuals for all equipment.

General description:

The system's two wells are located 100 feet due north of the Winding Creek maintenance building which is located at the end of North Main Street. The borough owns approximately 200 acres of land from the maintenance building to the foot of Buffalo Mountain. The adjoining land on Buffalo Mountain is state forest land. This area is considered protected and past water analyses indicate no contamination problems. The only potential source of contamination is from Highway Route 14 which is located 200 feet north of both wells. Well #1 produces 400 gpm and Well #2 produces 350 gpm.

Pumps – Both wells have dual stage vertical line shaft pumps made by the Worthington Pump Company, Models _____. The prime movers are 30 HP, 3 phase, 440 volt electric motors manufactured by the General Electric Company, Models _____

Disinfection – Each well uses vacuum gas chlorination utilizing 150 pound gas chlorine cylinders located in each pump house.

Water Storage – A 300,000 gallon standpipe located off Woodthrust Road provides approximately seven hours of storage.

System Demand – Averages 1 mgd of which 20 percent is probably due to leakage. We do have a problem with line breaks – 80 percent of the distribution system is original piping installed in the 1920s.

E. Communications

Telephone is the primary link to convey information. Should this service be lost, CB radios can be used. The superintendent's car is equipped with a CB radio. Channel 19 will be used during an emergency. The borough also has two portable CB radios which are located at the maintenance building. These radios are tested annually to assure they work properly.

F. Power Supply

Electricity is obtained from PP&L and their crews repair power outages rather quickly because the borough is located on the main power grid.

G. Assessment of Available Equipment

Communications 2 portable CB radios
 1 CB radio is installed in the superintendent's car
Note: the superintendent's car also is used by the operator in charge when the superintendent is not on site.

Emergency Power Supply 2 portable generators Model # _____ with 15 kilowatts D.C. output are available via agreement with the fire department.

A backhoe/front end loader is available from the Public Works Department.

A 10-ton dump truck and drivers are available from the Public Works Department.

A pickup truck (3/4 ton 4 wheel drive) is assigned to the Water Department.

Two backup pumps for the wells are available via agreement with neighboring water systems.

H. Emergency Measures

1. **Distribution System Problems**– Main breaks are corrected as they occur. Usually breaks are reported by the police department or consumers in the vicinity of the break.

Response Procedures:

6. **Source Contamination** – Route 14 is located 200 feet north of both wells. This is the most probable source of contamination. An accident involving chemical spillage at this location could contaminate the wells. The state police have been informed to contact the mayor concerning any accident near the vicinity of the wells. If it involves a chemical truck the information on the truck's placard will be used to determine the appropriate response measures. The district DEP office will be notified immediately for assistance.
7. **Prolonged Water Outage** – Source contamination, line breaks, aquifer depletion, and storage tank failure all can cause a prolonged water outage. In case of a water outage, all customers shall be notified to conserve available water.

As an interim measure when water cannot readily be provided, water tank trailers will be set up at the following locations:

Village Hall
Westway Shopping Center
Village Park

Winding Creek located 1/4 mile south of the borough's maintenance building has been approved by DEP as an emergency water source. Water pipes and pumps will be requested from PEMA to convey water from Winding Creek to the chlorination room for treatment and entry into the distribution system. Chlorination will be increased to provide 4 ppm of chlorine.

DEP REGIONAL OFFICES

Region	Region Headquarters	County Supervised
Southeast	Suite 6010 Lee Park 555 North Lane Conshohocken, PA 19428 Phone: 610-832-6060	*Bucks, *Chester, Delaware, Montgomery, Philadelphia
Northeast	2 Public Square Wilkes-Barre, PA 18711-0790 Phone: 570-826-2511	Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne, Wyoming
Southcentral	909 Elmerton Avenue Harrisburg, PA 17110 Phone: 717-705-4708	Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry, York
Northcentral	208 West Third Street, Suite 101 Williamsport, PA 17701 Phone: 570-327-3636	Bradford, Cameron, Centre, Clearfield, Clinton, Columbia, Lycoming, Montour, Northumberland, Potter, Snyder, Sullivan, Tioga, Union
Southwest	400 Waterfront Drive Pittsburgh, PA 15222-4745 Phone: 412-442-4217	*Allegheny, Armstrong, Beaver, Cambria, Fayette, Greene, Indiana, Somerset, Washington, Westmoreland
Northwest	230 Chestnut Street Meadville, PA 16335-3481 Phone: 814-332-6899	Butler, Clarion, Crawford, Elk, *Erie, Forest, Jefferson, Lawrence, McKean, Mercer, Venango, Warren

*County Health Departments

This and related environmental information are available electronically via Internet. For more information, visit us through the Pennsylvania homepage at <http://www.state.pa.us> or visit DEP directly at <http://www.dep.state.pa.us> (choose directLINK "Drinking Water Publications").



www.GreenWorks.tv - A web space dedicated to helping you learn how to protect and improve the environment. The site features the largest collection of environmental videos available on the Internet and is produced by the nonprofit Environmental Fund for Pennsylvania, with financial support from the Pennsylvania Department of Environmental Protection, 877-PA-GREEN.

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