

Flood

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” (a flood is possible in your area), or a flood “warning” (flooding is already occurring or will occur soon in your area). The issuing of these is in the form of forecasts from the National Weather Service (NWS) and other governmental agencies. Also, initiate upon the discovery of actual flooding.

Notify

- Utility Manager or his/her designee

Management will make the decision to contact local response authorities to request possible assistance.

Links to specific River Forecast Centers (RFCs): <http://www.nws.noaa.gov/oh/hic/rfc.html>

The NWS maintains 13 regional RFCs 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 river and flash floods, hydrographs for gauging stations, and flood outlook potentials. Be aware that floods often occur without local precipitation due to precipitation upstream.

Flash flood guidance values are available via your local RFC. 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 are in the Organization Contact List in the Appendices of the ERP.

SPECIFIC ACTIVITIES

I. **Assess the Problem**

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.

If a Flood Watch or Warning:

1. Contact local representative of NWS 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:
5. Conduct site assessment from nearest safe location
6. Based on peak flood stage, predict and build inventory of equipment likely to be most affected
7. List equipment needed to restore water service when floodwaters recede.

II. **Isolate and Fix the Problem**

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

The following steps are suggestions to prepare for the event:

1. Activate Emergency Operations Center (EOC).
2. Assemble essential personnel and designate duties, such as:
 - a. Elevate in-place or remove water-sensitive equipment within structures to prevent flood damage.
 - b. Anchor fuel tanks.
 - c. Elevate electrical system components.

- d. Take appropriate flood-proofing steps (sandbags or other).
 - e. Install sewer backflow valves.
 - f. Flood-proof or elevate heating, cooling, and ventilating equipment.
 - g. Assemble and stage mobile stand-by generators and auxiliary water pumps.
3. Notify neighboring utilities or other sources of emergency response support if the need for additional work force or equipment arises.
 - a. The Virginia Water/Wastewater Agency Response Network (VA WARN) is an excellent source to fill these requests.
 4. Notify customers, media, and state and local authorities that a disruption in service and/or that demand reductions may be necessary.
 5. Pre-test and/or initiate emergency communications plan
 6. Consider shutdown if flooding appears imminent.

III. **Monitoring**

If it is moving swiftly, even water six inches deep can knock an individual off their feet. Many people receive injuries or are killed wading through floodwaters. 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

Observe the following recommended practices during the flood event:

1. Take pictures of the damage, of both 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. Floodwaters can move vehicles in as little as 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 and gloves. The most common injuries following a disaster involve cuts on the feet and hands.

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 utility manager or his/her designee is to communicate with customers and the Local Emergency Planning Committee (LEPC) as to current conditions.

IV. **Recovery and Return to Safety**

You can find more information here: <http://www.fema.gov/nfip>

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

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

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

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 Emergency Response Plan or Extended Power Outage Plan.
5. Inspect, clean, rebuild, replace all affected equipment as necessary
6. 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..

V. **Report of Findings**

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