

WATER SYSTEM
EMERGENCY RESPONSE PLAN
for the
Ipswich, Massachusetts
Water Department

PWSID 3144000

January 2016

WATER SYSTEM EMERGENCY RESPONSE PLAN
IPSWICH WATER DEPARTMENT

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SECTION 1

PLAN OVERVIEW AND APPROVAL

1.1 INTRODUCTION

This plan has been prepared in accordance with the requirements of the Massachusetts Department of Environmental Protection (MassDEP) including:

- MassDEP Guidelines and Policies for Public Water Systems, Chapter 12 Emergency Response Planning Requirements
- MassDEP Guidelines and Policies for Public Water Systems, Appendix O - Handbook for Water Supply Emergencies
- MassDEP Drinking Water Program - Emergency Response Planning Guide for Public Drinking Water Systems

1.2 PLAN MANAGEMENT

The Ipswich Water Department (IWD) Water System Emergency Response Plan will be managed as follows to ensure plan readiness:

1. Each person listed on our chain-of-command will keep an updated copy of the plan in their residence.
2. The IWD will update the plan as necessary but at a minimum annually.
3. The original of the most recent plan will be kept in the Director's office.
4. A copy of the most recent plan will be kept in the Ipswich Water Treatment Plant (WTP).
5. A copy of the most recent plan will be kept at the each pumping station.
6. An article about the plan will be placed in the newsletter so all customers know it exists.
7. In all cases, earlier plans will be discarded after receipt of a newer plan.
8. Any new IWD staff will be trained on all aspects of the emergency plan.
9. IWD will rehearse the plan annually.

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1.3 PLAN APPROVAL

This plan is officially in effect when reviewed, approved, and signed by the following people:

NAME/TITLE	SIGNATURE	DATE
Nishan D. Mootafian Chair of the Board of Selectmen		
Judy A. Field Vice Chair of the Board of Selectmen		
William Craft Member of the Board of Selectmen		
Edward B. Rauscher Member of the Board of Selectmen		
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Revised: _____

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Revised: _____

1.4 PLAN REVIEW

This plan has been reviewed and acknowledged by the following people:

Year 2016

NAME/TITLE	SIGNATURE	DATE
_____	_____	_____
_____	_____	_____
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Year 2017

NAME/TITLE	SIGNATURE	DATE
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SECTION 2

EMERGENCY RESPONSE MISSION AND GOALS

The mission statement and goals will focus the Ipswich Water Department's (IWD) Water System emergency planning and response.

2.1 MISSION STATEMENT FOR EMERGENCY RESPONSE

In an emergency, the mission of the Ipswich Water Department is to protect the health of our customers by being prepared to respond immediately to a variety of events that may result in contamination of the water or disruption of supplying water.

2.2 GOALS

- Goal 1 Be able to quickly identify an emergency and initiate timely and effective response action.

- Goal 2 Be able to quickly notify local, state, and federal agencies to assist in the response.

- Goal 3 To protect public health by being able to quickly determine if the water is not safe to drink or use and being able to immediately notify customers effectively of the situation and advise them of appropriate protective action.

- Goal 4 To be able to quickly respond and repair damages to minimize system down time.

This Emergency Response Plan (ERP) will outline response procedures, depending upon the type and severity of the specific emergency or incident. Every emergency is different and may require a specific sequence of response actions to protect public health and minimize damages.

2.3 GENERAL STEPS

In any emergency event, IWD will follow a series of general steps. These include the following:

1. Confirm and analyze the type and severity of the emergency.
2. Take immediate actions to save lives.
3. Take action to reduce injuries and system damage.
4. Make repairs based on priority demand.
5. Return the system to normal operation.
6. Debrief and update the ERP as needed. This allows the IWD to learn from the emergency.

2.4 ERP ACTIVATION

Knowing when to activate or set your ERP in motion is as important as having a prepared and documented ERP. The Homeland Security Advisory System shown in Figure 2-1 contains five threat condition levels. Low Condition (Green) is declared when there is a low risk of terrorist attacks. Guarded Condition (Blue) is declared when there is a general risk of terrorist attacks. Elevated Condition (Yellow) is declared when there is a significant risk of terrorist attacks. High Condition (Orange) is declared when there is a high risk of terrorist attacks. Finally, Severe Condition (Red) reflects a severe risk of terrorist attacks. EPA has issued supplemental guidance for water utilities to increase security based on threat conditions described by the five-tiered Homeland Security Advisory System.

**FIGURE 2-1
THREAT CONDITION LEVELS**



SECTION 3

SYSTEM INFORMATION

The following section provides the pertinent basic information of the Ipswich system. This basic information should be kept readily available for when you need it for emergency responders, repair people, and the news media.

3.1 SYSTEM INFORMATION

**TABLE 3-1
SYSTEM INFORMATION OVERVIEW**

Public Water System Identification Number (PWSID)	3144000
System name and address	Ipswich Water Department 272 High Street Ipswich, MA 01938
Basic description and location of system facilities	<p>The Ipswich Water Department receives its water from two surface water reservoirs and six groundwater wells. The Dow Brook/Bull Brook Reservoir is located in the north central section of the Town and is the main source of supply. The wells are generally located on the south side of Town and are used mainly on the weekends and during peak water usage in the summer months. The water system includes approximately 93 miles of distribution mains ranging in size from 2-inch to 16-inch and has hydrants throughout the system.</p> <p>The facilities are as follow:</p> <p>Supply and Treatment</p> <p>Dow Brook Pump Station - Raw water pump station has two pumps capable of 1,740 GPM each at 30 ft TDH, and flow metering.</p> <p>Ipswich Water Treatment Plant (WTP) - 2.5 MGD conventional water treatment plant. Treatment includes coagulation and sedimentation, filtration, and chemical feed for disinfection, pH adjustment, oxidation, corrosion control, and fluoridation. The Ipswich Power Plant, located at 276 High Street, provides back-up power to the Ipswich WTP and raw water pump station.</p> <p>Mile Lane Well - 100 GPM</p> <p>Browns Well - 350 GPM</p> <p>Winthrop Well No. 1 - 250 GPM</p> <p>Winthrop Well No. 2 - 140 GPM</p> <p>Essex Road Well - 125 GPM</p> <p>Fellows Road Well - 250 GPM</p>

	<p>All well raw water is treated for disinfection, corrosion control, and fluoridation, with the exception of Miles Lane Well which is treated for disinfection and fluoridation only.</p> <p>Storage Town Hill Tank - 3.0 MG Pinefield Tank - 1.0 MG Plover Hill Tank - 0.5 MG</p> <p>Booster Pump Stations Mile Lane Booster Pump Station - 850 GPM Jeffrey's Neck Booster Pump Station - 300 GPM Cedarview Booster Pump Station - 162 GPM</p> <p>System Demand (2015) Average Day = 0.95 MGD Maximum Day = 2.09 MGD</p>
Population served and service connections	Population Served - 13,450 Service Connections - 4,633
System Owner (the owner should be listed as a person's name)	Board of Selectmen/Water Commissioners William Craft Judy A. Field Nishan D. Mootafian Edward B. Rauscher Charles D. Surpitski
Name, title, and phone number of person responsible for maintaining and implementing the emergency response plan	Joseph Ciccotelli Water Superintendent Phone: 978-356-6639 Cell: 987-479-6959 Home: 978-356-2048

3.2 SYSTEM DESCRIPTION

The Ipswich Water Department's (IWD) source water is a combination of surface water and groundwater. The primary sources are the Dow Brook and Bull Brook Reservoirs, while the wells are used during peak demands in the summer and on weekends. Raw water from Dow Brook Reservoir is pumped through the Dow Brook Pump Station to the Ipswich WTP where it is filtered, disinfected, oxidized, fluoridated, pH adjusted, and treated with phosphate for

optimized corrosion control. This treated water is pumped from the filtration plant's clearwell, through a transmission main, into the distribution system and is stored in the Town Hill Tank. The Town Hill Tank serves the Main Service Area. The Mile Lane Booster Pump Station boosts pressure to the Pinefield Tank and Pinefield Service Area located on the west side of Town. The Jeffery's Neck Booster Pump Station serves the Plover Hill Service Area and fills the Plover Hill Tank. The Cedarview Booster Pump Station serves residential customers on Cedarview Road and Sunset Drive.

3.2.1 Dow Brook Reservoir

Dow Brook Reservoir is the primary source of water supply for the IWD. The reservoir is located off High Street in north Ipswich and has a volume of 64 MG. The reservoir's watershed consists of 563 acres of land surrounding the reservoir.

3.2.2 Bull Brook Reservoir

The Bull Brook Reservoir feeds the Dow Brook Reservoir. The Bull Brook Reservoir has a volume of 27.4 MG. The reservoir's watershed consists of 2,330 acres of land surrounding the reservoir. The Dow Brook and Bull Brook Reservoirs have a combined approved safe yield of 0.8 MGD.

3.2.3 Dow Brook Raw Water Pump Station

The Dow Brook Raw Water Pump Station is located at 276 High Street Rear down gradient of the source's dam. Two variable speed supply pumps capable of 1,740 GPM each at 30 ft total dynamic head (TDH) pump water from the reservoir to Ipswich Water Treatment Plant.

3.2.4 Ipswich Water Treatment Plant

Ipswich Water Treatment Plant is located at 274 High Street and consists of a 2.5 MGD conventional treatment facility. The treatment plant was constructed in the late 1980s. Water from the Bull and Dow Brook Reservoirs flows into two parallel pretreatment units. Each pretreatment unit includes two rapid mix basins, two flocculator basins and one sedimentation

basin, connected in series. The raw water is treated with sodium hypochlorite, chlorine dioxide, and sodium hydroxide prior to entering the rapid mix chambers. Polyaluminum chloride is added in the rapid mix basins. From the sedimentation basin, water flows to the two granular activated carbon filters, each with a capacity of 1.25 MGD. After the filters, the finished water is treated with sodium hypochlorite, sodium hydroxide, fluoride and blended phosphate (polyphosphate-orthophosphate) as the water flows to the 140,000 gallon clearwell. Two finished water pumps convey water from the clearwell to the distribution system. Each finished water pump has a capacity of 1,740 GPM at 230 feet of head and a 125 HP motor. The plant's maximum hydraulic capacity of 2.5 MGD was to be met with just one pump. The Ipswich Power Plant provides back-up power to the WTP.

3.2.5 Mile Lane Well and Well Pump Station

The Mile Lane Well is located off Mile Lane. The gravel-packed well was constructed in 1941 and renovated in 1963. The well is 12-inches in diameter and 45 feet deep. The well pump station includes one submersible pump capable of 100 GPM. Well water is treated with sodium hypochlorite for disinfection, blended phosphate for corrosion control and hydrofluosilicic acid for fluoridation. An emergency eyewash station is available at the station. The IWD plans to install an emergency generator at the pump station. The generator will be sized to run the well and all critical equipment associated with the pump station.

3.2.6 Browns Well and Well Pump Station

The Browns Well is located on the north side of High Street near Mitchell Road. The pump station and well were constructed in 1942, and renovated in 1954. The 24-inch diameter gravel-packed well is 55 feet deep. The well pump station includes one submersible pump capable of 350 GPM with a 25 HP motor. Well water is treated with sodium hypochlorite for disinfection, blended phosphate for corrosion control, and hydrofluosilicic acid for fluoridation. An emergency eyewash station is available at the station. Back-up power is currently not available at this station.

3.2.7 Winthrop Wells and Well Pump Station

The Winthrop Wells are located south of Topsfield Road on the Winthrop Estate. The wells were construction in 1961. Winthrop Well No. 1 is a 36-inch diameter gravel-packed well and is 28 feet deep. The well pump station includes one vertical turbine pump capable of 250 GPM. Winthrop Well No. 2 is a 12-inch diameter gravel-developed well and is 56 feet deep. The well pump station includes one submersible pump capable of 140 GPM. Raw water from both wells is treated with sodium hypochlorite for disinfection, blended phosphate for corrosion control, and hydrofluosilicic acid for fluoridation. An emergency eyewash station is available at both stations. Back-up power is currently not available at either station.

3.2.8 Essex Road Well and Well Pump Station

The Essex Road Well is located on the south side of Essex Road near Lakemans Lane. The pump station and well were construction in 1978. The 24-inch diameter gravel-packed well is 40 feet deep. The well pump station includes one vertical turbine pump capable of 125 GPM. Well water is treated with sodium hypochlorite for disinfection, blended phosphate for corrosion control, and hydrofluosilicic acid for fluoridation. An emergency eyewash station is available at the station. Back-up power is currently not operational at this station.

3.2.9 Fellows Road Well and Well Pump Station

The Fellows Road Well is located on the north side of Fellows Road west of Sagamore Road. The pump station and well were construction in 1980. The 18-inch diameter gravel-developed well is 73 feet deep. The well pump station includes one vertical turbine pump capable of 250 GPM with a 40 HP motor. Well water is treated with sodium hypochlorite for disinfection, blended phosphate for corrosion control, and hydrofluosilicic acid for fluoridation. A safety shower and emergency eyewash station are available at the station. Back-up power is currently not available at this station.

3.2.10 Distribution System

The water distribution system includes approximately 93 miles of water main ranging in size from 2-inch to 16-inch. Water main materials include cast iron (approximately 41%), asbestos cement (approximately 39%), ductile iron (approximately 10%) and plastic (approximately 10%). The distribution system includes valves and hydrants throughout and includes the Main Service Area, the Pinefield Service Area and the Plover Hill Service Area.

3.2.11 Mile Lane Booster Pump Station

The Mile Lane Booster Pump Station is located near the Mile Lane Well. The booster pump station, built in 1964, provides additional pressure to fill the Pinefield Tank. The station includes two pumps and has a capacity of 850 GPM with a 25 HP motor. The IWD plans to install a propane gas generator with auto-transfer switch and weatherproof enclosure at this site.

3.2.12 Jeffrey's Neck Booster Pump Station

The Jeffrey's Neck Booster Pump Station is located on Jeffery's Neck Road south of Grasshopper Lane. The station was constructed in 1956 and renovated in 1995. The station provides additional pressure to fill the Plover Hill Tank. It includes two pumps and has a capacity of 300 GPM with a 15 HP motor. There is no emergency eyewash station or shower available at the station. Back-up power is currently not available at this station.

3.2.13 Cedarview Booster Pump Station

The Cedarview Booster Pump Station is located on Cedarview Road at Topsfield Road and serves the homes on Cedarview Road and Sunset Drive. The station was built in 1973 and includes two pumps and has a capacity of 162 GPM with a 5 HP motor. Back-up power is currently not available at this station.

3.2.14 Town Hill Tank

The Town Hill Tank has a capacity of 3.0 million gallons. It is located off Spring Street north of Highland Cemetery and was constructed in 1964. The tank is a ground level welded steel tank and is 114 feet in diameter and 40 feet tall. The level in the tank is used to control the operation of the Ipswich WTP and the well pumps.

3.2.15 Pinefield Tank

The Pinefield Tank has a capacity of 1.0 million gallons. It is located off of Dix Road and was constructed in 1964. The tank is a steel standpipe and is 46.5 feet in diameter and 80 feet tall. The level in the tank is used to control the operation of the Mile Lane Booster Pump Station.

3.2.16 Plover Hill Tank

The Town Hill Tank has a capacity of 0.5 million gallons. It is located off Plover Hill Road at Chattanooga Road and was constructed in 1956. The elevated steel tank is 42 feet in diameter, 48 feet tall, and the base of the tank is 50 feet above ground level. The level in the tank is used to control the operation of Jeffrey's Neck Booster Pump Station.

3.2.17 Chemicals Used

Raw water from the Dow and Bull Brook Reservoirs is treated with chlorine dioxide to oxidize organic material and for disinfection of the filter media, sodium hypochlorite for disinfection, sodium hydroxide for pH adjustment, polyaluminum chloride for coagulation, hydrofluosilicic acid for fluoridation and polyphosphate for corrosion control. Chlorine Dioxide is generated onsite using sodium chlorite, sodium hypochlorite and hydrochloric acid. Water from all the wells is treated with blended phosphate (polyphosphate-orthophosphate) for corrosion control, sodium hypochlorite for disinfection, and hydrofluosilicic acid for fluoridation. Chemical handling, clean-up, and Material Safety Data Sheets (MSDS) for chemicals used for major (i.e. water treatment) and minor processes (i.e. lab tests) are included in the MSDS binder located at the Ipswich WTP Office.

3.3 SYSTEM OPERATION

All of the individual water system components noted within the System Description section work together as an integrated system. Their typical and desired normal and emergency modes of operation are described in the next two sections.

3.3.1 Normal Operation

Under normal operations, the raw water pump station conveys water into the Ipswich WTP, where it is filtered and chemically treated prior to entering the clearwell, and subsequently pumped into the distribution system. The Ipswich WTP finished water pumps and the well pumps operate based on the water elevation of the Town Hill Tank. When the water level drops below the "pump on" setpoint, the Ipswich WTP and/or well pump stations energize and pump into the system. When the tank is full (i.e., its "pump off" setpoint is reached), the Ipswich WTP and/or well pump stations stop operating. The treatment plant is normally run year round during the business week, while the wells are run during the weekends. The individual Operations & Maintenance (O&M) Manuals for the WTP and well pump stations should be referred to for additional detail.

3.3.2 Emergency Operation

The Ipswich Power Plant provides diesel driven emergency power for essential operational functions at both the Ipswich WTP and the raw water pumping station, in case of a power disruption. In the event of a power outage, the IWD remains in contact with the Power Plant Superintendent to ensure continued service. Emergency power is currently being installed at the Mile Lane Well and Booster Pump Station.

If the Ipswich WTP was not available, the wells provide adequate supply for the average daily demand. If the WTP were unavailable during the summer, outdoor water use restrictions would be implemented to reduce the demand on the wells.

3.3.3 Critical Components

All of the previously described components of the Ipswich water system are important to its proper operation. In regards to ranked importance, the Ipswich WTP can be considered the most critical component that must remain in service, or be returned to service quickly in case of an outage event, as it provides treatment to Dow Reservoir's raw water, which is the primary source of supply to the system.

3.4 SCADA SYSTEM

The IWD has a Supervisory Controls and Data Acquisition (SCADA) system used for monitoring and control of its water system infrastructure. The SCADA system utilizes GE Proficy HMI/SCADA IFix software. The main PLC at the WTP communicates with PLCs at the well stations and booster pump stations via dedicated telephone lines. The SCADA system generates alarms if parameters exceed operator-designated values. All remote station alarm conditions are communicated through the remote station PLCs to the WTP PLC. The WTP PLC will then contact the on-call water operator through an autodialer. WTP alarms include pump and filter trouble, clearwell and Town Hill Tank high/low, emergency eye wash, high/low finished water pH, fluoride, turbidity, chlorine residual, and intrusion alarms. Security and operational alarms are provided at all wells, booster pump stations and tanks. Currently, the hatch covers at the storage tanks and Cedarview Booster Pump Station are not alarmed.

The procedures for testing and maintain all facility communications and alarm systems to ensure their proper operation should be including within their corresponding O&M Manual. *In accordance with MassDEP's policies and guidelines, the proper operation and notification of alarms must be verified on a quarterly basis. An excerpt from MassDEP's policies and guidelines on testing of alarms and controls is included in **Appendix H**.* The IWD needs to develop a table with critical alarms for each of their installations in accordance with MassDEP requirements.

The respective O&M manuals for the Ipswich WTP, well pump stations, booster pump stations and SCADA system need to be referred to for more detailed information in regards to its monitoring, alarming and control capabilities.

3.5 LOCATION OF PERTINENT INFORMATION

The location of pertinent information that would be useful on a routine basis is included within the following table.

**TABLE 3-2
PERTINENT INFORMATION LOCATION SUMMARY**

ITEM	STORAGE LOCATION
Distribution System Map	Department of Utilities Office
Other Pertinent Maps	Superintendent Office at the Ipswich WTP and the Department of Utilities Office
Daily Reports	Superintendent Office at the Ipswich WTP
Permits	Superintendent Office at the Ipswich WTP and the Department of Utilities Office
Technical Manuals	Superintendent Office at the Ipswich WTP
O&M Manual and Plans	Superintendent Office at the Ipswich WTP

3.6 LOCATION OF EMERGENCY EQUIPMENT

Access to equipment, critical spare parts, etc. is important for the assurance of continued operations during an emergency or interruption of service. The following table lists the primary items and their location.

**TABLE 3-3
EMERGENCY/CRITICAL EQUIPMENT LOCATION SUMMARY**

COMPONENT	COMMENTS	LOCATION
Back-up Power	Diesel Powered Generator Propane Gas Powered Generator (Installation in progress)	Ipswich Power Plant - serves the WTP and Raw Water Pumping Station Mile Lane Well & Booster Pump Station
Critical Spare Parts	Various spare parts	Ipswich WTP, Well Pump Stations, Booster Pump Stations
Spill Response Materials	Spill kits, etc.	Ipswich WTP, Well Pump Stations, Booster Pump Stations, Ipswich Power Plant, Fire Department

In regards to the attainment of additional equipment, services, or spares that are not stocked, the IWD will contact its preferred contacts identified within the Service/Repair Notification List included within Section 4.

SECTION 4

CHAIN OF COMMAND AND EMERGENCY NOTIFICATION

The first response step in any emergency is to notify the person at the top of the chain of command – the person responsible for managing the emergency and making key decisions. This lead person will assess the situation and initiate a series of response actions based on the type and severity of emergency.

4.1 CHAIN OF COMMAND – LINES OF AUTHORITY

**TABLE 4-1
CHAIN OF COMMAND**

NAME/TITLE	RESPONSIBILITIES DURING AN EMERGENCY	CONTACT NUMBERS
Vicki Halmen Water & Wastewater Director	Responsible for overall management and decision making for the Ipswich Water & Wastewater Utilities including the Water Department. The Director is the lead for managing the emergency, providing information to regulatory agencies, the public and news media. Responsible for directing and organizing the efforts of the Water Department Superintendent and the Water Distribution Foreman, collecting information and providing recommendations to the Board of Water Commissioners.	Phone: 978-356-6635 x108 Fax: 978-356-6634 Cell:978-360-1867
Joe Ciccotelli Water Department Superintendent Primary Certified Operator (Treatment)	In charge of operating the water treatment facilities , performing inspections, maintenance and sampling and relaying critical information, assessing facilities, and providing recommendations to the Director.	Phone: 978-356-6639 Fax: 978-356-6634 Cell: 978-479-6959
Peter Robins Water Distribution Foreman, Primary Certified Operator (Distribution)	In charge of operation of the distribution system , performing inspections, maintenance and sampling, performing hydrant flushing and water main repairs, assessing distribution system piping, hydrants, valves and other buried infrastructure, and providing recommendations to the Director.	Phone: 978-356-6635 x112 Fax: 978-356-6634 Cell: 978-360-1869

4.2 NOTIFICATION PROCEDURES

- Notify system personnel who may be on-call or off-duty.
- Notify customers, priority customers, and industrial customers.
- Alert local law enforcement, drinking water officials, local health officials, and water testing laboratories when appropriate.
- Contact service and repair contractors.
- Contact neighboring water systems for assistance, if necessary.
- Arrange for alternative water supplies such as bottled water.

4.3 LOCAL NOTIFICATION LIST

**TABLE 4-2
LOCAL NOTIFICATION LIST**

AUTHORITY	PERSON	TITLE	TELEPHONE
Fire Department	Gregory Gagnon	Chief	911 978-356-6627
Police Department	Paul Nikas	Chief	911 978-356-4343
FBI Field Office	Nick Boshers	-	617-742-5533
Emergency Management Department	Lt. Jon Hubbard	E.M. Director	911 978-356-6645
Board of Health	Anthony Torra Colleen Fermon	Building Inspector Health Agent	978-356-6605/ 978-356-6606
National Spill Response Center	-	-	800-424-8802
State Spill Hotline (DEP)	-	-	888-304-1133
Local Hazmat Team	Enpro Clean Harbors	-	800-966-1102 800-645-8265
Local Laboratory (Primary)	Jim Groleau	Biomarine, Inc.	978-281-0222
Laboratory (Secondary)	Alan Ford	Rhode Island Analytical	978-568-0041
Town Officials/Board of Selectmen	William Craft Judy Field Nishan Mootafian Edward B. Rauscher Charles Surpitski	Member Vice Chair Chair Member Member	P: 978-356-6600

4.4 STATE/FEDERAL NOTIFICATION LIST

**TABLE 4-3
STATE/FEDERAL NOTIFICATION LIST**

STATE AGENCIES	
Dig Safe	888-344-7233
State Police (Essex County HQ – Danvers, MA)	978-538-6161*
Department of Environmental Protection - Drinking Water Program	
Boston	617-292-5500
Northeast Region (Wilmington)	978-694-3200
Department of Public Health	617-624-6000
Outside of Working Hours	617-522-3700*
Nuclear Incident Advisory Team (Part of DPH)	617-727-9710* 617-242-3453
Massachusetts Emergency Management Agency (MEMA)	888-304-1133* 508-820-2000
Massachusetts Civil Defense	978-640-9500*
FEDERAL AGENCIES	
EPA (Boston Office)	888-372-7341*
National Response Center	800-424-8802*
Federal Emergency Management Agency (FEMA)	800-621-3362*
Occupational Safety & Health Administration (OSHA)	800-321-6742
Centers for Disease Control and Prevention (Atlanta, GA)	800-232-4636
Federal Aviation Administration (Accident Reporting)	404-305-5156*
Federal Bureau of Investigation (FBI)	617-742-5533*

* 24 Hour

4.5 MEDIA

**TABLE 4-4
MEDIA NOTIFICATION LIST**

NEWS OUTLET	TYPE	TELEPHONE
The Ipswich Chronicle	Local Newspaper	978-356-5141
Salem News	Regional Newspaper	978-922-1234
WCVB	Television Station	781-449-0400
WHSB (Beverly)	Radio Station	978-921-7482
WESX	Radio Station	617-884-4500
ICAM	Community Access	978-356-0353
Local (Central Dispatch)	Ipswich PD	911 978-356-4321

4.6 SERVICE/REPAIR NOTIFICATION LIST

**TABLE 4-5
SERVICE/REPAIR NOTIFICATION LIST**

SERVICE	NAME	TELEPHONE
Electric Utility Company	Ipswich Electric Department	978-356-6635
Gas Utility Company	National Grid	800-233-5325
Telephone Utility Company	Verizon	781-555-1611
Well Driller	The Maher Corporation	781-421-2600
Pump Specialist	Maher Services	978-664-WELL
Dig Safe		888-344-7233
Bottled Water Service	Polar Beverages Belmont Springs Water Co.	800-734-9800 617-489-4752
Bulk Water Hauler	Rocky Mountain Spring Water Spring Realty Water System	781-749-4849 617-678-1335
Waterworks Contractor	N. Granese & Sons Richard Brockelbank Bob Perry	781-631-3399 978-356-4503 978-500-2540
Electrician	Minniear Electric	781-953-5258
Plumber	Ultimate Plumbing	508-752-1166
Soil Excavation/Backhoe	See Waterworks Contractors	
Power Generator Rentals	United Rentals	508-845-3710
Chemical Treatment Feed Pumps	WTP Operators Distribution System Operators	978-375-6774 978-375-6745
Radio/Telemetry Repair/Service	A/D Instruments	603-382-4667
Chemical Suppliers	Carus Corp. JCI Jones Chemical Harcross Chemical, Inc. Holland Company, Inc. Monson Companies, Inc. Univar USA, Inc.	800-435-6856 800-364-2944 800-642-0181 800-639-9602 800-235-0957 800-556-2426
Pump Supplier	Goodwin Pump (Rentals)	860-889-2343
Pipe Supplier	EJ Prescott John Hoadley & Sons	978-777-7738 781-878-8098

4.7 CRITICAL CUSTOMERS

**TABLE 4-6
CRITICAL CUSTOMER NOTIFICATION LIST**

NAME	CONTACT	TELEPHONE
Ipswich Public Schools	Superintendent	978-356-2935
Residence at River Bend	Administrator	978-356-1300
Lahey Health Center	Administrator	978-356-5522
Sisters of Notre Dame	Administrator	978-356-0392
Cable Gardens Apartments	Administrator	978-356-1199
Oak Hill Apartments	Administrator	978-356-1530

4.8 NOTIFYING WATER SYSTEM CUSTOMERS

4.8.1 Who is Responsible

The Director of Utilities is responsible for making the decision to notify customers regarding a potential water shortage and the need for water use restrictions. The Director should consult with field staff to make the decision. Once the decision is made procedures for notification will be initiated.

4.8.2 Procedures

- Director confers with key staff, MassDEP and Town Officials, as required, to verify problems.
- Director organizes staff to develop the message to be delivered to the customers.
- Director consults with state drinking water staff regarding the problem.
- Director with assistance from staff prepares notices, signs and media messages.
- Water system operators continue to investigate problem and make repairs as necessary.
- Water shortage notification will be distributed by:
 - Institute **Connect CTY** alert.

- Staff will place signs on main travel routes into the community.
- Director contacts radio, TV and newspapers and requests issuance of the water shortage notice and request to curtail water use. Notice and request are also posted on the Town of Ipswich website (www.town.ipswich.ma.us) and the Ipswich Utilities website (www.ipswichutilities.org).
- Administrative support person will provide a pre-scripted message to phone callers.
 - Water system operators continuously update the Director on water shortage
 - Once water shortage is resolved, re-notify customers
 - Town **Connect CTY** system will be used to notify/update residents

4.9 ALERTING LOCAL LAW ENFORCEMENT, STATE DRINKING WATER OFFICIALS, AND LOCAL HEALTH

4.9.1 Who is Responsible

The Director or designee is responsible for making the decision to notify MassDEP, local health officials and local law enforcement depending upon the level and type of emergency.

4.9.2 Procedures

MassDEP - The MassDEP Drinking Water Program has regulatory jurisdiction for public water systems and should be one of the first agencies to be contacted in almost all emergency events.

911 - If the situation is an emergency that needs response from local fire, law enforcement, medical or hazardous materials team (HazMat), calling 911 should be the first immediate call.

Fire and HazMat - If the emergency incident involves an unknown substance and possible contamination of the water system, the first responders will more likely be the local fire department and/or HazMat team.

Local Health Department - The Ipswich Public Health Agent is responsible for all public health

issues within the Town. They should be notified of any event that could affect public health within the Town.

Federal Bureau of Investigation (FBI) - If the event is a known terrorist incident or a direct written or phone threat against the water system, the FBI is to be contacted as soon as possible. Local and state police can also help determine if the FBI should be notified.

4.10 CONTACTING SERVICE AND REPAIR CONTRACTORS

4.10.1 Who is Responsible

The Water Superintendent, with assistance from operators, is responsible for implementing notification to service/repair contractors

4.10.2 Procedures

A list of service/repair contractors and phone numbers is part of this emergency plan (Table 4-5).

The Water Superintendent will use this list to telephone appropriate contractors. If necessary, the Water System Operators will assist.

The Water Superintendent or Water Distribution Foreman is responsible for determining the equipment, materials and man-power required for the specific emergency response.

4.11 PROCEDURES FOR ISSUING A HEALTH ADVISORY

4.11.1 Who is Responsible

The Director or designee is responsible for contacting the Town Health Agent, MassDEP and other agencies for issuing a health advisory.

4.11.2 Procedures

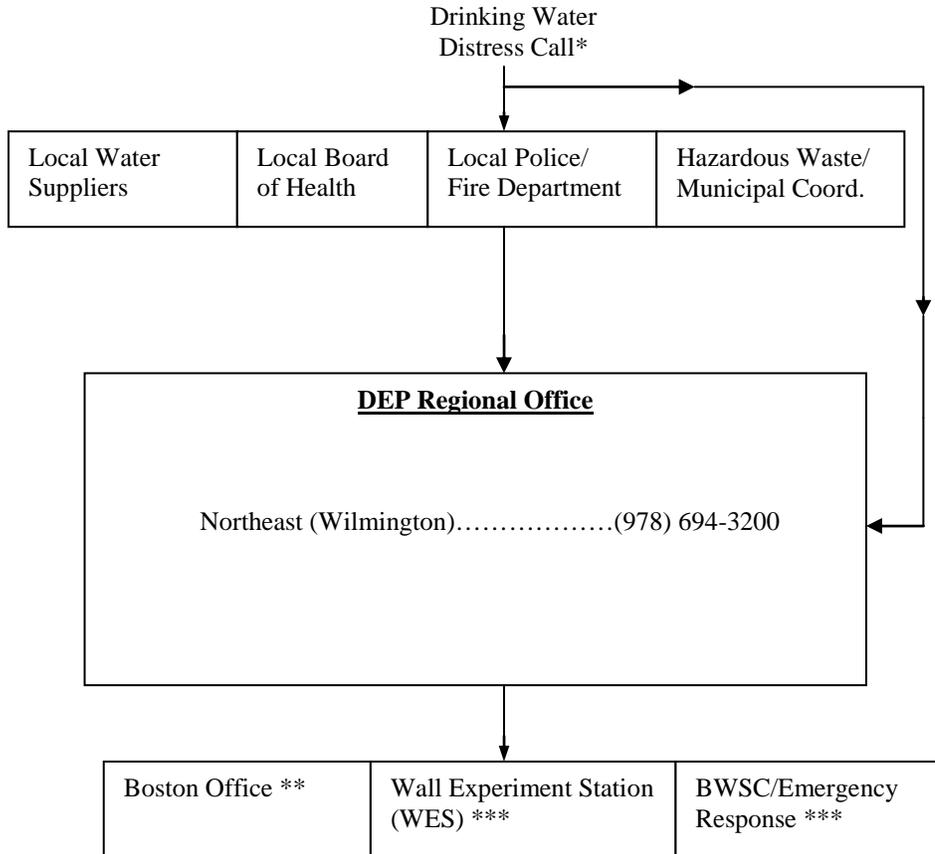
- Contact MassDEP
- Contact local Health Agent
- Coordinate public notification with staff and media in accordance with Section 7

4.12 PROCEDURES FOR CONTACTING MASSDEP

MassDEP may be contacted 24 hours/day, seven day per week by using the following procedures during regular working hours or during all other hours.

4.12.1 Working Hours

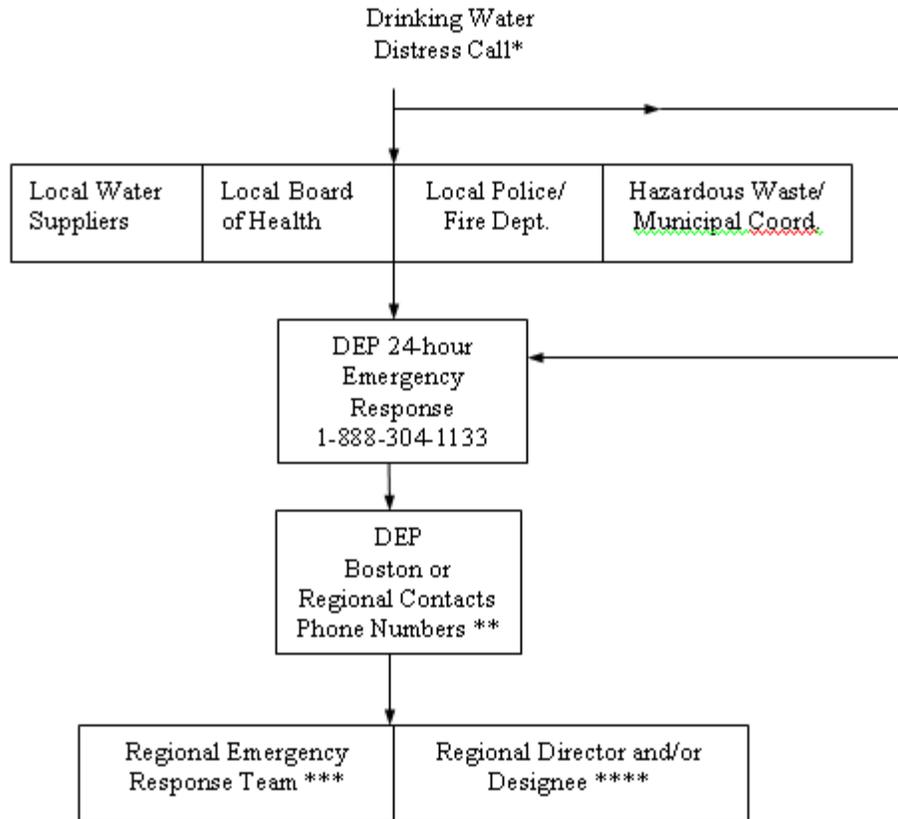
During Working Hours - Monday to Friday (9:00 AM to 5:00 PM):



- * All threats or suspected acts of terrorism against a water system must be reported to the Local Police or State Police immediately. Local and State Police will determine if the Federal Bureau of Investigation will be notified.
- ** Calls made directly to the Boston Office will be referred to the specific regional office.
- *** WES will only be contacted by the Regional or Divisional Director or their designee, if deemed necessary, and will give advice on the necessary chemical analysis to be taken and will also decide which analyses can be done by WES.
- **** The Bureau of Waste Site Cleanup (BWSC)/Emergency Response will be contacted whenever there is a spill, release of oil and/or hazardous material. The Drinking Water Program will work with the BWSC/Emergency Response until the end of situation. Each Bureau should exchange copies of all reports written as a result of the situation (i.e. spill reports and water supply emergency data reports).

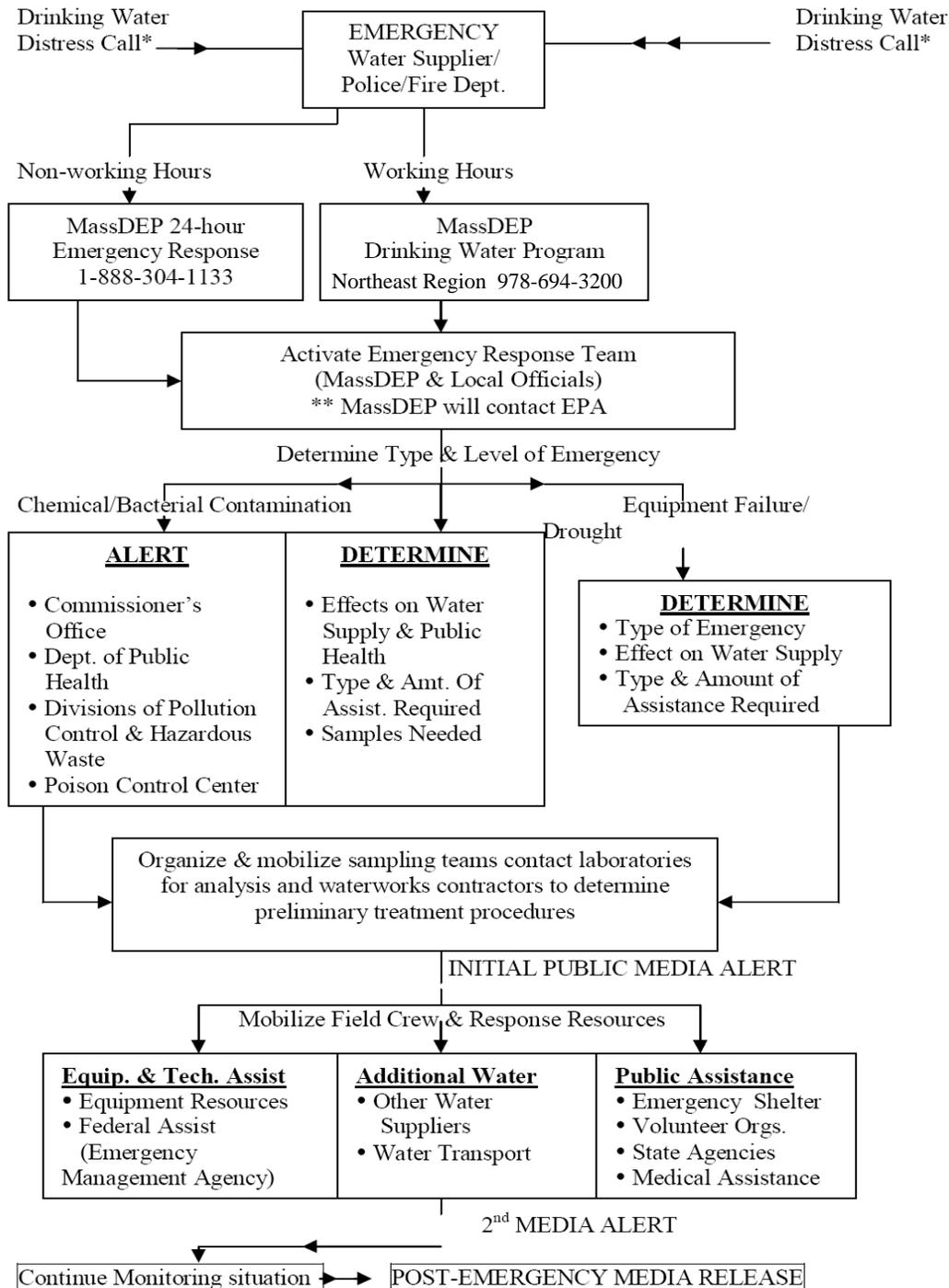
4.12.2 Non-Working Hours

During Non-Working Hours - Monday to Friday (5:00 PM to 9:00 AM), Weekends and Holidays:



- * All threats or suspected acts of terrorism against a water system must be reported to the Local Police and State Police immediately. Local and State Police will determine if the Federal Bureau of Investigation will be notified.
- ** MassDEP's Emergency Response team will contact the Drinking Water Program.
- *** The Regional Incident Response person may be able to handle the emergency without calling the Regional Director or his/her designee. Incident Response personnel are required to notify, by telephone, the regional Drinking Water Section Chief at the start, or within 24 hours, of the event (emergency) being reported and forward a copy of the Incident Report to the Drinking Water Program at the MassDEP Boston Office.
- **** The Regional Director or his/her designee will define the scope of the problem, determine who should handle the emergency response, and determine who should be contacted (i.e. local Board of Health, etc.). The Regional Director or his/her designee will also have available a list, with addresses and telephone numbers, of experienced volunteer water supply engineers. This list will also be available to the Office of Incident Response. This list should be prioritized in order of experience. Services will be reimbursed, for any time spent outside of their normal working hours, according to the current union contract.

4.13 PROCEDURES INVOLVING OUTSIDE AGENCIES AND PERSONNEL



* All threats against a water system must be reported to the State Police immediately.

** EPA will be responsible for contacting the Federal Agencies if the emergency is related to tampering with the water system.

SECTION 5

SEVERITY OF POTENTIAL EMERGENCIES

A decision on the severity of emergencies is made by the Water & Wastewater Director with collaborative input from system personnel. The information for making such a decision will accumulate over time, and may result in changes in the assessment of the severity. Communicate each assessment of severity immediately to all those dealing with the emergency.

5.1 LEVEL 1 - ROUTINE PROBLEMS

These incidents are minor disruptions to the water system that affect 10% or less of the system and are anticipated to be repaired/resolved in 24 hours or less.

Examples: Water main breaks and mechanical problems at pumping stations.

5.1.1 Initial Response

1. Begin documentation log (Refer to Emergency Response Checklist in **Appendix F**) at first report of the problem.
2. Investigate problem and evaluate the situation to determine the level of emergency.

5.1.2 Response Procedures for Level I

1. Activate emergency response team and respond in accordance with the Emergency Response Plan (ERP).
2. Maintain records of all activities throughout the incident. Retain records for future reference.
3. Monitor resolution of the emergency and take appropriate action if the level of the emergency changes.

5.1.3 Notes

1. If a violation requiring a Tier 1 Public Notice in accordance with 310 CMR 22.16 occurs, the Public Water Supply (PWS) must contact and consult with MassDEP staff within 24 hours of the PWS first learning of the violation. Refer to **Appendix J** for the MassDEP Notice Tier 1 Templates.
2. If a coliform bacteria violation has occurred, the PWS must file a Coliform Violation Evaluation Survey (included in **Appendix D**) with the local MassDEP regional office. This survey will not be used for compliance purposes but will provide MassDEP with valuable information on the cause and corrective actions for coliform bacteria violations.

5.2 LEVEL II - ALERT/MINOR EMERGENCIES

These incidents are more significant disruptions to the water system that affect 50% or less of the system and are anticipated to be repaired/resolved in 72 hours or less.

Examples: Local total coliform bacteria detection, major main breaks, multiple main breaks, major mechanical problems at pumping stations/treatment facility, or failure of chemical feed systems.

5.2.1 Initial Response

1. Begin documentation log (Refer to Emergency Response Checklist in **Appendix F**) at first report of the problem.
2. Investigate problem and evaluate the situation to determine the level of emergency.

5.2.2 Response Procedures for Level II

1. Activate emergency response team and respond in accordance with Emergency Response Plan.
2. Contact local responsible officials and authorities, including the MassDEP Regional Office, to inform them of conditions in the system and discuss any special actions that may be required. Such required actions may include, but are not limited to:

- Collect special water quality samples related to the nature of the emergency.
 - Collect appropriate water quality samples at sites throughout the distribution system where problems have occurred. These samples must be taken both during and after the incident. If the problem is determined to be coliform bacteria related, follow the Coliform MCL Violation Determination flow chart included within **Appendix C**.
 - Provide notification to parties affected by the incident.
 - Provide an alternate source of water to those affected by the incident, if needed.
 - Contact local news media to inform them of incident, if needed.
 - Provide Public Notification of any violations of MassDEP regulations, as needed.
3. Contact local responsible officials and authorities, including MassDEP Regional Office, to inform them of completion of repairs and results of all water quality testing.
 4. Maintain records of all activities throughout the incident. Retain records for future reference.
 5. Monitor resolution of the emergency and take appropriate action if the level of the emergency changes.

5.2.3 Notes

1. If a violation requiring a Tier 1 Public Notice in accordance with 310 CMR 22.16 occurs, the PWS must contact and consult with MassDEP staff within 24 hours of the PWS first learning of the violation. Refer to **Appendix J** for the MassDEP Notice Tier 1 Templates.
2. If a coliform bacteria violation has occurred, the PWS must file a Coliform Violation Evaluation Survey (included within **Appendix D**) with the local MassDEP regional office. This survey will not be used for compliance purposes but will provide MassDEP with valuable information on the cause and corrective actions for coliform bacteria violations.

5.3 LEVEL III - MAJOR EMERGENCIES

These incidents are very significant disruptions to the water system that affect more than 50% of the system and/or are anticipated to require more than 72 hours to be repaired/resolved. Major emergencies may require a Declaration of State of Water Supply Emergency and/or a Boil Water

Order, Do Not Drink Order or Do Not Use Order. **MassDEP considers all incidents that result in a Boil Water Order, Do Not Drink Order or Do Not Use Order to be Level III incidents.**

Examples: Break in major transmission main, loss or failure of treatment facility, loss of source (dam break, water supply shortage, contamination, etc.), loss of pressure in system, widespread total coliform bacteria outbreak, fecal coliform or E. Coli detection, or acts of vandalism.

5.3.1 Initial Response

1. Begin documentation log (Refer to Emergency Response Checklist in **Appendix F**) at first report of the problem.
2. Investigate problem and evaluate the situation to determine the level of emergency.

5.3.2 Response Procedures for Level III - Bacterial Contamination

1. Initiate consultation with MassDEP and follow Public Notification requirements.
2. Activate emergency response team and respond in accordance with the Emergency Response Plan to collect samples and conduct preliminary analyses to determine potential contamination of the water supply. Use the data to follow the Coliform MCL Violation Determination flow chart included within **Appendix C**.
3. Contact local responsible officials and authorities, including MassDEP Regional Office, to inform them of conditions in the system and discuss any special actions that may be required. Such required actions may include, but are not limited to:
 - Collection of special water quality samples related to the nature of the emergency.
 - Collection of bacteria samples at sites throughout the distribution system where problems have occurred. These samples may be taken both during and after the incident. If the problem is determined to be coliform bacteria related, follow the Coliform MCL Violation Determination flow chart included within **Appendix C**.
 - Provide notification to parties affected by the incident.
 - With MassDEP approval, provide an alternate source of water if needed. Alternative water sources are identified in Section 9.

- Contact local news media to inform them of incident, if needed.
 - If MassDEP issues a Declaration of State of Water Supply Emergency, Boil Water Order, Do Not Drink Order or Do Not Use Order, follow necessary procedures.
4. Once problem is identified, initiate actions to resolve the problem.
 5. Contact local responsible officials and authorities, including MassDEP Regional Office, to inform them of completion of repairs and results of all water quality testing.
 6. Maintain records of all activities throughout the incident. Retain records for future reference.
 7. Monitor resolution of the emergency and take appropriate action if the level of the emergency changes.

5.3.3 Response Procedures for Level III - Equipment/System Failure

1. Activate emergency response team to evaluate the extent of the problem and determine the type and quantity of support needed to initiate corrective action.
2. Contact local responsible officials, including MassDEP Regional Office, to inform them of conditions in the system and discuss any special actions that may be required. Such required actions may include, but are not limited to:
 - Conduct preliminary water quality analyses to determine potential contamination of the water supply as a result of the equipment/system failure.
 - Provide notification to parties affected by the incident.
 - With MassDEP approval, provide an alternate source of water, if needed.
 - Contact local news media to inform them of the incident, if needed.
 - If MassDEP issues a Declaration of State of Water Supply Emergency or Boil Water Order or Do not Drink Order, follow necessary procedures.
3. Once problem is identified, initiate actions to resolve the problem.
4. Contact local responsible officials and authorities, including MassDEP Regional Office, to inform them of completion of repairs and results of all water quality testing.
5. Maintain records of all activities throughout the incident. Retain records for future reference.
6. Monitor resolution of the emergency and take appropriate action if the level of the emergency changes.

5.3.4 Notes

1. If a violation requiring a Tier 1 Public Notice in accordance with 310 CMR 22.16 occurs, the PWS must contact and consult with MassDEP staff within 24 hours of first learning of the violation. Refer to **Appendix J** for the MassDEP Notice Tier 1 Templates.
2. If a coliform bacteria violation has occurred, the PWS must file a Coliform Violation Evaluation Survey (included within **Appendix D**) with the local MassDEP regional office.

5.4 LEVEL IV - NATURAL DISASTERS

These incidents are generally caused by a widespread meteorological or geological event that disrupts the water system affecting more than 50% of the system and/or requiring more than one week for recovery of services. Such events may cause structural damage to a treatment facility or contaminate a source with untreated sewage, toxic chemical, or radioactive material. A Declaration of State of Water Supply Emergency and/or a Boil Water Order or Do Not Drink Order are likely to be required.

Examples: Hurricanes, tornadoes, earthquakes, or floods.

If the disruption of the system causes equipment failure and/or contamination caused by bacteriological activity, follow the emergency response procedures for Level III. If the contamination is caused by chemical compound(s), use the following procedure:

5.4.1 Initial Response

1. Begin documentation log (Refer to Emergency Response Checklist in **Appendix F**) at first report of the problem.
2. Investigate problem and evaluate the situation to determine the extent of impact on the water system. Collect water samples for analyses to determine if it is contaminated and the type of contamination.

5.4.2 Response Procedures for Level IV - Chemical Contamination

1. If possible, remove the affected water supply source or close the distribution system until it can be fully evaluated for contamination.
2. Contact MassDEP Regional Office for further instructions.
3. Inform proper local and state authorities/agencies, activate response team immediately and respond in accordance with the Emergency Response Plan. The responsible authority or authorities will issue the necessary "Orders".
4. Inform the public through the local/regional electronic media about the emergency, affected area, and alternative water supply. Keep the public informed about new developments through "special reports and public service news".
5. With MassDEP approval, activate alternative water supply.
6. Evaluate the situation to brief the authorities and inform the public. If necessary, take other precautionary measures to safeguard public health.
7. Collect new samples for analyses and put in place a monitoring system to ensure a safe water quality.
8. Maintain records of all activities throughout the incident. Retain records for future reference.
9. Monitor resolution of the emergency and take appropriate action if the level of the emergency changes.

5.4.3 Notes

1. If a violation requiring a Tier 1 Public Notice in accordance with 310 CMR 22.16 occurs, the PWS must contact and consult with MassDEP staff within 24 hours of first learning of the violation. Refer to **Appendix J** for the MassDEP Notice Tier 1 Templates.
2. If a coliform bacteria violation has occurred, the PWS must file a Coliform Violation Evaluation Survey (included within **Appendix D**) with the local MassDEP regional office.

5.5 LEVEL V - NUCLEAR DISASTERS / MAJOR TERRORIST ACTS

These incidents involve large and uncontrolled releases of radioactive material or compounds into the environment/water supply source or deliberate acts that impair a water system (i.e.,

terrorism). In the case of a nuclear disaster, surface water supplies within a 50-mile radius of a nuclear power plant experiencing such a release may be immediately contaminated. Groundwater supplies may remain safe for a period of time. A Declaration of Water Supply Emergency and/or a Do Not Drink Order are likely to be required.

Examples: Nuclear power plant release to the environment or deliberate release of highly toxic materials to a water supply.

5.5.1 Initial Response

1. Begin documentation log (Refer to Emergency Response Checklist in **Appendix F**) at first report of the problem.
2. Investigate problem and evaluate the situation to determine the extent of impact on the water system. Collect water samples for analyses to determine if it is contaminated and the type of contamination.

5.5.2 Response Procedures for Level V

1. If possible, remove the affected water supply source or close the distribution system until it can be fully evaluated for contamination.
2. Be prepared to follow the directives issued by the Massachusetts Emergency Management Agency on the Emergency Broadcast network; and provide the necessary assistance to this agency. At a minimum, the directives will advise the public:
 - a. Not to use surface or ground water until the source is analyzed and approved to be safe for human or animal consumption.
 - b. Limit the ingestion of water stored in closed containers or bottled water until after it has been tested and approved for consumption.
 - c. MassDEP and/or the Department of Public Health will provide technical assistance and provide information on testing water sources to ensure that they are safe for consumption.
 - d. Maintain records of all activities throughout the incident. Retain records for future reference.

- e. Monitor resolution of the emergency and take appropriate action if the level of the emergency changes.

5.5.3 Notes

1. All threats against a water system must be reported to the State Police and Federal Bureau of Investigation immediately.
2. Terrorist acts found to be minor in nature may be reduced to a lower level and follow the appropriate emergency response procedures.
3. If a violation requiring a Tier 1 Public Notice in accordance with 310 CMR 22.16 occurs, the PWS must contact and consult with MassDEP staff within 24 hours of the public water system first learning of the violation. Refer to **Appendix J** for the MassDEP Notice Tier 1 Templates.
4. If a coliform bacteria violation has occurred, the PWS must file a Coliform Violation Evaluation Survey (included within **Appendix D**) with the local MassDEP regional office.

SECTION 6

WATER QUALITY SAMPLING

If contamination is suspected, notify and work with the local health jurisdiction and MassDEP, Drinking Water Program regional office to help identify what testing should be done. This may help prevent illness or even death.

In general, the unintentional or intentional contamination of the water supply can come in many forms. For example:

- Microbiological;
- Organics (pesticides or VOCs);
- Inorganics (metals or cyanide); and
- Radionuclides.

6.1 WATER SAMPLING AND MONITORING ISSUES

Water sampling and monitoring is an integral part of the Emergency Response Plan (ERP). Water sampling and monitoring issues include:

- Identifying proper sampling procedures for different types of contaminants;
- Obtaining sample containers;
- Determining the quantity of required samples;
- Identifying who is responsible for taking samples;
- Identifying who is responsible for transporting samples (in time sensitive situations);
- Confirming laboratory capabilities and certifications; and
- Interpreting monitoring or laboratory results.

6.2 WATER SAMPLING

If it is suspected that someone intentionally sabotaged the system or contaminated the water, this may be a crime scene. Call the local law enforcement and MassDEP Drinking Water Program regional office, and be sure not to disturb any potential evidence.

There are several instructions that apply to all sampling techniques for all contaminants:

1. Do not rinse or empty bottles. Bottles for certain constituents may contain a preservative that must remain in the bottle.
2. Assume that any liquid present when a bottle arrives from the laboratory is caustic. If it comes in contact with skin or eyes, use first aid procedures for acid burns.
3. If there is an overflow while filling a sample bottle, restart the procedure using a new sample bottle of the same kind.
4. If one bottle is to be used for several different samples, use the most restrictive sampling technique.

The following table presents routine and non-routine samples that may need to be taken during a suspected contamination event. Coordination with the local water quality lab (identified within Section 4) will be required for most samples requiring off-site analysis.

**TABLE 6-1
WATER SAMPLING TESTS TO PERFORM**

SAMPLING PARAMETER	DO WE HAVE PROCEDURES? (YES/NO)	BASIC STEPS TO CONDUCT SAMPLING (SITES, FREQUENCY, PROCEDURES, LAB REQUIREMENTS, LAB LOCATIONS, LAB CONTACTS, LAB HOURS, ETC.)
Coliform Bacteria	Yes	Sample at all sources, tanks and distribution sampling points. Evaluate results and determine if there is a violation (refer to Section 5).
Chlorine Residual	Yes	Sample at all sources, tanks and distribution sampling points. Evaluate results and determine action. Repeat as required.
Nitrate/Nitrite ¹	Yes	Sample at all sources. Evaluate results and determine action. Repeat as required.
Total Organic Carbon (TOC) ²	Yes	Sample at all sources, tanks and distribution sampling points. Evaluate results and determine action. Repeat as required.
Total Halogenated Organic Carbon (TOX) ³	No	Evaluate potential locations and develop procedures. Coordinate with water quality lab.
Cyanide ⁴	No	Evaluate potential locations and develop procedures. Coordinate with water quality lab.
pH	Yes	Use pH meter at all sources, tanks and distribution sampling points. Evaluate results and determine action. Report as required.
Fluoride	Yes	Use Fluoride Test Kit at all sources, tanks and distribution sampling points. Evaluate results and determine action. Report as required.

Notes:

1. These contaminants could be harmful to infants.
2. Although TOC is naturally present in most waters, higher levels may indicate the presence of organic materials that could pose a health concern.
3. Although TOX includes TTHMs and HAA5s, higher than normal levels could suggest that contamination may have occurred that could pose a health concern.
4. Cyanide is very toxic substance that can cause death upon ingestion.

SECTION 7

COMMUNICATION PLAN

Communication with customers, the news media, and the general public is a critical part of emergency response.

7.1 DESIGNATED PUBLIC SPOKESPERSON(S)

The designated spokesperson for the Ipswich Water Department and an alternate contact are provided in Table 7-1. If the spokesperson is not available, then the alternate would assume that position. The alternates include a secondary spokesperson within the Water Department and the Ipswich Emergency Management Team spokesperson.

**TABLE 7-1
DESIGNATED SPOKESPERSONS**

SPOKESPERSON	ALTERNATES
Vicki Halmen	Joe Ciccotelli
Water & Wastewater Director	Water Superintendent

7.2 KEY MESSAGES

Develop possible messages in advance, and update them as the emergency develops. Some possible messages include:

- We are taking this incident seriously and doing everything we can to resolve it.
- Our primary concern is protecting our customers' health.
- Another important concern is keeping the system operational and preventing damage.
- We are sampling the water and doing tests to determine whether there is contamination.
- What we know right now is "fill in with current information of situation"
- The information we have is incomplete at this point in time. We will keep you informed as soon as we know more.
- We have contacted state and local officials to help us respond effectively.

- If you think you may be ill or need medical advice, contact a physician.

7.3 NOTIFICATION

Clear communication is a key component when responding to an emergency and various groups will need to be notified.

7.3.1 Water System Users

The Director is responsible for implementing notification to the water system users. The Ipswich system has approximately 4,630 service connections. Notification will be accomplished through utilization of telephone via **Connect CTY** and through the public media. Signage will also be placed in key locations in the Town. The IWD's main office phone message system and website will also be updated with pertinent information.

7.3.2 Critical Customers

The IWD has water system customers who require potable water for medical reasons or other health and safety reasons. A list of these critical customers has been included within Section 4 of this emergency response plan. During emergencies causing interruption of service, the Director is responsible for providing priority notification to these customers. Priority notification will also be given to these customers for boil orders and alternate water will be supplied on a priority basis. If the Director cannot reach these customers by telephone, then a visit to the location will be made. The Director or his designee is responsible for maintaining an up-to-date critical customer list.

7.3.3 Service/Repair

The Water Superintendent or On-Call Operator is responsible for implementing notification to service/repair contractors. A list of service/repair contacts is part of this emergency plan and has been included within Section 4. The Superintendent is responsible for maintaining an up-to-date service/repair contractor list.

7.3.4 Local and State Agencies

The Director is responsible for implementing notification to local and state agencies. A list of local and state agencies is part of this emergency response plan within Section 4. The Director is responsible for maintaining an up-to-date local and state notification list.

7.3.5 Mutual Aid

Mutual Aid to assist the IWD during a lack of resources, whether caused by a staff shortage, equipment needs, etc. will be determined by the Director and Water Superintendent. Currently, the IWD does not have any agreements with local municipalities and is not a member of the Massachusetts Water/Wastewater Agency Response Network (MAWARN) for the provision of Mutual Aid. The IWD should consider joining MAWARN and consider its options for contracting with a specialized water system operations company that could assist with routine operations when resources are limited or when a staffing shortage is incurred.

7.4 HEALTH ADVISORIES

During events when water quality and human health are in question, it may be necessary to issue a health advisory that provides advice or recommendations to water system customers on how to protect their health when drinking water is considered unsafe. These advisories are issued when the health risks to the consumers are sufficient, in the estimation of the water system or state or local health officials, to warrant such advice.

Health advisories usually take the form of a drinking water warning or boil water advisory. Communication during these times is critical. Health advisories should always be well thought out and provide very clear messages. Refer to **Appendix B** for guidance on When to Use Specific Public Health Orders (e.g., Boil Water, Do Not Drink, Do Not Use), and **Appendix G** for Guidelines for Preparing a News Release.

SECTION 8

RESPONSE ACTIONS FOR SPECIFIC EVENTS

8.1 BASIC STEPS

In any event there are a series of general steps to take:

1. Confirm and analyze the type and severity of the emergency.
2. Take immediate actions to save lives.
3. Take action to reduce injuries and system damage.
4. Make repairs based on priority demand.
5. Return the system to normal operation.
6. Review the emergency response and update the ERP, as required.

8.2 SPECIFIC EMERGENCIES

The tables on the following pages identify the assessment; set forth the immediate actions; define what notifications need to be made; and describe important follow-up actions for the following specific emergencies:

1. Power outage
2. Distribution main break
3. Chlorine treatment equipment failure
4. Treatment equipment failure
5. Source pump failure
6. Microbial (coliform, *e. Coli*) contamination
7. Chemical contamination / chemical overfeed
8. Vandalism or terrorist attack
9. Reduction or loss of water in the well
10. Drought
11. Hazardous materials spill in vicinity of sources or system lines
12. Electronic equipment failure

13. Cyber attack
14. Natural Event (Hurricane or Winter Storm)
15. Collapse of Pump House Structure
16. Pandemic Influenza

**TABLE 8-1
POWER OUTAGE**

<p align="center">ASSESSMENT</p>	<p>The Ipswich WTP is served by a back-up diesel generator at the Ipswich Power Plant. The generator can power the essential operations at the Ipswich WTP and the Dow Reservoir Pump Station.</p> <ol style="list-style-type: none"> 1. Operator to assess cause of power failure and report to Superintendent. 2. Call Electric Department – request information on the estimated down time and assess whether the outage is likely to last more than four hours. 3. Assess the ability to supply fuel for extended periods. 4. Estimate potable water requirements under the emergency condition. 5. Determine impacts on communication and SCADA.
<p align="center">IMMEDIATE ACTIONS</p>	<ol style="list-style-type: none"> 1. Monitor water storage tank levels. 2. Turn off unnecessary equipment. 3. Monitor startup and operation of generators.
<p align="center">NOTIFICATIONS</p>	<ol style="list-style-type: none"> 1. Electric Department - let them know that a public water system is experiencing an outage and that the generator needs to supply power until the electric power is restored. 2. Customers - advise to cut back on water usage until power is restored, as needed.
<p align="center">FOLLOW-UP ACTIONS</p>	<ol style="list-style-type: none"> 1. Turn off back-up generator (or verify automatic shut-down). 2. Return system to general power supply. 3. Inspect pumping facilities to ensure proper operation. 4. Check generator fuel, oil, coolant and belts. Replace/replenish as needed. 5. Update ERP as needed based on observations.

**TABLE 8-2
DISTRIBUTION MAIN BREAK**

ASSESSMENT	Water Distribution Forman or Operator to assess the problem location, shut down procedures, and repair process.
IMMEDIATE ACTIONS	<ol style="list-style-type: none"> 1. Contact Emergency Repair Contractor if repair cannot be performed with internal staffing and resources. 2. Call Dig Safe. 3. Notify Police and Town Dispatch (911). 4. Secure site with barricades and pylons. 5. Check system drawings to locate isolation valves to isolate the break. 6. Check systems drawings and contact utilities for location of other pipes, gas, telephone, sewer, etc. 7. Mobilize repair crew. 8. Isolate break. Note that valves should not be completely closed (to maintain positive pressure in the main) until the break is exposed and back flow through the main no longer poses a threat of contamination. 9. Repair break, disinfect (in accordance with procedures in Section 10) and return to service. 10. Repair street as required to restore traffic.
NOTIFICATIONS	<ol style="list-style-type: none"> 1. Police Department 2. Residents affected by line break 3. MassDEP - as required 4. WTP Staff
FOLLOW-UP ACTIONS	<ol style="list-style-type: none"> 1. Disinfection and sampling of water line after placing it in service. 2. Confirm the extent of property damage, if any, and advise legal services. 3. Prepare report outlining: cause of failure, time of incident and duration of repair, extent of any damage or other impacts, cost of repairs, technical details of the repair. 4. Update ERP as needed based on observations.

**TABLE 8-3
CHLORINE TREATMENT EQUIPMENT FAILURE**

ASSESSMENT	<p>Water Superintendent or Operator</p> <ol style="list-style-type: none"> 1. Evaluate impact on water quality. 2. Determine location / cause of equipment failure.
IMMEDIATE ACTIONS	<ol style="list-style-type: none"> 1. Isolate equipment and repair or replace. 2. Contact Emergency Repair Contractor if repair cannot be performed with internal staffing and resources. 3. In case of chlorine release, restrict access to area until completion of cleanup: <ol style="list-style-type: none"> a. Consult MSDS before any clean up efforts begin. b. Ensure cleanup is conducted by trained personnel only. Wear adequate personal protective equipment. c. Remove all combustible and flammable materials. d. Ventilate area. e. Once clean up is complete proceed with repair or replacement of equipment. 4. Test for chlorine residual at normal sampling points, and in water storage. 5. As indicated by tests, dose water in storage with chlorine, flush system, or both. 6. Replace repair materials used during repair.
NOTIFICATIONS	<ol style="list-style-type: none"> 1. MassDEP - based on level of emergency 2. Customers - as necessary 3. Water distribution system operators - as necessary
FOLLOW-UP ACTIONS	<ol style="list-style-type: none"> 1. Retest for residual chlorine and microbial contamination. 2. Update ERP as needed based on observations.

**TABLE 8-4
TREATMENT EQUIPMENT FAILURE**

ASSESSMENT	<p>Water Superintendent or Operator</p> <ol style="list-style-type: none"> 1. Evaluate impact on water quality. 2. Determine location / cause of equipment failure. 3. Determine need to use other sources during repair/replacement if supply capacity is reduced.
IMMEDIATE ACTIONS	<ol style="list-style-type: none"> 1. Isolate equipment and repair or replace. 2. Consult manufacturer's guidance documents for equipment troubleshooting and repair options. 3. Test treated water for normal treatment performance parameters and adjust dosage as required. 4. Replace materials used during repair.
NOTIFICATIONS	<ol style="list-style-type: none"> 1. MassDEP - if inadequate treatment is found. 2. Public notification - if untreated water is supplied to system.
FOLLOW-UP ACTIONS	<ol style="list-style-type: none"> 1. Notify public as per guidance from the MassDEP. 2. Update ERP as needed based on observations.

**TABLE 8-5
SOURCE PUMP FAILURE**

<p align="center">ASSESSMENT</p>	<p>The primary source of supply (Ipswich WTP) has two supply pumps each (1 duty and 1 standby). Upon a failure of the duty pump, an alarm/notification should sound and the standby pump should automatically start. If not, another alarm should sound and immediate action will be required. Each well is served by a single well pump and an alarm should sound upon pump failure.</p> <p>Water Superintendent or Operator:</p> <ol style="list-style-type: none"> 1. If the incident is likely to lead to a water shortage, determine whether the following response activities are required: <ol style="list-style-type: none"> a. Implementing water-use restrictions b. Increasing output of unaffected supplies c. Activating interconnections
<p align="center">IMMEDIATE ACTIONS</p>	<ol style="list-style-type: none"> 1. Make necessary changes to prevent incident from causing additional failures. 2. Based on incident assessment, determine what (if any) actions are required before the equipment is restarted. 3. Attempt to restart equipment (if appropriate) <ol style="list-style-type: none"> a. If this fails, go to No. 5. b. If this succeeds, review maintenance requirements and operations status and notify Superintendent. 4. Based on incident assessment, revisit notification requirements and the need for emergency plan activation. 5. Determine whether IWD staff can repair the equipment, or hire a contractor to repair the equipment (if appropriate). 6. Repair or replace equipment. 7. Monitor system status and progress of repairs and other response activities. 8. Test repairs and systems to confirm operations are back to normal.
<p align="center">NOTIFICATIONS</p>	<ol style="list-style-type: none"> 1. Residents - if reduced water usage is necessary. 2. MassDEP - if service is impacted.
<p align="center">FOLLOW-UP ACTIONS</p>	<ol style="list-style-type: none"> 1. Review emergency plan activation status and notification needs. 2. Review incident response and compile necessary documentation. 3. Make necessary operational changes to prevent additional equipment failure or operational problems. 4. Update ERP as needed based on observations.

TABLE 8-6
MICROBIAL (COLIFORM, *E. COLI*) CONTAMINATION

ASSESSMENT	<ol style="list-style-type: none"> 1. Superintendent and/or Forman will assess the level of emergency and response actions. 2. Use Emergency Response Checklist to assess emergency response, notification and document actions taken.
IMMEDIATE ACTIONS	<ol style="list-style-type: none"> 1. Contact MassDEP Regional Office. 2. Collect follow-up bacteria samples at sites throughout the distribution system where problems have occurred. 3. Follow the Coliform MCL Violation Determination flow chart included within Appendix C. 4. Disinfect system through storage tanks and flushing system through blow offs/hydrants throughout the system. 5. Measure for chlorine residual and re-sample for bacteria. 6. Provide notification to parties affected by the incident. 7. With MassDEP approval, provide an alternate source of water if needed. Alternative water sources are identified in Section 9. 8. If MassDEP issues a Declaration of State of Water Supply Emergency, Boil Water Order, Do Not Drink Order or Do Not Use Order, follow necessary procedures. 9. Maintain records of all activities throughout the incident. Retain records for future reference. 10. Conduct follow up sampling.
NOTIFICATIONS	<ol style="list-style-type: none"> 1. MassDEP 2. Local Board of Health 3. Local news media to inform them of incident, if needed 4. Public notification as per guidance by MassDEP
FOLLOW-UP ACTIONS	<ol style="list-style-type: none"> 1. Send notice to MassDEP in accordance with the Safe Drinking Water Act. 2. Update ERP as needed based on observations.

**TABLE 8-7
CHEMICAL CONTAMINATION**

ASSESSMENT	<ol style="list-style-type: none"> 1. Director and MassDEP review water quality results and assess level of emergency and level of response actions. 2. Use Emergency Response Checklist in Appendix F to assess emergency response, notification and document actions taken.
IMMEDIATE ACTIONS	<ol style="list-style-type: none"> 1. Isolate contaminant in distribution system. 2. Initiate flushing program. 3. Determine cause of containment and correct. 4. Assess results of previous sample analysis and attempt to identify the contaminant. 5. Confirm the identity of the contaminant. 6. Perform a full characterization of the contaminated area, including contaminant properties, contaminant concentration profiles, and characteristics of the impacted area. 7. Evaluate the likely direction and extent of future movement of the contaminant within the distribution system. 8. Isolate portions of system containing suspect water. 9. Shut down system if obvious or confirmed contamination warrants. 10. Issue “Boil Water”, “Do not Drink”, or “Do not Use” orders and Press Releases as appropriate. 11. Initiate Alternate Water Supply Plan, as necessary. 12. Continue sampling and analysis to monitor the status and extent of the contamination, and to verify that containment strategies are working. 13. Select treatment and rehabilitation technology/approach. 14. Develop strategy for disposal of contaminated residuals. 15. Develop sampling and analysis plan to verify remediation. 16. Verify that water is safe by performing additional sampling and analysis to confirm the progress of system treatment and remediation. 17. Notify public that water is safe upon concurrence of MassDEP. 18. Notify outside agencies that water is safe. 19. Return to normal operations.
NOTIFICATIONS	<ol style="list-style-type: none"> 1. MassDEP 2. Local Board of Health 3. Local news media to inform them of incident, if needed 4. Public notification as per guidance by MassDEP
FOLLOW-UP ACTIONS	<ol style="list-style-type: none"> 1. Send notice to MassDEP in accordance with the Safe Drinking Water Act. 2. Update ERP as needed based on observations.

**TABLE 8-8
VANDALISM OR TERRORIST ATTACK**

ASSESSMENT	Water Superintendent determines severity of the incident.
IMMEDIATE ACTIONS	<ol style="list-style-type: none"> 1. Call Police Department and maintain constant 2-way contact. 2. Investigate location of alarm to confirm reason for alarm while remaining in contact with Police. <ol style="list-style-type: none"> a. If alarm is false, return to normal operation and advise Police and Director. b. Determine cause of false alarm and take appropriate action to rectify so that future occurrences are avoided. c. If there is evidence of illegal entry request Police assistance and get to safe location immediately while remaining in contact with police. Advise police of your location. 3. Inform the Director of situation. 4. Assess damage and take necessary action: <ol style="list-style-type: none"> a. Notify MassDEP if appropriate. b. Investigate production processes for evidence of contamination. c. If contamination is suspected, contact the Director and MassDEP and refer to the emergency response procedures for contamination. d. Fix or repair damage. e. Provide additional protection against future actions.
NOTIFICATIONS	<ol style="list-style-type: none"> 1. Activate Connect CTY notification system if necessary 2. Notify Police and FBI (if suspected terrorism)
FOLLOW-UP ACTIONS	<ol style="list-style-type: none"> 1. Completion of repairs, return system to normal. 2. Update ERP as needed based on observations.

**TABLE 8-9
REDUCTION OR LOSS OF WATER IN THE WELL**

<p align="center">ASSESSMENT</p>	<p>The IWD uses the Dow Reservoir as its primary source of supply with the wells as supplementary sources. Water Superintendent and Operator</p> <ol style="list-style-type: none"> 1. If the incident is likely to lead to a water shortage, determine whether the following response activities are required: <ol style="list-style-type: none"> a. Implementing water-use restrictions b. Increasing output of unaffected supplies c. Activating interconnections
<p align="center">IMMEDIATE ACTIONS</p>	<ol style="list-style-type: none"> 1. Monitor well production records and check for system leaks or increased demand on system that could cause well stress. 2. Check water level in well and record measurement and trends. 3. Throttle back pump capacity as necessary and if possible for well production. 4. Check well pump for leaks in column pipe or shaft failure. Coordinate work with pump supplier/specialist as identified in Section 4, Table 4-5. 5. With MassDEP approval, provide an alternate source of water if needed. Alternative water sources are identified in Section 9.
<p align="center">NOTIFICATIONS</p>	<ol style="list-style-type: none"> 1. Notify Residents to reduce water usage if necessary 2. Notify MassDEP if service is impacted
<p align="center">FOLLOW-UP ACTIONS</p>	<ol style="list-style-type: none"> 1. Notify residents that water system is back to normal operation. 2. Perform well performance tests and well maintenance as required. 3. Update ERP as needed based on observations.

**TABLE 8-10
DROUGHT**

<p align="center">ASSESSMENT</p>	<ol style="list-style-type: none"> 1. Director and Water Manager review source production and system trends. 2. If water level measurements show declines in water levels in sources, implement the MassDEP approved Drought Management Plan which includes the following action levels. <ol style="list-style-type: none"> a. Stage 1 - Normal: Total reservoir storage capacity of 90-100% of normal conditions. b. Stage 2 - Mild: Total reservoir storage capacity of 75-90% of normal conditions. c. Stage 3 - Moderate: Total reservoir storage capacity of 60-75% of normal conditions. d. Stage 4 - Severe: Total reservoir storage capacity of 40-60% of normal conditions. e. Stage 5 - Emergency: Total reservoir storage capacity below 40% of normal conditions. 3. If at any time a consistent rise in the water level in the storage tanks cannot be maintained during off-peak demand, declaration of a Drought Emergency should be considered.
<p align="center">IMMEDIATE ACTIONS</p>	<p>Stage 1 - Begin public education campaigns.</p> <p>Stage 2 - Increase public education efforts and implement voluntary water restrictions.</p> <p>Stage 3 - Inform public of drought status. Implement mandatory water restrictions.</p> <p>Stage 4 - Implement ban on all outdoor water use.</p> <p>Stage 5 - Assure all available ground water sources are being utilized and investigate purchasing water from Hamilton.</p> <p>The appropriate action for each level of severity shall be in place until the trigger for that level has not been met for at least seven consecutive days.</p>
<p align="center">NOTIFICATIONS</p>	<ol style="list-style-type: none"> 1. Notify all Town Departments, Water Commissioners, and media once a drought stage is declared or updated. 2. Inform residents and other water users at each stage drought condition. 3. Contact MassDEP for permission to use water restrictions. 4. Notify Hamilton and any other adjoining systems that an interconnection may be needed prior to reaching Stage 5 level.
<p align="center">FOLLOW-UP ACTIONS</p>	<p>System returns to normal by notifying residents. Update ERP as needed based on observations.</p>

**TABLE 8-11
HAZARDOUS MATERIALS SPILL IN VICINITY OF SOURCES OR SYSTEM LINES**

ASSESSMENT	Water Superintendent evaluates if there is a threat to the water supply.
IMMEDIATE ACTIONS	<ol style="list-style-type: none"> 1. Notify MassDEP and Hazmat team. 2. Shut off sources as needed. 3. Determine available supply and volume of water in storage tanks. 4. Determine if emergency interconnections/alternative water sources (identified in Section 9) are necessary.
NOTIFICATIONS	<ol style="list-style-type: none"> 1. Hazmat Team will determine severity of the leak and additional notifications. 2. MassDEP will manage the cleanup. 3. Notify adjoining systems that interconnection may be needed.
FOLLOW-UP ACTIONS	<ol style="list-style-type: none"> 1. Once informed conditions are safe, assess damage, repair facilities. 2. Update ERP as needed based on observations.

**TABLE 8-12
ELECTRONIC EQUIPMENT FAILURE**

ASSESSMENT	Water Superintendent or Operator to determine the severity of the failure.
IMMEDIATE ACTIONS	<ol style="list-style-type: none"> 1. Bring in contractor to fix electrical equipment. 2. Operate sources manually as necessary.
NOTIFICATIONS	Residents if electrical equipment has failed for a lengthy time and water problems exist.
FOLLOW-UP ACTIONS	<ol style="list-style-type: none"> 1. If residents were originally notified of problem, inform them that the problem has been resolved. 2. Update ERP as needed based on observations.

**TABLE 8-13
CYBER ATTACK**

<p align="center">ASSESSMENT</p>	<p>Water Superintendent / Data Manager Initial areas for investigation are:</p> <ul style="list-style-type: none"> • SCADA is not controlling system parameters • Quality of water results • Inadequate supply
<p align="center">IMMEDIATE ACTIONS</p>	<ol style="list-style-type: none"> 1. Assess damage and direct computer system repairs, as needed. 2. Backup all data and store it in a safe location. 3. Restrict physical access to the area. 4. Physically unplug any phone lines that could dial in to the attacked computer. 5. Unplug the computer from the network. 6. Determine if the SCADA system needs to be isolated from process operations and taken completely off line. 7. Photograph the scene, including connections to any peripherals. 8. If the computer is off, DO NOT turn it on (preferred method is to jumper system disk drive(s) as read only, and perform a post-mortem on a separate computer using suitable tools.) 9. If the computer is on, DO NOT reboot it. 10. Avoid accessing any files on the compromised machine. 11. Repair hardware components (if necessary), replace software, as necessary, and install improved electronic security, as necessary.
<p align="center">NOTIFICATIONS</p>	<ol style="list-style-type: none"> 1. Notify immediately upon discovery of the attack: <ol style="list-style-type: none"> a. Contact Town Police and MassDEP b. Data (IT) Manager 2. Others as appropriate (for example): <ol style="list-style-type: none"> a. Internet Service Provider b. Computer Equipment Vendor c. SCADA Software Contractor
<p align="center">FOLLOW-UP ACTIONS</p>	<ol style="list-style-type: none"> 1. Solicit the assistance of a Computer Emergency Response Team. 2. Retrieve logged data from the various equipment and server logs. 3. With law enforcement/FBI assistance, check for implanted backdoors and other malicious code (i.e., Trojan horse, or worm). 4. Test security breach to ensure it has been repaired (in a safe mode, in case the problem has not been fixed or some other attack was installed). 5. Assess / implement additional precautions for SCADA system. 6. Update ERP as needed based on observations.

**TABLE 8-14
NATURAL EVENT (HURRICANE OR WINTER STORM)**

ASSESSMENT	<p>Water Superintendent and Town Emergency Management Director. It is expected that the local Emergency Planning Committee will carefully and continually monitor meteorological conditions and forecasts.</p>
IMMEDIATE ACTIONS	<p>Before the storm:</p> <ol style="list-style-type: none"> 1. Monitor track of storm. 2. Release nonessential personnel, as warranted. 3. Assemble essential personnel and designate duties. 4. Typical duties at this stage may include: <ol style="list-style-type: none"> a. Fill gravity storage tanks. b. Test auxiliary power sources. c. Fill fuel tanks. d. Secure windows and doors. e. Mobilize snow removal equipment, as warranted. f. Man remote stations essential to operations. g. Stockpile chemicals, food, etc. 5. Discuss needs with electric company. 6. Test back-up communications system. 7. Review mutual aid agreements and verify connections to/from neighboring water systems. 8. Review power outage action plan. <p>During the storm:</p> <ol style="list-style-type: none"> 1. Monitor tanks and supplies. 2. Monitor changes in water quality. If a water quality emergency should develop, follow the appropriate procedure. 3. Open connections with neighboring water systems, if necessary. 4. Provide backup power to facilities utilizing generators, as appropriate.
NOTIFICATIONS	<ol style="list-style-type: none"> 1. Town Emergency Management Director. 2. Notify customers, media, and state and local authorities if service is disrupted or if significant demand management is necessary.
FOLLOW-UP ACTIONS	<ol style="list-style-type: none"> 1. Repair any damage to facilities. 2. Update ERP as needed based on observations.

**TABLE 8-15
COLLAPSE OF PUMP HOUSE STRUCTURE**

ASSESSMENT	<p>Water Superintendent or Operator</p> <ol style="list-style-type: none"> 1. Perform a thorough assessment of the structural damage caused by the fire, explosion or collapse. 2. Determine how damage is affecting system operations.
IMMEDIATE ACTIONS	<ol style="list-style-type: none"> 1. If the damage appears to be intentional, treat as a crime scene. Consult with local police, state police, and the FBI on evidence preservation. 2. Isolate damaged facility from rest of water system, and take measures to bypass the damaged area, if possible. 3. Physically secure water system facilities and implement heightened security procedures throughout the system. 4. Initiate Alternate Water Supply Plan to provide alternate water supply for customers and fire protection, as necessary. 5. Issue public notification and Press Releases as appropriate. 6. Request assistance from outside contractors or other water utilities, if needed to help repair the damage. 7. Perform sampling and monitoring activities and analysis to determine if the damage has rendered the water supply unsafe for customers. 8. Perform a system pressure evaluation to determine how the damage has affected customers and fire water capability. 9. Repair damage to critical equipment and facilities as soon as possible. 10. Clean and disinfect system components, as necessary. 11. Resume normal operations.
NOTIFICATIONS	<ol style="list-style-type: none"> 1. Notify MassDEP. 2. Activate Connect CTY notification system, if necessary. 3. Notify Police and FBI (if suspected terrorism).
FOLLOW-UP ACTIONS	<ol style="list-style-type: none"> 1. Confirm the extent of property damage, if any, and advise legal services. 2. Completion of repairs, return system to normal. 3. Update ERP as needed based on observations.

**TABLE 8-16
PANDEMIC INFLUENZA***

An influenza pandemic may severely impact the IWD's (as well as other services) ability to provide a non-interrupted supply of drinking water. Therefore, the IWD, the community and related agencies should work together to create a detailed and comprehensive plan to handle such an event. Though a full pandemic influenza plan is beyond the scope of this ERP, the following table identifies preliminary list of items that should be considered during a pandemic and included in the plan. Additional information related to pandemic influenza provided by the Environmental Protection Agency (EPA), the Center for Disease Control (CDC) and the Association of Metropolitan Water Agencies (AMWA) is included in **Appendix K**.

ASSESSMENT	A severe flu pandemic will result in significant absenteeism due to illness, the need to care for ill family members, and fear of infection. This absenteeism can affect drinking water system operators and their capability to operate and maintain the water system. Additionally, this may effect the provision of supplies needed for treatment and supply of drinking water. The Water Superintendent or Operator should assess the availability of staff as a result of the pandemic.
IMMEDIATE ACTIONS	<ol style="list-style-type: none"> 1. Assess status of water system (production capability, chemical supply, fuel supply, etc.) and determine the ability to continue operations. 2. Identify critical staffing needs and direct available staff to critical tasks. 3. If appropriate, contact a contract operator service to supplement available staff. 4. Advise staff that have contracted or suspect they may have contracted influenza to seek medical attention and advise their supervisor. 5. Contract with a company that will clean/disinfect computers, common areas, work stations, etc. 6. Provide each work station with a disinfecting agent in a spray bottle, a package of paper towels, and a package of latex gloves. 7. Determine what protective equipment will be effective and acquire sufficient quantities for Water Department Staff. 8. If appropriate, limit access to Water Department Facilities to essential staff only.
NOTIFICATIONS	<ol style="list-style-type: none"> 1. Local Board of Health. 2. Notify customers, media, and state and local authorities if service is disrupted or if significant demand management is necessary.
FOLLOW-UP ACTIONS	<ol style="list-style-type: none"> 1. Continue disinfection of workstations on a regular basis. 2. Update ERP as needed based on observations.

* Information provided by the MassDEP Emergency Response Workshop.

SECTION 9

ALTERNATE WATER SOURCES

9.1 INTERCONNECTIONS

The Ipswich Water Department has interconnections with adjoining towns of Hamilton and Rowley water systems. Contact information is listed in Table 9-1. These connections can be used for additional supply in case of an emergency. Both interconnections are manually opened. The interconnection with Rowley may result in reduced pressures in Ipswich.

**TABLE 9-1
INTERCONNECTIONS WITH ADJOINING TOWNS**

TOWN/DEPARTMENT	ADDRESS	CONTACT	NUMBER
Hamilton Water Department	P.O. Box 429 577 Bay Road Hamilton, MA 01936	William Redford, Director of Public Works	Office: 978-468-5581
Rowley Water Department	401 Central Street P.O. Box 29 Rowley MA 01969	MaryBeth Wiser, Superintendent	Office: 978-948-2640

9.2 BOTTLED/BULK WATER

Supply of bottled water or bulk water may be required if the water system is contaminated and/or unable to provide drinking water to its customers. Sources of bottled/bulk water are listed in Table 9-2 (as well as Table 4-5 in Section 4). The implementation of bottled/bulk water supplies should be coordinated with the Town of Ipswich Board of Health, MassDEP, and the Town Police Department. Public Notification of the procedures and locations for obtaining water must be made including all media contacts and the **Connect CTY** system.

**TABLE 9-2
BOTTLED/BULK WATER SOURCES**

TYPE	SOURCE	NUMBER
Bottled	Polar Beverages Worcester, MA	800-734-9800
	Belmont Springs Water Co Belmont, MA	617-489-4752
Bulk	Rocky Mountain Spring Water Hingham, MA Contact: Ed Rose	781-749-4849
	Spring Realty Water System Boston, MA Contact: Jerry Leggiero	617-678-1335

SECTION 10

RETURNING TO NORMAL OPERATIONS

10.1 INTRODUCTION

As the emergency passes, the system must prepare to return to normal operating condition. This may be a very simple or very complex process, depending on the type and severity of the emergency. Many factors may need to be considered before deciding to return to normal operation. Some factors include:

- Has the system been repaired to the point that it can meet demand?
- Have operators made a safety and operational inspection of all system components?
- Has the distribution system been properly flushed, disinfected and pressure tested?
- Has the water been adequately tested in accordance with sampling regulations?
- Does the water meet the required standards?
- Is there adequate staff available to operate and manage the system?
- Do federal, state, and local agencies support returning to normal operation?
- Have you developed the proper public messages?

10.2 RETURNING TO NORMAL OPERATIONS

The tables on the following pages offer a step-by-step guide to getting the operations of the water system back to normal after an emergency.

**TABLE 10-1
DISTRIBUTION SYSTEM**

ACTION	DESCRIPTION AND ACTIONS
RECOVER AND EVALUATE	<ol style="list-style-type: none"> 1. After completion of emergency repairs, return to normal work schedules, if possible. 2. Perform a survey of emergency repairs and scheduling of permanent repairs. 3. Prepare an inventory of repair supplies and replacement stock.
INSPECT, FLUSH, AND DISINFECT THE SYSTEM	<ol style="list-style-type: none"> 1. Superintendent and Distribution Foreman inspect all system facilities, ensure all water quality tests have been done and the system has been flushed and disinfected if necessary. 2. Superintendent makes decision on current condition of system.
VERIFY WATER QUALITY	Superintendent verifies adequacy of water quality sampling results.
COORDINATE WITH MassDEP	Superintendent coordinates with MassDEP on system condition and water quality results if needed.
NOTIFY CUSTOMERS	<ol style="list-style-type: none"> 1. Water Manager meets with water system operator and communications lead to write notice to customers if needed 2. Water Manager directs communications lead to distribute public notice if needed.

EMERGENCY WATER MAIN DISINFECTION

When repairs require that mains be opened and depressurized under emergency conditions such as a break or other physical failure of the pipeline, the necessity to restore water service as soon as possible prevents complete compliance with the routine main disinfection procedures of AWWA Standard C651-05. Alternate disinfection procedures under such conditions are as follows:

1. Minimize the entry of contaminants into the repaired main. If possible, repair the break without depressurizing the main by use of clamps, sleeves or other devices.

2. If the main must be shut down and depressurized during repair, excavated areas should be dewatered to the extent practical to prevent dirty water from contacting the pipe.
3. Provide temporary plugs to open ends of pipes.
4. Disinfect the pipe by swabbing with a concentrated chlorine solution or by maintaining a high chlorine residual in the repaired section of main for a brief contact period. (The swabbing method should not be utilized where there is a potential for significant contamination of the main).
5. Swabbing Method:
 - a. All new pieces of pipe and other materials used in repair are thoroughly swabbed with a concentrated (1% available) chlorine solution to disinfect all surfaces that will come in contact with potable water. The 1% chlorine solution may be prepared by adding 2 ounces of calcium hypochlorite (65%-available chlorine) or 26 fluid ounces of household bleach (5%-available chlorine) to 1 gal of water.
 - b. The chlorine solution is typically applied using clean rags or a sprayer. Longer pieces of pipe may be disinfected using a clean mop. When working with hypochlorite compounds, proper personal protection should be worn such as rubber gloves, goggles, and respiratory protection under conditions of inadequate ventilation.
6. Hypochlorite Injection or Addition of Premixed Solution:
 - a. Preliminary Steps - shut off of all service connections along the section of main to be disinfected. Temporary connections for filling the main with water and flushing the main through a hydrant or other temporary outlet must be provided. The isolated section of main must be initially flushed to remove dirty water, debris, and air.
 - b. Hypochlorite Injection - Liquid sodium hypochlorite is injected into the flowing main by means of a chemical-feed pump to achieve a high chlorine residual. The initial required chlorine dose is 300 mg/L, verified by measuring chlorine residuals in the flushed water. Inject the minimum amount of hypochlorite

solution required to treat one pipe volume with an initial chlorine dose of 300 mg/L.

- c. Addition of Premixed Solution - Prepare a premixed chlorine-water solution in sufficient volume to completely fill the repaired section of main. A hypochlorite compound is added to potable water in a tanker truck or other large container to form a solution with at least 300 mg/L free chlorine. The solution is pumped into the repaired section of main until the main is full, as indicated by a discharge through a hydrant or other outlet at the other end of the section.
7. Minimum Contact Period - The minimum contact period for an initial chlorine dose of 300 mg/L is 15 minutes. After the minimum 15-minute contact period, a chlorine residual of at least 100 mg/L should be verified. Lower initial chlorine doses may be used for longer contact periods (e.g., 100 mg/L initial chlorine dose with a 3-hour contact time).
8. Final Steps - The heavily chlorinated water is flushed from the main until the chlorine residual is reduced to the level normally present. Consideration should be given to the collection of bacteriological samples after disinfection is completed to provide a record of the effectiveness of the procedures. Collect a sample from at least one point located immediately downstream of the repair. If the direction of flow is unknown, collect samples on each side of the repair. Samples also may be collected from customer services that have been disinfected and thoroughly flushed. Do not collect samples from hoses or fire hydrants.

**TABLE 10-2
SUPPLY AND TREATMENT**

ACTION	DESCRIPTION AND ACTIONS
EVALUATE FACILITIES	<ol style="list-style-type: none"> 1. Conduct an on-site inspection of all supply and 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. Perform a survey of emergency repairs and scheduling of permanent repairs. 6. Prepare an inventory of repair supplies and replacement stock. 7. Implement complete record keeping of time and expense. 8. Recommend when able, servicing of emergency equipment (oil changes, lubrication, etc.). 9. Perform in-depth damage assessment of system to determine long-term effects of damaged areas.
VERIFY WATER QUALITY	Superintendent verifies adequacy of water quality sampling results.
REPORTING AND INSURANCE	Manager: <ol style="list-style-type: none"> 1. Notifies appropriate insurance carriers. Provides written and photographic documentation of damage, as necessary. 2. Prepares a preliminary damage report. 3. Prepares written documentation of emergency work performed for possible compensation by emergency agencies.
COORDINATE WITH MassDEP	Director coordinates with MassDEP on system condition and water quality results.
NOTIFY CUSTOMERS	<ol style="list-style-type: none"> 1. Superintendent meets with water system operator and communications lead to write notice to customers. 2. Director directs communications lead to distribute public notice.

WATER SUPPLY WELL DISINFECTION

1. Use caution when working on the well to avoid electrical shock from the pump.
2. Pump well until water is clear.
3. 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.
4. 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.
5. Disinfect the well pump and pumping equipment with a strong chlorine solution prior to being placed into service.
6. Let the chlorinated water stand in the well and the pipes for 24 hours.
7. Pump the well to waste until no trace of chlorine (chlorine smell) is detectable.
8. Collect water samples at the wellhead and have them tested for coliform bacteria by a MassDEP approved laboratory. If water fails bacteria test, re-disinfect the well. MassDEP will assist in testing.
9. Before placing the well into service as a drinking water source, acceptable microbiological water quality results must be obtained.

SECTION 11

TRAINING AND REHEARSALS

11.1 TRAINING

Training should focus on increasing the knowledge of the Ipswich Water Department (IWD) personnel about disaster hazards and the effect they may have on the system. An opportunity to practice emergency response should also be incorporated in the training. Many areas conduct Emergency Response drills. These drills may address a specific hazard and they are often conducted at local, State and Federal levels. Some items to note include:

- Find out by asking when and where drills are scheduled.
- Observe other state and community drills, note what goes right or wrong.
- Conduct drills by acting out one of the scenarios used.

11.2 OCCURRENCE EVALUATION

At the conclusion of the event, the IWD should assemble, brainstorm and prepare an after-event evaluation summary and modify the Emergency Response Plan (ERP) with "lessons learned" for improved future emergency response and actions.

11.3 STAFF TRAINING

**TABLE 11-1
TRAINING NEEDS AND EXPECTATIONS BY POSITION**

POSITION	TRAINING NEEDS AND EXPECTATIONS
Director, Manager and Superintendent	<ul style="list-style-type: none">• Communications Planning• Water Supply Containment• Treatment Failure
Operators	<ul style="list-style-type: none">• Emergency Assessment• Personnel Safety• Interconnections / Back-up Sources• Flushing
Administrative Support	<ul style="list-style-type: none">• Threat Evaluation and Response• Public Notification• Cyber Threat Recovery

11.4 EMERGENCY RESPONSE TRAINING FOR WATER UTILITY PERSONNEL

**TABLE 11-2
TRAINING TYPES**

TRAINING TYPE	PURPOSE	BENEFIT	DESCRIPTION	RESOURCES TO PROVIDE TRAINING	FREQUENCY
Understanding the Emergency Response Plan	To familiarize staff with the plan.	Enhances efficiency in emergency response.	Includes a walk-through of sections; reviews location of information.	Safety Coordinator; Consultant	Annually and new employee orientation
Table-top Emergency Response Drills	To familiarize staff with the emergency response process and participants.	Increases efficiency, effectiveness, and interagency cooperation and coordination.	Presents a scenario with key players participating. Advances participants through scenarios; lessons learned are presented.	Consultant; Fire Department; Police; Local Emergency Response Agency	Annually
Full-scale Emergency Response Drills	To enhance knowledge and capabilities needed during an emergency response.	Increases efficiency, effectiveness, and interagency cooperation and coordination.	Presents a scenario where the key players are located at their respective agency locations during a mock emergency. Lessons learned are presented.	Consultant; Fire Department; Police; Local Emergency Response Agency	One per year
First Aid/Cardio-Pulmonary Resuscitation (CPR)	To provide care to another person.	Enables assistance for persons when injured prior to emergency care.	Teaches basic first aid to provide initial care to an injured person. Teaches the steps for baby, child, and adult CPR.	The Red Cross; Consultant; Safety Coordinator	Initial training and refresher
Fire Extinguisher	To effectively use a fire extinguisher and associate fire types with the proper extinguisher.	Eliminates small fires.	Teaches the parts to an extinguisher and types of extinguishers; practice using an extinguisher on a fire.	Fire Department	Initial training as required
800 Megahertz (MHz) Radios	To teach the capabilities and operations of a 800 MHz radio.	Ensures effective use of a 800 MHz radio, which police and fire departments use.	Presents the operations, channels, codes, and general maintenance of the radio; practice using a radio.	Local Emergency Planning Agency; Police; Fire Department	Managers or operators assigned to using the radio during an emergency.
Other Safety Equipment	To learn about other types of safety equipment, and company and Occupational Health and Safety Administration (OSHA) laws.	Prevents a hazard event from occurring by knowing how to use safety equipment properly.	Discusses the various types of equipment that exist (e.g., breathing apparatus), their uses, capabilities, and limitations.	Safety Coordinators	As required

APPENDIX A

FLUSHING PLAN

APPENDIX A

FLUSHING PROGRAM

The objective of the Flushing Program is to provide the Ipswich Water Department (IWD) with a guideline for understanding and improving their water distribution system flushing program.

Flushing programs provide many benefits including improved water quality, improved water main life and decreased customer complaints. It is also important as a response to certain water system emergencies.

Sedimentation in distribution systems is primarily caused by elements such as iron and manganese coming out of solution, causing dirty water which leads to customer complaints. After falling out of solution, the elements form cohesive bonds to the pipe walls. Over time, this reduces the carrying capacity of the pipe, increases the headloss within the pipe, and ultimately requires either cleaning or replacement of the main to regain lost capacity.

The implementation of a flushing program reduces, if not eliminates, sedimentation build-up. Through the flushing process, flows and velocities are increased in mains to a point where buildup is removed from pipe walls and flushed out of the distribution system through hydrants.

By removing the sedimentation from the system, customer complaints are reduced while overall water quality and distribution main life are increased.

EQUIPMENT

The implementation of a flushing program involves the exercising of gate valves and hydrants and the measurements of flows and time. The IWD flushing crew should have the following equipment at a minimum:

- Hydrant wrenches
- Gate valve wrenches
- Flow diffusers

- A pitot or flow measurement device
- Communication equipment
- Stop watch
- Log book or record sheet.

During the flushing process, hydrants will be opened to discharge water and create the high flows necessary to remove the sedimentation from pipe walls. Various gate valves may need to be closed to ensure the sediment is being removed from the target area and not just moved around in the distribution system. Consequently, hydrant wrenches and gate wrenches will be necessary to operate the gate valves and hydrants as appropriate.

In order to prevent erosion and/or property damage when a hydrant is opened, a flow diffuser should be used. The diffusers will breakup the stream of water coming through the hydrant orifice and allow the water to be directed to a preferred discharge point. Also, a pitot or flow measurement device will be needed to determine that the required flow is being achieved, and a stop watch will be necessary to measure time for the calculation of volume discharged.

Throughout the flushing process, communications with pump stations and other members of the crew may be necessary. The following information should be recorded:

- Hydrant flushed
- Gate valves closed
- Date and time of day
- Flushing rate
- Duration
- Comments regarding operation of gate valves and hydrants
- Comments regarding flushing rate, duration, water quality
- Maintenance issues
- Property protection/customer service issues
- Confirmation that any gate valves closed as part of the process were re-opened.

This information can be used to optimize the flushing program and develop valve and hydrant maintenance requirements.

CUSTOMER NOTIFICATION

Before implementing the flushing program, the IWD should notify all of the customers that may be affected in the target area. Prior notification will allow customers to prepare for possible low flows and/or dirty water.

Notification should consist of a time period that flushing will occur in the area, who to call if a problem occurs due to the flushing, the duration of the program to be conducted, and a brief explanation of the flushing process.

Flushing programs are designed to remove contaminants and materials from a water distribution system. High flows are used to shear sediment from pipe walls and remove any stagnant water from the system. These high flows typically range from 400 - 1,800 gpm and depend on the diameter of the main. Most flushing plans use distribution storage tanks as the source of water and flush towards the extremities of the system. However, depending upon the purpose of the flushing, the water source and direction should be reviewed prior to beginning the flushing. In general, we recommend the following sequence depending upon the problem.

- **Removing "Dirty Water":** For general flushing and to remove "dirty water" from the system, start at the tanks and work on transmission mains towards the system extremities.
- **Contaminant at Supply Source:** For contaminant at supply sources, such as over feeding chemicals, backflush towards the treatment plant/supply beginning at the known extent of contamination. Uncontaminated water from the storage tanks and other emergency supply sources or interconnections should be used as supply water. Treatment of discharged flushing water for pH neutralization using limestone bags and dechlorination using sodium thiosulfate may be required to protect the environment.

- **Contaminant Originating at Distribution Storage Tank:** For contamination originating at the distribution storage tank, isolate the tank from the system and backflush the distribution system towards the tank. This will require the water supply (Ipswich WTP and/or wells in the Main Service area, the Jeffery's Neck Booster Pump Station in the Plover Hill Service Area and the Mile Lane Booster Pump Station in the Pinefield Service Area) to be on to provide a source of uncontaminated water. Note that high flushing velocities are not required to over-turn water in the distribution system.

In general, to provide adequate recharge to the storage tanks the Ipswich WTP and the service area booster pump stations should be active when it does not affect the desired flushing flow path.

The typical flushing program begins at the base of the storage tanks and works its way toward the extremities of the system. This method provides a clean supply from which the program can obtain the necessary flow.

After the mains immediately adjacent to the storage tanks have been flushed, the large diameter distribution mains should be flushed. Clean water is moved from storage tanks to the main pipe network and then to smaller mains and dead-end streets. By using the same path that water is supplied to the system to clean the system, missed areas are minimized.

In order to obtain the required velocity and/or minimize the target area disturbed by the flushing, it may be necessary to close gate valves. Gate valves as well as hydrants should be opened and closed slowly. This will minimize the effect of water hammer in distribution mains, thereby reducing the risk of leaky or broken mains, damaged plumbing fixtures and fire alarms. Additionally, the use of a hydraulic model is important to verify that necessary flows and/or velocities do not adversely affect other parts of the system.

After the first comprehensive flushing program is complete, the frequency of flushing can be estimated. It is common to perform a flushing program on an annual basis, but problem areas

may need more frequent flushing. Frequency can be adjusted based on how fast sediments build up or complaints arise.

FLUSHING AREAS

For flushing purposes, the water system can be generally divided into the three service areas (Main, Pinefield and Plover Hill) in order to allow for system flushing. The flushing order is such that flushing starts at the storage tanks and draws clean flushing water out toward the system extremities. The order is flexible as long as flushing water always originates from a previously flushed area. Therefore, the flushing should begin at the Town Hill Tank to flush the Main Service Area first. The Pinefield and Plover Hill Service Areas should be flushed after the Main Service Area has been completed.

For each area, certain procedures including: suggested valves to be closed, main size, and optimum locations for flushing hydrants should be determined to produce a uni-directional flow pattern (which is beyond the scope of this ERP). The selection of the hydrants or valves should be field verified based on actual conditions, including operability of hydrants or valves or location with respect to the disposal of the water from the hydrants

DOCUMENTATION

Flushing programs can and should be modified as the need arises. In order to evaluate the effectiveness of a flushing program (i.e., the need for modifications to the program), a procedure should be developed to log customer complaints. This will help in determining areas that should be flushed more than once a year or in a different procedure than that generally presented in this section.

The complaint log should be a spreadsheet which includes, at a minimum, the date, time, nature of complaint and department response as well as any other related notes.

Additionally, water volume used for the flushing event should be recorded, totaled and included on the Annual Statistical Report submitted to MassDEP for proper usage documentation.

FLUSHING PROCEDURE

The following steps are the procedure for the Flushing Program unless otherwise noted in the report:

1. Check that tank levels are at their highest before starting the flushing event.
2. When flushing an area, make sure that any source of pumped supply in that particular area is off to allow for flows to be pulled from previously flushed areas (i.e., from water storage facilities).
3. Close any appropriate gates slowly, if required.
4. Determine the minimum and maximum required flows based on the diameter of the water mains to provide adequate scouring in the water main (See Figure A-1 at the end of this section).
5. Determine the minimum flushing volume based on the length and diameter of the main to be flushed (See Figure A-2 at the end of this section).
6. Open the hydrant slowly and completely and take pitot readings. Correlate the reading to a measured flow rate.
7. Obtain the necessary flows to provide adequate scouring in the water main. This may involve opening additional orifices at the hydrant.
8. Determine the required flushing time from the flow rate and pipe volume (See Figure A-3 at the end of this section).
9. Leave the hydrant open for the required amount of time.
10. Close the hydrant slowly to minimize the effect of water hammer on the system.
11. Open the previously closed gates slowly to minimize the effect of water hammer on the system.
12. Repeat until the desired area is flushed.

Figure A-1
Minimum and Maximum Flushing Flows (By Pipe Size)

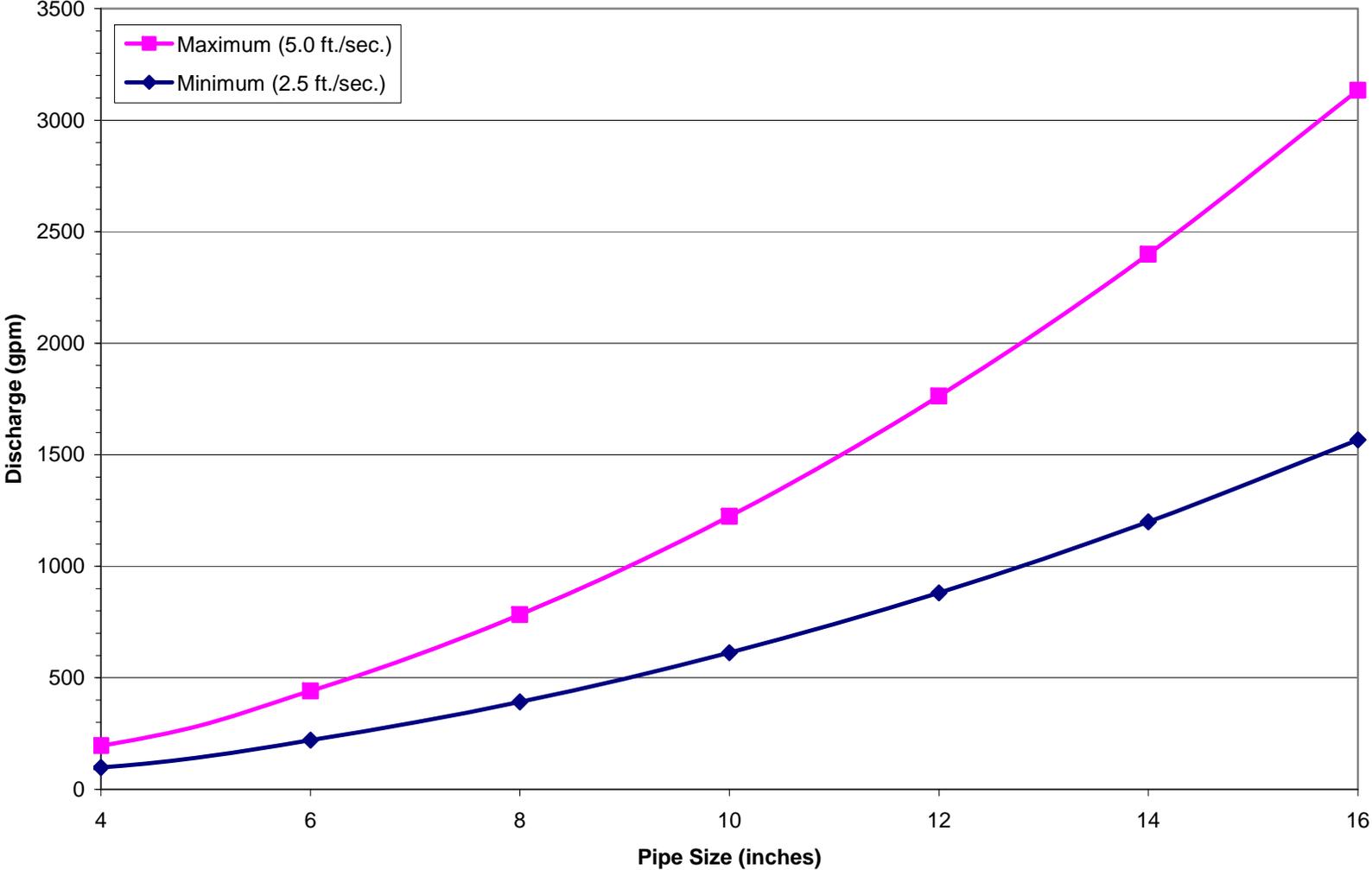


Figure A-2
Minimum Flushing Volume (By Length and Pipe Diameter)

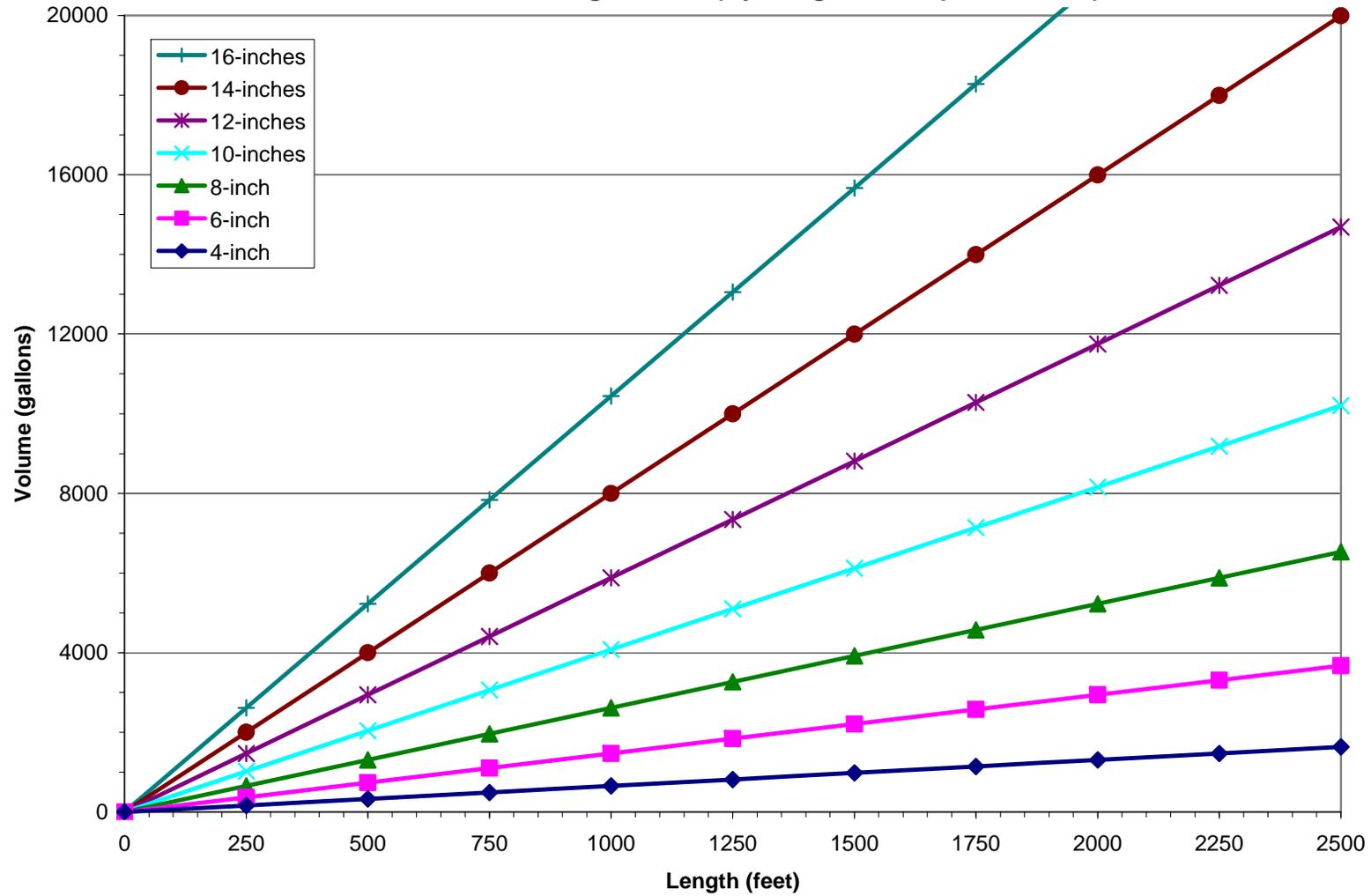
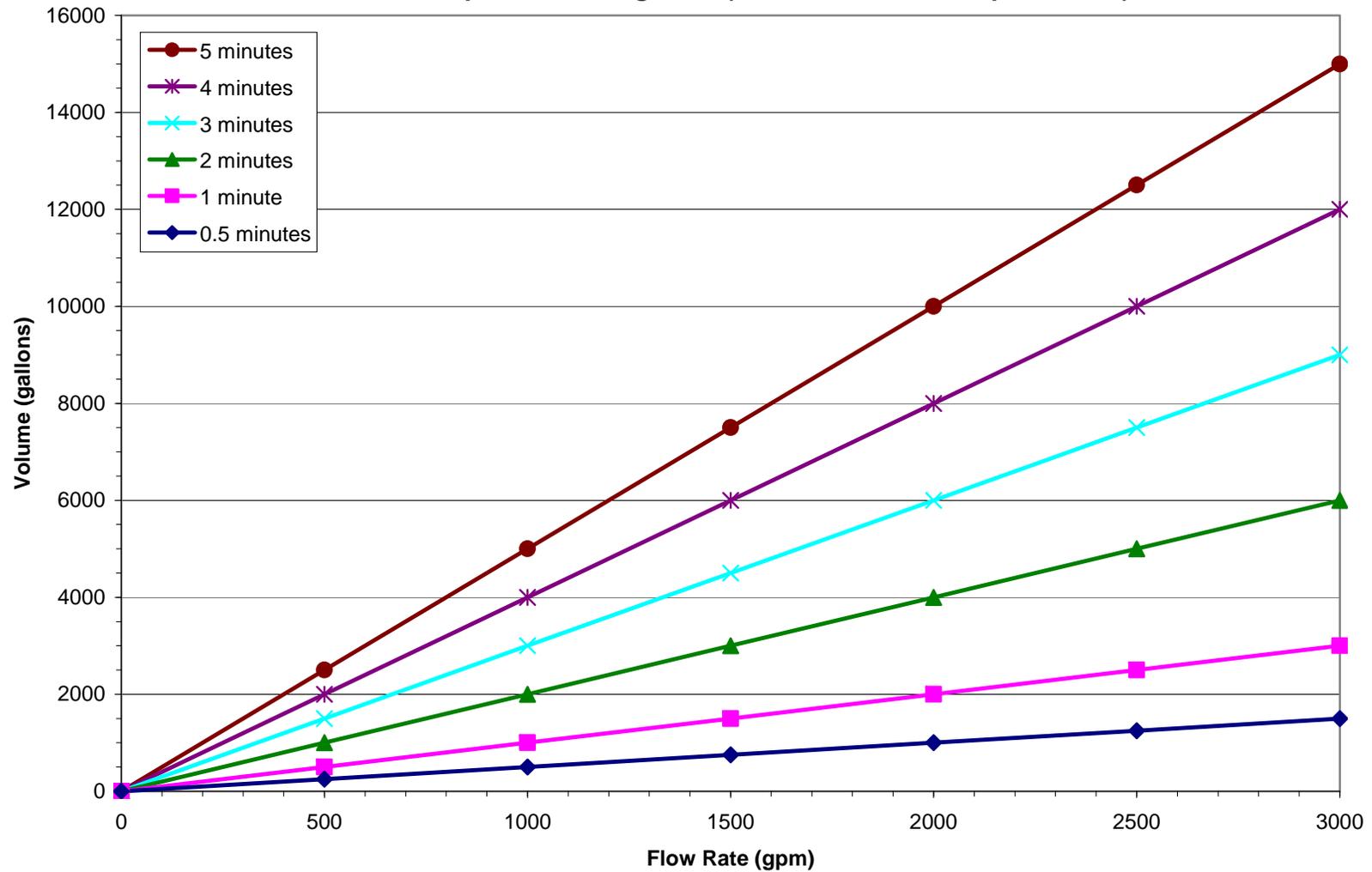


Figure A-3
Minimum Required Flushing Time (Per Flow Rate and Pipe Volume)



APPENDIX B

WHEN TO USE SPECIFIC PUBLIC HEALTH ORDERS

WHEN TO USE SPECIFIC PUBLIC HEALTH ORDERS				
TYPE OF ORDER	WHEN TO USE THE ORDER	WHAT TO DO	EXAMPLES OF WHAT TO DO	PROCEDURES FOR FOOD ESTABLISHMENTS
BOIL WATER	Microbiological contamination when there is no identified risk due to inhalation, skin irritation, or flammability	<p>Boil water at a rolling boil for 1 minute before using for any human consumption¹ purpose.</p> <p>Use bottled water or water from an alternative source.</p> <p>Discard ice⁴.</p> <p>You may bathe with this water but when bathing do not swallow water (sponge bathe kids).</p> <p>You may flush toilets.</p>	<p>Boil your water or if you cannot boil use bottled water, or water from an alternate source for the following human consumption purposes:</p> <ul style="list-style-type: none"> • Brushing teeth • Washing hands • Washing cuts, bruises, etc • Cooking • Ice making • Washing vegetables • Washing eating/cooking utensils • Pets (water, food, bathe) 	<p>Food establishments must follow MA DPH procedures and the direction of their local board of health (LBH).</p> <p>See pg. 18 of the DPH guide² for procedures to follow during a Boil Order.</p> <p>LBH may be more stringent than the DPH guide.</p>
DO NOT DRINK	Chemical or radiological contamination when there is no identified risk due to inhalation, skin irritation or flammability. Bacteria contamination when boiling or disinfection is not available or practical.	<p>Do not use water for human consumption¹ purposes.</p> <p>Use bottled water from an alternative source.</p> <p>Discard ice⁴.</p> <p>You may bathe with this water but when bathing do not swallow the water (sponge bathe kids).</p> <p>You may flush toilets.</p>	<p>Use bottled water or water from an alternate source for the following human consumption purposes:</p> <ul style="list-style-type: none"> • Brushing teeth • Washing hands • Washing cuts, bruises, etc • Cooking • Ice making • Washing vegetables • Washing eating/cooking utensils • Pets (water, food, bathe) 	<p>Food establishments must follow the DPH guide and the directions of their LBH.</p> <p>See pg. 15 of the DPH guide² for procedures to follow during a water interruption incident.</p> <p>LBH may be more stringent than the DPH guide.</p>
DO NOT USE	Chemical or radiological or unknown contamination when there is a risk from inhalation, skin irritation, or flammability.	<p>Do not use the water for any purpose.</p> <p>Use bottled water or water from an alternate source.</p> <p>Discard ice⁴.</p> <p>Do not flush toilets or other units until MassDEP has determined it is safe to do so.</p>	<p>Use bottled water or an alternate source for all human consumption purposes including showering.</p> <p>Discard any products prepared with the water collected during the period of concern, e.g., baby formulas, foods, ice cubes, etc.</p> <p>Do not use the shower or flush toilets until approved to do so by MassDEP. Showering and flushing may present a risk from inhalation.</p> <p>When or if flushing is allowed or required by MassDEP flush all pipes and units e.g. hot and cold water taps, toilets, humidifiers, dishwashers, washing machines, etc³.</p>	<p>Food establishments must follow the DPH guide and the directions of their LBH.</p> <p>See pg. 15 of the DPH guide² for procedures to follow during a water interruption incident.</p> <p>LBH may be more stringent than the DPH guide.</p>

¹ On 2/26/88, the US District Court settled the US vs. Midway Heights case in part by claiming “human consumption includes drinking, bathing, showering, cooking, dishwashing, and maintaining oral hygiene.”

² For DPH’s guide visit

http://www.mass.gov/?pageID=eohhs2terminal&L=6&L0=Home&L1=Provider&L2=Guidance+for+Businesses&L3=Food+Safety&L4=Retail+Food&L5=Policies+and+Guidelines&sid=Eeohhs2&b=terminalcontent&f=dph_environmental_foodsafety_p_emergency_plans&csid=Eeohhs2

³ For more information read MassDEP’s flushing fact sheet at <http://www.mass.gov/dep/water/laws/policies.htm#dwguid>

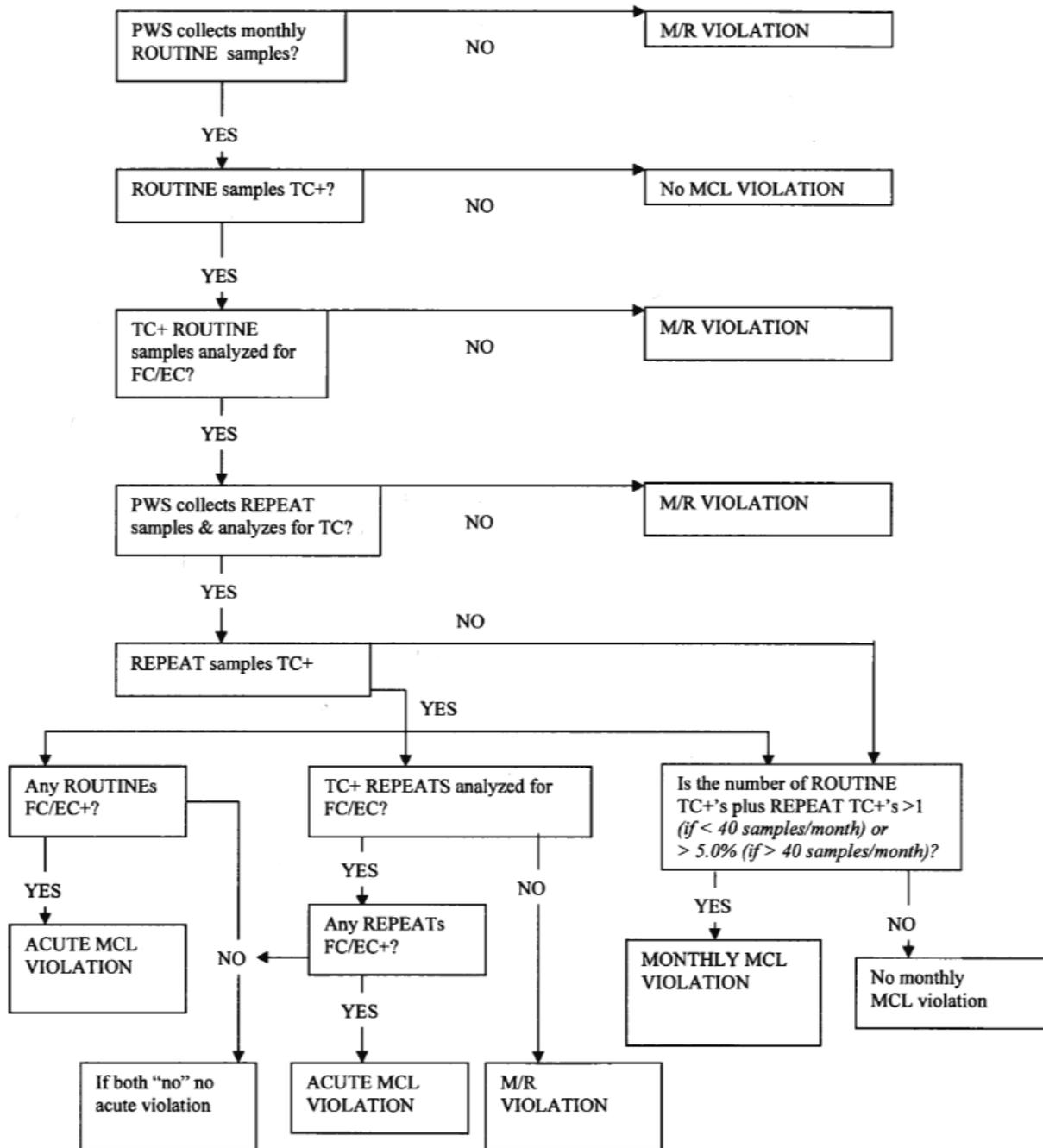
⁴ Freezing does not kill bacteria. Discard ice made during the period in question.

APPENDIX C

**VIOLATION DETERMINATION FOR THE TOTAL
COLIFORM RULE**

APPENDIX C

VIOLATION DETERMINATION FOR THE TOTAL COLIFORM RULE



APPENDIX D

COLIFORM VIOLATION EVALUATION SURVEY

APPENDIX E

**PERSONAL SAFETY AND EMERGENCY OPERATIONS
PROCEDURES**

APPENDIX E

PERSONAL SAFETY AND EMERGENCY OPERATIONS PROCEDURES

PERSONNEL SAFETY

Protecting the health and safety of everyone in the Ipswich Water Department (IWD) as well as the surrounding community is a key priority during an emergency. During an emergency, personnel may be at risk of harm, injury, or even death. This section of the ERP provides direction on how to safely implement a variety of response actions.

When considering personnel safety the following factors should be taken into account:

- ❑ ***Evacuation Planning***
- ❑ ***Evacuation Routes and Exits:*** Designate primary and secondary evacuation routes and ensure that they are clearly marked, well lit, unobstructed at all times, and unlikely to expose evacuating personnel to additional hazards.
- ❑ ***Assembly Areas and Accountability:*** Obtaining an accurate account of personnel requires planning and practice. Designate assembly areas where personnel should gather after an evacuation and specify procedures for taking a head count and identifying personnel.
- ❑ ***Shelter:*** In some major events, the best means of protection is to take shelter (also known as shelter in place) either within the IWD or away from the IWD in another building.
- ❑ ***Training and Information:*** Train staff and personnel in evacuation, shelter, and other safety procedures.
- ❑ ***Emergency Equipment:*** Consider developing written procedures for using and maintaining your emergency response equipment. This should apply to any emergency equipment relevant to a response involving a toxic chemical, including all detection and

monitoring equipment, alarms and communications systems, and Personal Protective Equipment (PPE) not used as part of normal operations.

- ❑ ***First Aid:*** Discuss proper first aid and emergency medical treatment for employees and others who are onsite at the IWD. This should include standard safety precautions for victims as well as more detailed information for medical professionals. Indicate also who is likely to be responsible for providing the appropriate treatment (i.e., an employee with specialized training or a medical professional).

PROPERTY PROTECTION

Protecting Water Department facilities, equipment and vital records is essential to restoring operations once a major event has occurred. The ERP identifies measures and procedures that are aimed at securing and protecting the IWD following a major event. Items that should be considered include:

- ❑ “Lock down” procedures;
- ❑ Access control procedures;
- ❑ Establishing a security perimeter following a major event;
- ❑ Evidence protection measures for law enforcement (should the major event also be declared a crime scene);
- ❑ Securing buildings against forced entry; and
- ❑ Other property protection procedures and measures.

APPENDIX F

EMERGENCY RESPONSE CHECKLIST

APPENDIX F

EMERGENCY RESPONSE CHECKLIST

City/Town: _____ PWS Name: _____ PWS ID #: _____

Complete a checklist for every emergency and, within thirty (30) days of a Level III, IV, or V emergency, file an Emergency Report, attaching the checklist used during the Emergency Response. The reported information must include a detailed timeline of the incident and response, evaluation of the incident, recommendations for improvements to emergency response planning and communication, recommendations for improvements to water system operations, staffing and budget, timeline for making all recommended changes and if necessary an updated emergency response plan except for those items that are security sensitive.

Send one (1) copy, with all additional forms and documents used according the Massachusetts drinking water regulations and the Handbook for Water Supply Emergencies, to MassDEP Regional Office, addressed to Drinking Water Program (DWP). (If you already have a reporting form available please use it in lieu of the form below).

REPORT ALL EMERGENCIES

Name of Person Completing Form: _____ Title: _____

Date: _____ Time of Report: _____

Location of Emergency: _____
Address / Line No. / Well No.

Emergency Caller Information (Circle): Male/Female Adult/Child

_____ Home Telephone _____
Name Work Telephone _____

Address

If the emergency is a threat against a water system, collect the following:

Voice: Normal Loud Whisper Calm Excited Nervous Other: _____
Connection: Clear Other (could it have been a cell phone): _____
Background Noise: Children Music Computer Television Radio Animals (type) _____
Machinery (type) _____ Other: _____

Describe the problem/ emergency: _____ Time: _____

Determine Emergency Level (circle): I* II* III IV V

*If Levels I or II, described the steps taken to handle the emergency.

If Level I or II, stop and file the report at this point.

If Level III or greater, continue on next page.

EMERGENCY RESPONSE CHECKLIST (continued for Level III or greater)

Which of the following actions were involved in the emergency? (Check appropriate actions)

Motor vehicle accident:
Vehicle type: _____ Make: _____
Color: _____ Reg. _____ State: _____
Owner name/Address): _____

Accidental discharge:

Illegal dumping/discharge:

Chemical(s) involved:
Trade Name/ Common Name: _____
(Circle) Solid / Liquid / Vapor / Other: _____
Placard / Label ID / DOT #: _____

Disease outbreak, type of disease: _____

Bacterial Problem, describe: _____

Nearest Public Drinking Water Source (surface/ground):

Name/address (location)

Approximate distance from emergency location _____

Which of the following actions did you complete? (Check appropriate actions)

Notify person(s) in charge of all emergencies:
Name: _____ Home Telephone _____
Work Telephone _____
Initial Emergency Response: _____

Close reservoir: _____ Wells Nos. _____
Name of Reservoir

Shutdown pump(s): _____
No. or Name

Shut off some of the distribution lines
Specify (location, valve): _____

Cross Connection Survey
Results: _____

Other (describe): _____

EMERGENCY RESPONSE CHECKLIST (continued for Level III or greater)

Local Authorities/Departments Contacted:

- | | | |
|--------------------------|--|---|
| <input type="checkbox"/> | <input type="checkbox"/> Water Supply Superintendent/Assistant | <input type="checkbox"/> Certified Operator |
| | <input type="checkbox"/> Mayor/Officials | <input type="checkbox"/> Fire Department |
| | <input type="checkbox"/> Police Department | <input type="checkbox"/> Health Department |
| | <input type="checkbox"/> Other: _____ | |

Local/Regional News Media Contacted:

- | | |
|---|--|
| <input type="checkbox"/> Local Newspaper | <input type="checkbox"/> Local Radio Station |
| <input type="checkbox"/> Local TV Station | <input type="checkbox"/> Local Short-wave |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Radio Operator(s) |

State Authorities/Agencies Contacted:

- State Police / State Agencies (Emergency Line)
- MassDEP (Emergency Line): Boston NERO SERO CERO WERO
- MassDEP: Water Pollution Control Hazardous Waste
- Department of Public Health
- Massachusetts Emergency Management Agency (MEMA)
- Other: _____

Federal Authorities/Agencies Contacted:

- EPA - Boston Office (Emergency Line)
- National Response Center
- Coast Guard
- Federal Emergency Management Agency (FEMA)
- Federal Highway Administration
- National Guard
- Communicable Disease Center - Atlanta, GA
- Other: _____

Notify office staff about the problem/emergency to answer questions from the users;

Brief the person(s) in charge of the emergency response and superiors about new developments;

Prepare and attach a list of equipment and materials (specification/quantity) used in emergency response;

Emergency report (checklist) completed; (Prepare and file the emergencies report for every single emergency situation.)

Emergency report filed and one (1) copy submitted to MassDEP Regional Office - DWP.

Other: _____

APPENDIX G

GUIDELINES FOR PREPARING A NEWS RELEASE

APPENDIX G

GUIDELINES FOR PREPARING A NEWS RELEASE

YOURTOWN WATER DEPARTMENT
123 Main Street
Yourtown, YX 99999

Date of Issuance: Month, Day, Year

CONTACT: Contact's Name
Work Telephone
Home Telephone

FOR IMMEDIATE RELEASE

YOUR CITY OR TOWN, STATE - When preparing a news release, the questions: WHO? WHAT? WHEN? WHERE? And HOW? (when appropriate) should be answered in the lead paragraph. The lead paragraph should be kept as brief as possible, with no more than one or two sentences at most.

- The body of a news release should start about one-third of the way down the page. The news release should be typed or printed on one side of 8 1/2" x 11" sheets of paper.
- Use wide margins at the top and bottom of the page, and double-space your release so the copy can be edited, as appropriate.
- The source of information should be prominently displayed at the top of the release. In addition, the release should list the name, address and telephone number of the contact person in the upper left corner of the first page.
- A release date should appear in the upper right-hand section of the first page. Most releases should be "FOR IMMEDIATE RELEASE". Stipulate a date for release only when the news warrants holding it for a specific date or time.
- The text should be tightly edited. Keep your sentences and paragraphs short; use proper punctuation and grammar.
- End each sheet at the end of a paragraph. Use "more" at the bottom of the sheet if the release continues onto another sheet.

- Put a slugline in the upper left-hand corner of the second sheet and any additional sheets. Indicate the appropriate page number in the slugline.

Indicate the end of the release by placing one of the following symbols at the bottom of the last page of the news release:

###

30

END

Proofread every word; double-check the copy with your source; let someone else proofread the finished copy for typos and grammar before distribution.

###

(Credit to Drinking Water Week Workbook published by New England Water Works Association)

APPENDIX H

ALARM TESTING

APPENDIX H

ALARM TESTING

TESTING ALARMS AND CONTROLS

All alarms and controls installed to prevent the overfeed or underfeed of a critical chemical shall be tested quarterly, unless otherwise required by MassDEP, and logs shall be maintained to record the test results. The protocols for testing critical alarms includes the following:

1. High and low critical alarms shall be tested using one of the following methods:
 - a. Adjust alarm set points on the analyzer
 - b. Change alarm sets points through the SCADA system
 - c. Use a chemical standard if the system uses an analyzer probe
2. Interlocks shall be tested to insure chemical feed systems perform as expected using the following methods:
 - a. *Interlock with Pump Starter* - Turn raw or finished water pump to off position and verify that corresponding critical chemical feed system is de-energized.
 - b. *Interlock with Flow Meter or Flow Switch* - Create a low or no flow condition on the raw or finished water pump and verify that the corresponding critical chemical feed system is de-energized.
 - c. *Interlock with Analyzer* – Create critical alarm condition, in accordance with the alarm testing protocols noted above, and verify that the corresponding critical chemical feed system and raw or finished water pump are de-energized.
3. If the system is required to use a remote notification device, such as an autodialer or software, the system shall test the device to insure that it notifies a properly certified operator on call. To test the device, the system shall trigger an alarm which requires a shut down and record the sequence in which the device contacts the certified operator authorized to respond. The system does not need to test all alarm systems, but the sequence should be checked for all critical alarms.
4. Ensure that all alarms in the system including alarms for pumps, high water, intrusion, etc. are transmitted to a location that is monitored continuously. If no such location is available, suitable alternative arrangements shall be made such as a programmable telephone dialer to an on-call person or persons. Telemetry systems, such as programmable telephone dialers, shall include a local alarm at the monitored location in case of loss of the telephone line or radio communications failure or other transmission failure.

The IWD needs to develop a table with critical alarms for each of their installations in accordance to MassDEP requirements.

APPENDIX I

EQUIPMENT AND SUPPLIES

APPENDIX I

EQUIPMENT AND SUPPLIES

EMERGENCY EQUIPMENT LIST

Emergency equipment that may be needed to respond to an emergency is specific to the type of emergency response action required. Equipment listed in this Emergency Response Plan (ERP) includes equipment that the water system does not have at its immediate disposal on a daily basis, such as heavy construction equipment and replacement parts that are not normally kept on hand. For equipment that will be supplied by contractors or other utilities, the required lead-time for each type of equipment or chemical request should be noted in the ERP.

Table I-1 includes an emergency equipment list that the water system may need to respond to an emergency.

**TABLE I-1
EMERGENCY EQUIPMENT LIST**

EQUIPMENT/ SUPPLY DESCRIPTION	SOURCE / LOCATION	RESPONSIBLE PERSON	TELEPHONE NUMBER	INVENTORY /RESTOCKING FREQUENCY
Heavy Equipment:				
Dump Trucks				
Loaders				
Backhoes				
Dozers				
Water Trucks				
Portable Chemical Feed Trucks				
Communication Equipment:				
Portable Radios				
Radio Batteries				
Cell Phone Rentals				
General Equipment:				
Air Compressors				
Fans and Blowers				
Generators				
Shop Vacuums				
Pumps				

EQUIPMENT/ SUPPLY DESCRIPTION	SOURCE / LOCATION	RESPONSIBLE PERSON	TELEPHONE NUMBER	INVENTORY /RESTOCKING FREQUENCY
Chemicals				
Chlorine Gas				
Sodium Hypochlorite				
Personnel Protective Equipment				
SCBA				
Tyvek Suits				
Boots				
Respirators				
Cartridges				
Gloves				
Bulk Supplies				
Sand				
Absorbents				

PERSONNEL PROTECTIVE AND OTHER EMERGENCY EQUIPMENT

This section of the ERP can be used to describe the water system's procedures for using, testing, and maintaining emergency response equipment, and should include equipment to detect toxic chemicals, alarm and communications systems, and Personal Protective Equipment (PPE) not used as part of normal operations. Some examples of the types of procedures to include are listed below.

- How and when to use the equipment properly.
- How and when the equipment should receive routine maintenance.
- How and when the equipment should be inspected and tested for readiness.

TELEPHONE EQUIPMENT

Normal methods of voice and data communication, including land-based telephones, wireless phones and system operation via SCADA may be out of service during an emergency or terrorist event. Back-up or alternate communication methods and procedures should be evaluated and

exercised as part of the water system's emergency planning process, including practice of SCADA-free operations.

Some water systems may have installed emergency telephones to serve as a critical connection during a business disruption or an emergency. Emergency telephones of this kind should connect directly the water system's security desk, and their use should be restricted to safety and security purposes only. If emergency phones are installed, their locations should be noted in the ERP.

In an extreme major event (e.g., a terrorist attack), it may not be advisable to use normal channels of communication even if they are working properly. For example, during a bomb threat the use of cell phones may be unwise, since compatible frequencies can be used to detonate certain types of bombs. Provisions need to be made for an efficient, secure and fail-safe form of communication to be available during conditions when the use of normal means may not be possible.

VHF RADIO COMMUNICATIONS

When radio communication is possible and practicable it is important to have a pre-established protocol as well as pre-determined channels over which to communicate. Radio communications are not secure and if sensitive information must be conveyed it may be necessary to implement an in-house courier service.

During an emergency, specific instructions should be provided by the water system's Command Center on the use of the water system's two-way radios. It is important to note that radio communications are not secure, and therefore radios must not be used to transmit sensitive messages or data that is not ready for public release, or would give advantage to an attacker. For this reason, it is anticipated that radios will be of limited use during an attack on the water system, unless there is a loss of off-site power or other event affecting the land-based and cell phone service.

Table I-2 below provides information on the water system's radios and usage procedures. If the water system has access to CB radios and/or military radios, either through direct ownership or

mutual aid agreements, the equipment should also be listed in the ERP as well as the channels over which communication will occur.

**TABLE I-2
VHF RADIO COMMUNICATIONS**

CHANNEL	USE GROUP / FREQUENCY	TYPE OF USAGE
		Routine Operations
		Emergency Operations

APPENDIX J

PUBLIC NOTICE TIER 1 TEMPLATES



Public Notice Tier 1 Templates

Total Coliform Rule Coliform or *E. coli* Template 1-4

Instructions: (template on following page)

Since exceeding the fecal coliform or *E. coli* maximum contaminant level is a Tier 1 violation, you must provide public notice to persons served as soon as practical but within 24 hours after you learn of the violation (310 CMR 22.16(2)(b)). During this time, you must also contact your regional MassDEP office. You should also coordinate with your local board of health or health department. You may also have to modify the template if you also have high nitrate levels or other coliform MCL violations.

Mandatory language on health effects (310 CMR 22.16(5)(d)) for your public notification (PN), which must be included exactly as written, is presented in *italics* in the template.

You must also include the following italicized language in all notices, where applicable. Use of this language does *not* relieve you of your obligation to take steps reasonably calculated to notify all persons served:

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

Delivery - You must use one or more of the following methods to deliver the notice to consumers (310 CMR 22.16(2)(c)):

- Radio
- Television
- Hand or direct delivery
- Posting in conspicuous locations
- In addition to one (or more) of the above methods, you must publish the Tier 1 public notice within your local newspaper as a one-day advertisement no later than 14 days after the violation. A copy must be submitted to MassDEP no later than the time published.

You may need to use additional methods (e.g., newspaper, reverse 911 phone calls, e-mail, web posting, delivery of multiple copies to hospitals, clinics, or apartment buildings) since notice must be provided in a manner reasonably calculated to reach all persons served. If you post or hand-deliver, print your notice on your system's letterhead, if you have it.

The template is appropriate for hand delivery or a newspaper notice. However, you may wish to modify it before using it for a radio or TV notice. If you do, you must still include all required elements and leave the health effects language in italics unchanged. This language is mandatory (310 CMR 22.16(5)(d)). See Chapter 8 of the EPA and the Association of State Drinking Water Administrators (ASDWA) *Public Notification Handbook* for a notice designed for posting. If you post or hand-deliver, print your notice on letterhead, if available.

Massachusetts Department of
Environmental Protection
One Winter Street
Boston, MA 02108-4746

Commonwealth of
Massachusetts
Deval L. Patrick, Governor
Timothy P Murray, Lt. Governor

Executive Office of
Environmental Affairs
Ian A. Bowles, Secretary

Department of
Environmental Protection
Laurie Burt, Commissioner

Produced by the
Bureau of Resource Protection,
Rev. November 2010.
Printed on recycled paper.

This information is available in
alternate format by calling our
ADA Coordinator at
617-556-1057.

Alternative Sources of Water – If you are selling or providing bottled water, your notice should say where it can be obtained. Remember that bottled water can also be contaminated. If you are providing bottled water, make sure it meets the US Food and Drug Administration (FDA) standards. You can contact the Massachusetts Department of Public Health and the bottler and ask for the most recent test results.

Population Served - Make sure it is clear who is served by your water system--you may need to list the areas you serve.

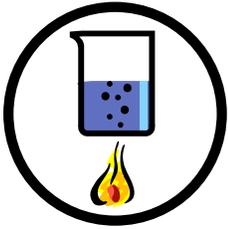
Corrective Action - In your notice, describe corrective actions you are taking. Listed below are some steps commonly taken by water systems with fecal coliform or *E. coli* violations. Use one or more of the following actions, if appropriate, or develop your own:

- We are chlorinating and flushing the water system.
- We are switching to an alternate drinking water source.
- We are increasing sampling for coliform bacteria to determine the source of the contamination.
- We are repairing the wellhead seal.
- We are repairing the storage tank.
- We are restricting water intake from the river/lake/reservoir to prevent additional bacteria from entering the water system and restricting water use to emergencies.

After Issuing the Notice - Send a copy of each type of notice and a certification that you have met all the public notice requirements to your regional MassDEP office and local board of health within ten days from the time you issue the notice (310 CMR 22.15(3)(b)).

It is recommended that you notify health professionals in the area of the violation. People may call their doctors with questions about how the violation may affect their health, and the doctors should have the information they need to respond appropriately. In addition, health professionals, including dentists, use tap water during their procedures and need to know of contamination so they can use bottled water. It is a good idea to issue a "problem corrected notice" when the violation is resolved. See Template 1-6.

Note - The EPA/ASDWA Public Notification Handbook provides additional aids to help water systems develop notices for violation situations. An electronic copy of the Public Notification Handbook is available at EPA's web site (www.epa.gov/safewater/pn.html). Please note that the EPA/ASDWA Handbook templates are non-state specific so Massachusetts water suppliers are required to use the Massachusetts version of the templates for compliance purposes. Electronic copies of the Massachusetts public notification templates are available on the MassDEP website <http://www.mass.gov/dep/water/drinking/systems.htm#pubnot>.



DRINKING WATER WARNING

[System] water is contaminated
with [coliform] or [*E. coli*]

BOIL YOUR WATER BEFORE USING

[Coliform or *E. coli*] bacteria were found in the water supply on [date]. These bacteria can make you sick, and are a particular concern for people with weakened immune systems. Bacterial contamination can occur when increased run-off enters the drinking water source (for example, following heavy rains). It can also happen due to a break in the distribution system (pipes) or a failure in the water treatment process.

What should I do? What does this mean?

- **DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST or USE BOTTLED WATER**

Bring all water to a rolling boil and let it **boil for at least one (1) minute** or **use bottled water**. You may cool the boiled water before using. Boiled or bottled water should be used for drinking, making ice, food preparation, brushing teeth and washing dishes **until further notice**. Boiling kills bacteria and other organisms in the water.

- Refer to the attached notice for additional precautions you may take. This information is also located on the MassDEP website: **Consumer Information on Boil Orders** <http://www.mass.gov/dep/water/drinking/boilordr.htm>
Boil Order Frequently Asked Questions <http://www.mass.gov/dep/water/drinking/boilfaq.htm>
- **Discard** all ice, beverages, uncooked foods, and formula made with tap water collected on or before [date of concern/positive sample].
- **Food establishments** must follow MA DPH procedures and the direction of their local board of health, which may be more stringent than the DPH guide. **MA Department of Public Health - Guidance for Emergency Action Planning for Retail Food Establishments (pg. 19)** http://www.mass.gov/Eeohhs2/docs/dph/environmental/foodsafety/emergency_action_plans.pdf
- *Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.*
- The symptoms above are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice. People at increased risk should seek advice about drinking water from their health care providers.

What is being done?

[Describe corrective action.] We will inform you when tests show no bacteria and you no longer need to boil your water. We anticipate resolving the problem within [estimated time frame].

For more information, please contact [name of contact] at [phone number] or [mailing address]. General guidelines on ways to lessen the risk of infection by microbes are available from the EPA Safe Drinking Water Hotline at 1-800-426-4791.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by [system].

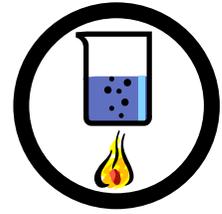
PWS ID#: [xxxxxxx]

Date distributed: [date]



Drinking Water Contaminated with Bacteria

Recent tests have indicated the presence of bacteria in your drinking water. The following are precautions you can take:



Drinking the Water

There are two simple and effective methods you can use to treat drinking water for microbiological contaminants (bacteria):

1. Boiling: Bring the water to a rolling boil for at least 1 minute. Laboratory data show this is adequate to make the water safe for drinking. You may cool the water before using it.

or

2. Disinfecting: Disinfectant tablets obtained from a wilderness store or pharmacy may be used. In an emergency, liquid chlorine bleach such as Clorox[®] or Purex[®] can be used at a dose of 8 drops (or 1 teaspoon) of bleach to each gallon of water. (*Careful measurement with a clean dropper or other accurate measuring device is required when using liquid chlorine bleach.*) Let stand for at least 30 minutes before use. Read the label to see that the bleach has 5-6% available chlorine.

Washing Dishes

It is best to use disposable tableware during the time the water needs disinfection. If that is not possible, the following steps should be taken:

1. Wash dishes normally but be sure to rinse them in a solution of 1 teaspoon of bleach, as mentioned above, in a gallon of warm water (submersion in a dishpan for a minimum of 5 minutes is advised). The dishes should be allowed to air dry. Gloves should be worn when handling bleach to minimize any skin irritation.
2. Because of the many variables involved with dishes washed in a dishwasher, it is recommended that you use the additional rinse step, as described above, after washing.

Bathing: Young children should be given sponge baths rather than put in a bathtub where they might ingest the tap water. Adults or children should take care not to swallow water when showering.

Brushing your teeth: Only disinfected *or* boiled water should be used for brushing your teeth.

Ice: Ice cubes are not safe unless made with disinfected *or* boiled water. The freezing process does not kill the bacteria or other microorganisms.

Washing fruit and vegetables: Use only disinfected *or* boiled water to wash fruits or vegetables that are to be eaten raw.

Hand washing: Only boiled *or* disinfected water should be used for hand washing.

Cooking: Bring water to a rolling boil for 1 minute before adding food.

Infants: For infants use only prepared canned baby formula that is not condensed and does not required added water. *Do not* use powdered formulas prepared with contaminated water.

Houseplants and garden: Water can be used without treatment for watering household plants and garden plants. The exception would be things like strawberries or tomatoes where the water would contact the edible fruit.

House pets: The same precautions that are taken to protect humans should be applied to pets. Aquatic organisms (e.g. fish) should not be exposed to water containing elevated levels of bacteria. If the organism's water needs to be refreshed use appropriately boiled or bottled water.

APPENDIX K

**PANDEMIC INFLUENZA FACT SHEET
AND PLANNING GUIDES**



Pandemic Influenza Fact Sheet for the Water Sector

What is Pandemic Influenza?

A pandemic is a global disease outbreak. A flu pandemic occurs when a new influenza virus emerges for which people have little or no immunity, and for which there is no vaccine. The disease spreads easily person-to-person, causes serious illness, and can sweep across the country and around the world in very short time. In June 2009, the World Health Organization declared a global H1N1 influenza pandemic.

Why Should the Water Sector be Concerned About Pandemic Influenza?

In a severe pandemic, absenteeism will increase from illness, the need to care for ill family members, and the fear of infection. This absenteeism can affect drinking water and wastewater system operators and their capability to operate and maintain their systems adequately, thereby increasing the risks to public health. Absenteeism would also affect workers from other essential and interdependent sectors such as the transportation, power, and chemical sectors. It can have an adverse impact on services such as delivery of chemicals and other essential materials and supplies.

Will Influenza Spread Through Drinking Water?

There are no reports of flu outbreaks from ingesting water. Influenza viruses are typically spread by exposure to respiratory droplets created when infected persons cough or sneeze, not from ingesting drinking water. Generally speaking, research has shown that chlorination and filtration methods that are typically used are effective in removing viruses from drinking water. Where groundwater is used, virus particles become diluted due to mixing with large volumes of groundwater. In those cases where there is concern that untreated groundwater may have become contaminated with an influenza virus, public water suppliers and private well users should contact their local and state drinking water and health experts to determine if precautions should be taken before the well water is used for drinking water.

Will Influenza Spread Through Wastewater?

Viruses may survive in untreated wastewater. Thus, utilities should take extra precaution to ensure that workers do not come into direct contact with untreated wastewater. However, research conducted to date on water treatment has shown that chlorination, ultraviolet (UV) radiation, and anaerobic digestion are effective in eliminating certain influenza A virus subtypes from water. H1N1 and H5N1 are influenza A virus subtypes.

What Can Water and Wastewater Utilities do to Prepare?

Utilities that do not prepare for the likelihood of pandemic flu may find themselves without the staff, equipment, or supplies necessary to continue providing safe drinking water or treating wastewater for their community. Utilities should integrate pandemic planning into existing business continuity and emergency response plans using available guidance documents for assistance. Planning actions that utilities may undertake include (1) identifying essential functions, services, processes, critical staffing needs, and interdependent relationships, (2) assessing supply chains and coordinating with vendors, (3) developing a communications strategy, and (4) working with community pandemic planners.

What is EPA Doing to Help Utilities Prepare?

EPA offers free tools and guidance materials to help utilities develop plans to prepare for and respond to pandemic influenza outbreaks. All of these documents are available at a new EPA webpage (<http://cfpub.epa.gov/safewater/watersecurity/pandemicflu>). Available resources include a Pandemic Flu Tabletop Exercise for water and wastewater utilities, EPA Region 1's *Top 10 List: Pandemic and Natural Disasters Notebook*, this fact sheet, and links to other useful websites and planning information.

What Other Flu Specific Guidance is Available to Help Utilities Prepare?

- Current guidance is available at www.flu.gov including updated guidance and a communication toolkit for businesses and employers.
- The Department of Homeland Security *Annex: Water and Wastewater Sector Pandemic Guideline* is available at (www.amwa.net/cs/security).
- The National Rural Water Association's *Small System Pandemic Influenza Checklist* Association of Metropolitan Water Agencies' *Business Continuity Planning in the Event of an Influenza Pandemic: A Reference Guide* are available from these associations.
- Read your State's pandemic plan (www.flu.gov/plan/states/stateplans.html).
- Also, consult OSHA guidelines on how to prepare your workplace and protect employees during a pandemic (www.osha.gov/Publications/influenza_pandemic.html).

Will Vaccines be Available?

Vaccination is one of the most effective ways to minimize suffering and death from influenza. The U.S. Department of Health and Human Services is the lead agency for expanding domestic influenza vaccine production capacity and producing a pandemic influenza vaccine. However, at the beginning of a pandemic, the scarcity of a vaccine will require that the limited supply be allocated or prioritized for distribution and administration. The U.S. Government has developed *Guidance on Allocating and Targeting Pandemic Influenza Vaccine* (www.flu.gov/vaccine/allocationguidance.pdf). This document provides guidance to states, territories, and tribes on the allocation of limited supplies of pandemic vaccine to different population groups, such as those who maintain essential community services like the water sector. This guidance may be modified based on the status of vaccine technology, the characteristics of pandemic illness, and risk groups for severe disease—factors that are unknown until a pandemic actually occurs.

CDC's Advisory Committee on Immunization Practices (ACIP), a panel made up of medical and public health experts, met July 29, 2009, to make recommendations on who should receive the new H1N1 vaccine when it becomes available. While some issues are still unknown, such as how severe the virus will be during the fall and winter months, the ACIP considered several factors, including current disease patterns, populations most at-risk for severe illness based on current trends in illness, hospitalizations and deaths, how much vaccine is expected to be available, and the timing of vaccine availability. Additional information on these recommendations is available at <http://www.cdc.gov/h1n1flu/vaccination/acip.htm>.

What Other Interventions May be Used?

There are a number of interventions that will be implemented to mitigate the effects of an influenza pandemic. Non-pharmaceutical interventions such as social distancing and infection control techniques such as hand-washing and cough etiquette will play a critical role in pandemic mitigation. Antiviral drugs may help prevent infection in people considered at risk and lessen the impact of symptoms in those infected with influenza. Antiviral drugs can also be used for prevention, and public and private sector entities may choose to stockpile antiviral drugs for this purpose.

Where Can I go for Additional Information?

Visit www.flu.gov. This site is managed by the U.S. Department of Health and Human Services and provides one-stop access to U.S. government pandemic, H1N1, and avian (H5N1) influenza information.

STATE AND LOCAL PANDEMIC INFLUENZA PLANNING CHECKLIST



Planning for pandemic influenza is critical. To assist you in your efforts, the Department of Health and Human Services (HHS) and the Centers for Disease Control and Prevention (CDC) have developed the following checklist. It identifies important, specific activities you can do now to prepare. Many are specific to pandemic influenza, but a number also pertain to any public health emergency.

This checklist is based on the HHS Pandemic Influenza Plan, Public Health Guidance for State and Local Partners, but is not intended to set forth mandatory requirements. Each state and local jurisdiction should determine for itself whether it is adequately prepared for disease outbreaks in accordance with its own laws and procedures.

Community Preparedness Leadership and Networking [Preparedness Goal 1—Increase the use and development of interventions known to prevent human illness from chemical, biological, radiological agents, and naturally occurring health threats.]

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Establish a Pandemic Preparedness Coordinating Committee that represents all relevant stakeholders in the jurisdiction (including governmental, public health, healthcare, emergency response, agriculture, education, business, communication, community-based, and faith-based sectors, as well as private citizens) and that is accountable for articulating strategic priorities and overseeing the development and execution of the jurisdiction's operational pandemic plan.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Delineate accountability and responsibility, capabilities, and resources for key stakeholders engaged in planning and executing specific components of the operational plan. Assure that the plan includes timelines, deliverables, and performance measures.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Within every state, clarify which activities will be performed at a state, local, or coordinated level, and indicate what role the state will have in providing guidance and assistance.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Assure that the operational plan for pandemic influenza response is an integral element of the overall state and local emergency response plan established under Federal Emergency Support Function 8 (ESF8): Health and medical service and compliant with National Incident Management System.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Address integration of state, local, tribal, territorial, and regional plans across jurisdictional boundaries in the plan.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Formalize agreements with neighboring jurisdictions and address communication, mutual aid, and other cross-jurisdictional needs.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Ensure existence of a demographic profile of the community (including special needs populations and language minorities) and ensure that the needs of these populations are addressed in the operation plan.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Address provision of psychosocial support services for the community, including patients and their families, and those affected by community containment procedures in the plan (see Supplement 11).

continued

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Test the communication operational plan that addresses the needs of targeted public, private sector, governmental, public health, medical, and emergency response audiences; identifies priority channels of communication; delineates the network of communication personnel, including lead spokespersons and persons trained in emergency risk communication; and links to other communication networks (see Supplement 10).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Identify for all stakeholders the legal authorities responsible for executing the operational plan, especially those authorities responsible for case identification, isolation, quarantine, movement restriction, healthcare services, emergency care, and mutual aid.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Make clear to all stakeholders the process for requesting, coordinating, and approving requests for resources to state and federal agencies.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Create an Incident Command System for the pandemic plan based on the National Incident Management System and exercise this system along with other operational elements of the plan.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Assist in establishing and promoting community-based task forces that support healthcare institutions on a local or regional basis.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Identify the authority responsible for declaring a public health emergency at the state and local levels and for officially activating the pandemic influenza response plan.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Identify the state and local law enforcement personnel who will maintain public order and help implement control measures. Determine in advance what will constitute a “law enforcement” emergency and educate law enforcement officials so that they can pre-plan for their families to sustain themselves during the emergency.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Ensure that the plans are scalable, to the magnitude and severity of the pandemic and available resources. Revise as necessary.

Surveillance [HHS Supplement 1. Preparedness Goal 3—Decrease the time needed to detect and report chemical, biological, or radiological agents in tissue, food, or environmental agents that cause threats to the public’s health. Preparedness Goal 5—Decrease the time to identify causes, risk factors, and appropriate interventions for those affected by threats to the public’s health.]

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Conduct year-round traditional surveillance for seasonal influenza (e.g., virologic, outpatient visits, hospitalization, and mortality data), including electronic reporting.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Improve capacity for rapid identification of unusual influenza strains by working with federal partners to enhance laboratory-based monitoring of seasonal influenza subtypes, as described in Supplement 1 (Surveillance).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Develop and be prepared to implement enhanced surveillance once a pandemic is detected to ensure recognition of the first cases of pandemic virus infection in time to initiate appropriate containment protocols, and exercise regularly.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Link and routinely share influenza data from animal and human health surveillance systems.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Obtain and track information daily during a pandemic (coordinating with epidemiologic and medical personnel) on the numbers and location of newly hospitalized cases, newly quarantined persons, and hospitals with pandemic influenza cases. Use these reports to determine priorities among community outreach and education efforts.

Public Health and Clinical Laboratories [HHS Supplement 2. Preparedness Goal 3—Decrease the time needed to detect and report chemical, biological, and radiological agents in tissue, food, or environmental agents that cause threats to the public’s health.]

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Institute surveillance for influenza-like illnesses (ILI) among laboratory personnel working with novel influenza viruses.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Develop and test a plan for surge capacity of public health and clinical laboratories to meet the needs of the jurisdiction during a pandemic.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Assess regularly the influenza diagnostic testing proficiency and adherence to biosafety containment and biomonitoring protocols.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Inform frontline clinicians and laboratory personnel of protocols for safe specimen collection and testing, how and to whom a potential case of novel influenza should be reported, and the indications and mechanism for submitting specimens to referral laboratories (see Supplements 3, 4, 5).

Healthcare and Public Health Partners [HHS Supplement 3. Preparedness Goal 6—Decrease the time needed to provide countermeasures and health guidance to those affected by threats to the public’s health.]

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Test the operational plan for the healthcare sector (as part of the overall plan) that addresses safe and effective 1) healthcare of persons with influenza during a pandemic, 2) the legal issues that can affect staffing and patient care, 3) continuity of services for other patients, 4) protection of the healthcare workforce, and 5) medical supply contingency plans.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Ensure all components of the healthcare delivery network (e.g., hospitals, long-term care, home care, emergency care) are included in the operational plan and that the special needs of vulnerable and hard-to-reach patients are addressed.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Ensure that plan provides for real-time situational awareness of patient visits, hospital bed and intensive care needs, medical supply needs, and medical staffing needs during a pandemic.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Test the operational plan for surge capacity of healthcare services, workforce, and supplies to meet the needs of the jurisdiction during a pandemic.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Test the plan provisions for mortuary services during a pandemic.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Maintain a current roster of all active and formerly active healthcare personnel available for emergency healthcare services.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Determine what constitutes a medical staffing emergency and exercise the operational plan to obtain appropriate credentials of volunteer healthcare personnel (including in-state, out-of-state, international, returning retired, and non-medical volunteers) to meet staffing needs during a pandemic.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Ensure healthcare facilities in the jurisdiction have tested a plan for isolating and cohorting patients with known or suspected influenza, for training clinicians, and for supporting the needs for personal protective equipment.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Ensure the healthcare facilities in the jurisdiction have tested an operational plan to initiate, support, and implement quarantine of potentially exposed healthcare personnel (see Supplements 4 and 5).

Infection Control and Clinical Guidelines [HHS Supplements 4 and 5. Preparedness Goal 6—Decrease the time needed to provide countermeasures and health guidance to those affected by threats to the public’s health.]

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Ensure the Health Alert Network in the jurisdiction reaches at least 80% of all practicing, licensed, frontline healthcare personnel and links via the communication network to other pandemic responders (see Supplements 3, 10).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Craft messages to help educate healthcare providers about novel and pandemic influenza, and infection control and clinical guidelines, and the public about personal preparedness methods.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Develop and test a plan (as part of the communication plan) to regularly update providers as the influenza pandemic unfolds.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Ensure appropriate local health authorities have access to EPI-X and are trained in its use.

Vaccine Distribution and Use [HHS Supplement 6. Preparedness Goal 6—Decrease the time needed to provide countermeasures and health guidance to those affected by threats to the public’s health.]

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Work with healthcare partners and other stakeholders to develop state-based plans for vaccine distribution, use, and monitoring; and for communication of vaccine status.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Exercise an operational plan that addresses the procurement, storage, security, distribution, and monitoring actions necessary (including vaccine safety) to ensure access to this product during a pandemic.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Ensure the operational plan delineates procedures for tracking the number and priority of vaccine recipients, where and by whom vaccinations will be given, a distribution plan for ensuring that vaccine and necessary equipment and supplies are available at all points of distribution in the community, the security and logistical support for the points of distribution, and the training requirements for involved personnel.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Address vaccine security issues, cold chain requirements, transport and storage issues, and biohazardous waste issues in the operational plan.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Address the needs of vulnerable and hard-to-reach populations in the operational plan.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Document with written agreements the commitments of participating personnel and organizations in the vaccination operational plan.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Inform citizens in advance about where they will be vaccinated.

Antiviral Drug Distribution and Use [HHS Supplement 7. Preparedness Goal 6—Decrease the time needed to provide countermeasures and health guidance to those affected by threats to the public’s health.]

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Develop state-based plans for distribution and use of antiviral drugs during a pandemic via the Strategic National Stockpile (SNS), as appropriate, to healthcare facilities that will administer them to priority groups. Establish methods for monitoring and investigating adverse events.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Test the operational plan that addresses the procurement, storage, security, distribution, and monitoring actions necessary to assure access to these treatments during a pandemic.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Ensure the jurisdiction has a contingency plan if unlicensed antiviral drugs administered under Investigational New Drug or Emergency Use Authorization provisions are needed.

Community Disease Control and Prevention (including managing travel-related risk of disease transmission) [HHS Supplements 8 and 9. Preparedness Goal 6—Decrease the time needed to provide countermeasures and health guidance to those affected by threats to the public’s health.]

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Exercise the jurisdiction’s operational plan to investigate and contain potential cases or local outbreaks of influenza potentially caused by a novel or pandemic strain.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Exercise the jurisdiction’s containment operational plan that delineates procedures for isolation and quarantine, the procedures and legal authorities for implementing and enforcing these containment measures (such as school closures, canceling public transportation, and other movement restrictions within, to, and from the jurisdiction) and the methods that will be used to support, service, and monitor those affected by these containment measures in healthcare facilities, other residential facilities, homes, community facilities, and other settings.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Ensure the jurisdiction has exercised the operational plan to implement various levels of movement restrictions within, to, and from the jurisdiction.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Inform citizens in advance about what containment procedures may be used in the community.

Public Health Communications [HHS Supplement 10. Preparedness Goal 4—Improve the timeliness and accuracy of communications regarding threats to the public’s health.]

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Assess readiness to meet communications needs in preparation for an influenza pandemic, including regular review, exercise, and update of communications plans.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Plan and coordinate emergency communication activities with private industry, education, and non-profit partners (e.g., local Red Cross chapters).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Identify and train lead subject-specific spokespersons.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Provide public health communications staff with training on risk communications for use during an influenza pandemic.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Develop and maintain up-to-date communications contacts of key stakeholders and exercise the plan to provide regular updates as the influenza pandemic unfolds.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Implement and maintain, as appropriate, community resources, such as hotlines and Web site, to respond to local questions from the public and professional groups.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Ensure the provision of redundant communication systems/channels that allow for the expedited transmission and receipt of information.

Workforce Support: Psychosocial Considerations and Information Needs [HHS Supplement 11. Preparedness Goal 6—Decrease the time needed to provide countermeasures and health guidance to those affected by threats to the public’s health.]

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Develop a continuity of operations plan for essential health department services, including contingency planning for increasing the public health workforce in response to absenteeism among health department staff and stakeholder groups that have key responsibilities under a community’s response plan.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Ensure availability of psychosocial support services (including educational and training materials) for employees who participate in or provide support for the response to public health emergencies such as influenza pandemics.

continued

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none">• Develop workforce resilience programs and ensure readiness to deploy to maximize responders' performance and personal resilience during a public health emergency.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none">• Assure the development of public health messages has included the expertise of behavioral health experts (see Supplement 10).

Business Continuity Planning in the Event of an Influenza Pandemic: A Reference Guide

The newest threat facing AMWA members is the possibility of an influenza pandemic caused by H5N1 – an avian strain with pandemic potential. According to the World Health Organization (WHO), concern about an influenza pandemic is real and recurrent but still rare. However, for eight years WHO and other health experts have been monitoring H5N1-- a particularly severe strain of influenza virus.

Influenza pandemics happen when a new viral subtype emerges that has not previously circulated in humans. H5N1 has infected humans but only those in close contact with infected birds. A fully contagious virus that could be passed from human to human has not yet emerged although the possibility exists.

The public health community and the federal government are taking the threat very seriously. Their unease is based on the continued and expanded spread of the highly pathogenic - and now endemic - avian H5N1 virus across eastern Asia and other countries. The H5N1 virus has raised concerns about a potential human pandemic because:

- It is especially virulent,
- It is being spread by migratory birds,
- It can be transmitted from birds to mammals and in some limited circumstances to humans, and
- Like other influenza viruses, it continues to evolve.

Business Continuity Planning Assumptions

The North American Electric Reliability Council (NERC) has developed ten parameters for purposes of business continuity planning for an influenza pandemic. Many, if not all, of the assumptions appear appropriate for AMWA members. For your reference the assumptions are listed below followed by a checklist of possible actions. (Please remember these are not predictions but assumptions you could use for situational planning.)

1. The timing of the outbreak of a pandemic is uncertain and depends on many factors.
2. Once human-to-human transmission begins, the disease will spread very rapidly around the world within three to eight weeks.
3. Attack rate for the general population is expected to be in the range of 25 percent and these people would be very ill for up to a week.
4. Absentee rates for employees may be in the range of 35 percent for the duration of the pandemic due to illness and other factors such as needing to take care of family members. The pandemic could last for up to 6 months. Absentee rates will not be uniform across an

organization and will be caused by employee illness as well as family care issues, inability to get to work, etc.

5. Persons who contract the virus are not expected to contract the virus a second time due to a build up of immunity. However, if the virus mutates, recurrences for the same individual would be possible.

6. Personnel will need to be managed differently to conduct essential business processes and to minimize the spread of the virus.

7. Not enough anti-viral medicines or vaccines will be available for the entire population. There may be none in the early stages and then limited quantities for select populations. Anti-viral medicines, such as Tamiflu, present a variety of difficult issues such as availability, effectiveness against specific virus strains and dosage levels for pre-infection prevention as compared to post-infection treatment.

8. A pandemic will strike in at least two waves, each lasting six to eight weeks. The first wave will peak in three to four weeks. The second wave will be three to six months after the first and will likely be stronger than the first. There may also be a third wave with characteristics similar to the second.

9. It will be important to provide accurate and timely information distribution to employees, labor organizations and government before and during the pandemic.

10. Interdependencies with other sectors as well as contractors and suppliers will be severely tested during an influenza pandemic.

Pandemic Influenza Checklist

The following checklist is intended to provide utility management with “food for thought” when considering what steps might be warranted in light of the current information on a potential pandemic. The checklist is not a cookbook but identifies specific activities utilities could use to prepare. The list was culled from a variety of resources including CDC, WHO, NERC, Business Roundtable, etc.

The Checklist is divided into six key areas:

- I. Develop Plans
- II. Develop Policies
- III. Conduct Training, Drills and Exercises
- IV. Provide for Protective Equipment and Prepare Facilities
- V. Prepare Response Actions
- VI. Maintain Awareness and Communication Channels

Pandemic Influenza Checklist

Key Actions	Status		
I. Develop Plans	Completed	In Progress	Not Started
1) Develop appropriate response plans and procedures including:			
a) Provide for the recognition of the threat, and appropriate response levels.			
b) Identify critical functions of the organization that must be kept in operation.			
c) Identify functions of the organization that can be suspended.			
d) Define the roles and responsibilities of employees, labor organizations, staff, supervisors, managers, and staff medical personnel during a pandemic.			
e) Develop an emergency communications plan that includes key contacts, back-ups, medical contacts, communication chains and processes to track and communicate employee status.			
f) List(s) of staff critical to basic functionality of the organization.			
g) Put in place plans to have an increased number of employees work from home. Ensure I.T. systems infrastructure can support this action.			
h) Plans and procedures should include providing support and assistance from human resource staff to employees' families.			
2) Consider the need to separate the workforce to establish independent locations, and/or preserve a "clean" site.			
3) Consider expanding the use of teleconferencing and videoconferencing to limit the frequency of meetings and other types of face-to-face contact.			
4) Consider security issues and the limitations law enforcement agencies will face during influenza pandemic.			
5) Consider developing joint operational plans with service providers, suppliers and key customers.			

6) Evaluate potential financial and budget impacts of interrupted operations, reduced revenues as well as unusual supply, material and personnel costs.			
7) Evaluate potential insurance costs for increased medical costs.			
8) Consider the need to send home non-critical staff.			
9) Consider the need and conditions for more extreme measures such as sequestering on-site critical staff.			
10) Identify key customers with specific needs including first responders and hospitals.			
11) Identify critical inputs necessary to maintain safe water, i.e. chlorine, treatment chemicals.			
12) Delineate accountability and responsibility, capabilities, and resources for key employees engaged in planning and executing specific components of the operational plan. Assure that the plan includes timelines, deliverables, and performance measures.			
13) Formalize agreements with neighboring systems and address communication, mutual aid, and other needs.			
II. Develop Policies	Completed	In Progress	Not Started
1) Develop/update staff travel policy, including possible provisions for quarantine after returning from an area where an outbreak has occurred. This would apply to work and non-work related travel.			
2) Develop/update meeting policy.			
3) Develop a visitor's policy including a sign-in process that is to be implemented in the event of an employee health incident or threat.			
4) Consult with health authorities to update confidentiality policies to manage staff that potentially has been exposed, to allow effective exposure tracking to be			

completed.			
5) Develop/update telecommuting policy for office staff.			
6) Develop/update policies for employee compensation and sick leave absences unique to a pandemic.			
7) Develop/update workforce deployment policies regarding teams and crews working together and the potential need to keep employees separate.			
III. Conduct Training, Drills and Exercises	Completed	In Progress	Not Started
1) Periodically test and verify preparedness plans and procedures via a simulation exercise, tabletop exercise or process walk through.			
2) Test the IT infrastructure to verify its capability to perform under pandemic conditions (more employees working from home, increased teleconferencing and videoconferencing).			
3) Train and prepare ancillary workforce, i.e. contractors, employees in other job titles/descriptions, retirees.			
IV. Provide for Protective Equipment and Prepare Facilities	Completed	In Progress	Not Started
1) Contract with a company that will clean/disinfect computer equipment, common areas, work stations, etc.			
2) Provide each workstation with a disinfecting agent in a spray bottle, a package of paper towels, and a package of latex gloves.			
3) Determine what personal protective equipment will be effective and consider acquiring sufficient quantities (masks, gloves and gowns). Availability of critical personal protective equipment may approach zero during the onset of influenza pandemic. Some masks deliver better speech clarity than others. Some masks are designed to protect the person			

wearing the mask; other masks protect exposure of others from the person wearing the mask.			
4) If on-site cafeteria, stock up on water, beverages, and food, especially items that require heating.			
5) If appropriate, isolate the building, post signs stating temporary quarantine at all exits, and restrict electronic card access to critical staff.			
V. Prepare Response Actions	Completed	In Progress	Not Started
1) By Employees			
a) When an employee has contracted or suspects that they have contracted a virus or have been exposed to a virus, the employee is to seek medical attention and advise his/her supervisor.			
b) Supervisor contacts the company medical or occupational health nurse to follow up on the employees.			
c) Implement a process such that all employees/visitors to critical facilities are subject to an appropriate screening questionnaire to aid in identifying whether or not they are a potential risk, (i.e. have you visited a high risk location in the past week?). Post screening questionnaire(s) at all entrances.			
d) If appropriate, contract a cleaning service/agency and request the disinfection of the affected employees workstation and shared work areas as well as all shared equipment and facilities (including washrooms, kitchen areas and meeting rooms). Assess the need for separation of staff.			
e) Close non-critical common areas, such as exercise room, or even cafeteria. If the pandemic has resulted in a “lock down” in critical operating functions (control rooms), determine how employees will be accommodated.			
f) Assess the need to direct staff to maintain an appropriate distance from each other.			

g) Assess the need for complete separation of staff including the activation of any backup facilities.			
h) Assess the need to vacate non-critical staff from the site.			
i) Provide regular communication to all staff of the latest medical advisories and recommend adherence to all suggested actions.			
j) Provide on-site critical operations staff with personal protective equipment.			
k) Notify all staff on site to leave their full name, employee ID, and after-hours contact number(s), including numbers where they may be potentially located, such as parents, other family etc. Instruct all employees when they will be allowed to return to work, i.e. the following business day, not until notified etc.			
l) Have visitors provide their home and site/company as well as an after-hours contact number(s) for follow-up.			
2) By Medical Resource			
a) Liaise with senior management			
b) Provide regular communication to all staff on the latest health advisories and recommendation adherence to all suggested actions.			
c) Provide regular communication to all staff on any additional pandemic specific requirements or information.			
d) Advise that the antibacterial waterless hand cleaner, antibacterial cleansers, and/or wipes will be placed at key communal areas (washrooms, kitchens, and workstations).			
e) Advise any exposed employee to contact their doctor and to adhere to the advice given.			
f) Advise any exposed employee to contact their supervisor immediately.			
g) Advise the exposed employee not to return to work until directed to do so by their supervisor and to follow policies in place.			
h) Request exposed employees to keep			

supervisors informed of their condition.			
VI. Maintain Awareness and Communication Channels	Completed	In Progress	Not Started
1) Medical resource should monitor for health threats via official bulletins or web sites.			
2) Provide employees, labor organizations, staff and decision makers with the most up-to-date information available by documenting specific characteristics of the contagion, such as the following:			
a) Mechanisms(s), speed, and ease of transmission by the contagion is spread, and mode(s) of transmission, such as touch, airborne, etc.			
b) Time the contagion remains active on surfaces such as door handles.			
c) Incubation period, the time to exhibit symptoms, and maximum contagious period.			
d) Expectations of employees, supervisors and managers to help reduce the risk of spreading the disease.			
3) Initiate a business continuity planning process to establish accountabilities, and identify the criticality of operations including mutual interdependencies, the loss of which would have a direct and serious detrimental impact on the public.			
4) Identify those functions critical to continued operations, and identify the people needed to fill those positions. Pre-screen critical staff to ensure their willingness to receive an antiviral vaccine given the side effects that may occur. Involve human resources staff as well as established mechanisms such as joint health and safety committees early.			
5) Communicate early and regularly with staff, and include recommendations to minimize potential transfer of infectious agents within company facilities, so that these measures can be practiced and internalized.			
6) Collaborate with the local public			

health unit or department on the enumeration of antiviral shot recipients for staff performing critical functions in the event of an influenza outbreak.			
7) Collaborate with local and/or state public health agencies and/or emergency responders to participate in their planning processes, share your pandemic plans, and understand their capabilities.			
8) Communicate with local and/or state public health agencies and/or emergency responders about the assets and/or services your facility could contribute to the community.			

Below are websites that may prove useful in keeping up to date on this issue:

<http://www.pandemicflu.gov>

http://www.who.int/csr/disease/avian_influenza/en

<http://www.cdc.gov/flu/avian/index.htm>

