# Action Plan AP 8A – Natural Event

# Flood

# AP Summary:

This Action Plan applies to flooding events. In general, these events occur with reasonable lead times, and it is possible to take proactive measures, as outlined below. Response and recovery can be time consuming during flood events, as they can involve loss of electrical power supply, damage of structures and equipment, disruptions of service, and injuries to utility personnel.

## Initiation and Notification

This AP should be initiated upon official notification of either a flood “watch” which is defined as a flood is possible in your area, or a flood “warning” which is defined as flooding is already occurring or will occur soon in your area. Such information will almost certainly be issued in the form of forecasts from the National Weather Service and other governmental agencies. Also initiate if actual flooding is discovered.

Notify

Water utility emergency response manager and or

Alternate Water utility emergency response manager

The water utility emergency response manager will make the decision to contact local response authorities to request possible assistance.

Links to specific River Forecast Centers can be found by clicking on the following website: <http://www.nws.noaa.gov/oh/hic/rfc.html>

The National Weather Service maintains 13 regional River Forecast Centers that are responsible for issuing flood forecasts synthesized from hydro-meteorological data. These centers offer current river conditions and observations, as well as forecast and guidance for both major river and flash floods, hydrographs for gauging stations, and flood outlook potentials. Be aware that floods often occur without local precipitation as a result of precipitation upstream.

Flash flood guidance values can also typically be obtained via your local River Forecast Centers. These values show data suggesting the amount of rain necessary over 1, 3, and 6 hour periods that could cause flash floods.

While major floods can take several hours to days to develop, flash floods can take only a few minutes to a few hours to develop.

Notification phone numbers can be obtained from the Organization Contact List in the Appendices as well as from Section III.D of the Emergency Response Plan.

### Equipment Identified

Binoculars

Location of Equipment: (enter location of equipment)

This equipment is available to assist in the execution of this AP.

#### Specific Activities that will be performed: (the following is a list of activities with descriptions that should be executed in the event of a flood)

##### Assess the Problem. If a Flood Watch or Warning is received:

1. Contact local representative of National Weather Service for additional information on exact location and probable extent (stage) of flooding, relative to utility facilities.
2. Use site maps or other available information to assess location of all facilities for location in flood plain.
3. Prioritize pre-flooding activities on basis of flooding potential (in part, based on location).
4. If flooding has already occurred:
   1. Conduct site assessment from nearest safe location.
   2. Based on peak flood stage, predict and build inventory of equipment likely to be most affected.
   3. List equipment needed to restore water service when flood waters recede.

Flood damage is proportional to the volume and the velocity of the water. Floods are extremely dangerous because they destroy through inundation and soaking as well as the incredible force of moving water. High volumes of water can move heavy objects and undermine roads and bridges. Flooding can also facilitate other hazards such as landslides, or cause other hazards such as material hazard events

###### Isolate and Fix the Problem. The following steps should be taken in preparation for the event:

1. Activate Emergency Operations Center (EOC).
2. Assemble essential personnel and designate duties, such as:
   1. Elevate in-place or remove water-sensitive equipment within structures to prevent flood damage.
   2. Anchor fuel tanks.
   3. Elevate electrical system components.
   4. Take appropriate flood-proofing steps (sandbags or other).
   5. Install sewer backflow valves.
   6. Flood-proof or elevate heating, cooling, and ventilating equipment.
   7. Assemble and stage mobile stand-by generators and auxiliary water pumps.
3. Notify neighboring utilities or other sources of emergency response support if manpower or equipment will be needed.
4. The [IO] is to notify customers, media, and state and local authorities that service may be disrupted and/or that demand reductions may be necessary.
5. Pre-test and/or initiate emergency communications plan
6. Consider shut down if flooding appears imminent.

Steps in advance of flooding obviously will be different than steps in reaction to flooding. Both may be needed for any one flooding event.

Flood water may have to be pumped out of facilities before utility equipment can be restored.

Decision to shut down must balance protection of utility equipment and maintenance of fire flows.

Monitoring. Observe the following recommended practices during the flood event:

1. Take pictures of the damage, both of buildings and their contents, for insurance claims.
2. Instruct Utility personnel to avoid floodwaters whenever possible.
3. If a vehicle stalls in rapidly rising waters, abandon it immediately and climb to higher ground. Vehicles can be swept away in two feet of water.
4. Stay out of any building if floodwaters remain around the building.
5. Avoid smoking inside buildings. Smoking in confined areas can cause fires.
6. Wear sturdy shoes. The most common injury following a disaster is cut feet.
7. Use battery-powered lanterns or flashlights when examining buildings. Battery-powered lighting is the safest and easiest, preventing fire hazard for the user, occupants, and building.
8. Look for fire hazards. There may be broken or leaking gas lines, flooded electrical circuits, or submerged furnaces or electrical appliances. Flammable or explosive materials may travel from upstream. Fire is the most frequent hazard following floods.
9. The WATER UTILITY EMERGENCY RESPONSE MANAGER or [IO] is to communicate with customers and the Local Emergency Planning Committee (LEPC) as to current conditions.

If it is moving swiftly, even water six inches deep can knock an individual off their feet. Many people are swept away wading through floodwaters, resulting in injury or death. Floodwaters may still be rising. Staff may not be able to see on the surface how fast floodwater is moving or see holes and submerged debris.

Floodwaters often undermine foundations, causing sinking, floors can crack or break and buildings can collapse. Buildings may have hidden damage that makes them unsafe such as gas leaks or electric hazards.

Recovery and Return to Safety. Once floodwaters recede, the following may be of relevance:

1. Check insurance policy for procedures to recover losses, including the national Flood Insurance Program.
2. Inspect foundations for cracks or other damage.
3. Check power lines for damages
4. Arrange for alternate source of electrical power or fuel for diesel generators, sufficient for period of outage following flood. See AP-7 Power Outage.
5. Throw away all food that has come into contact with floodwaters.
6. Inspect, clean, rebuild, replace all affected equipment as necessary
7. Contact state and local authorities to determine if there are any restrictions on disposal of materials and debris removed from the site or if a temporary discharge permit (NPDES or other) is needed for the water pumped from tanks and other flooded structures.

More information can be found by clilcking on the following link:

<http://www.fema.gov/nfip>

Cracks and damage to a foundation can render a building uninhabitable.

See Action Plan AP-7 Power Outage

Contaminated floodwater contains bacteria and germs. Eating foods exposed to flood waters can make personnel very sick.

In the longer-term, mitigation against loss of life and property caused by flood events is principally accomplished before the events, through sensible floodplain management and regulation. This involves strategies to modify flooding and to modify infrastructure to reduce likelihood of damage.

Guidelines to a variety of flood-proofing and elevation methods are available from FEMA and NOAA.

Report of Findings. Assemble relevant personnel to review effectiveness of action plan and reinforce lessons learned.

## AP-8A Revision Dates