

LEVEE FAILURE

DEFINITION – A levee is a human-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide protection from temporary flooding (Interagency Levee Policy Review Committee, 2006). Levee failures or breaches occur when a levee fails to contain the floodwaters for which it is designed to control or floodwaters exceed the height of the constructed levee. 51 of Pennsylvania's 67 counties have been identified as having at least one levee (FEMA Region III, 2009).



MITIGATION ACTIONS FOR RESIDENTS

- ▶ **Personal Preparedness** – It is important to plan for disasters. Families may not be together or at home. Consider completing the following to be prepared.
 - **Family Emergency Communication Plan** (FEMA) serves as a comprehensive checklist for household disaster preparedness. [FEMA Family Emergency Communication Plan Checklist](#)
 - **Family Disaster Plan** (American Red Cross) – Communication networks and electricity could be disrupted. Planning in advance will help ensure that all the members of your household know how to reach each other and where to meet up in an emergency. [American Red Cross Family Disaster Plan Template](#)
 - **Emergency Kits** – It is always a good idea to have an emergency kit on hand. Consider basic items as well as special needs.
 Build a Kit (Ready.gov) [ready.gov Build-a-Kit](#)
 Survival Kit Supplies (American Red Cross) [American Red Cross Survival Kit Supplies Checklist](#)
- ▶ **Emergency Alerts and Warnings** – To receive emergency alerts and warnings, refer to the following websites, mobile apps, and other resources.
 - **American Red Cross Mobile Apps** (Apple App Store, Google Play, or text to “90999” [Mobile Apps - The American Red Cross](#)
 - **South Central Alert** – This service allows residents and businesses in an eight county area to be notified of an emergency situation and important alert messages in a variety of ways, including on their cell phones, home and work phones, by text messaging and e-mail. [South Central Alert - Sign Up](#)
 - Monitor police news feeds, weather, and news on social media or websites. Receiving periodic updates is vital.
- ▶ **Awareness** – Property owners should educate themselves as to whether or not they are located in levee protected area.
- ▶ **Insurance** – Possession of an insurance policy provides rapid payment to the owner of claims for property damage and gives those with insurance the ability to recover much faster than those

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seeking to piece together other forms of assistance, which, in the long run, will not make up the entirety of losses.

- ▶ **Structure Elevation** – By raising a structure above the expected flood level, flood damages can be prevented. Behind an accredited levee, if a flood greater than the one percent annual chance flood occurs, there could be some damage to such elevated properties but considerably less than if the structures had been at the base flood elevation (BFE). In the SFHA, buildings are elevated to the BFE in the case of new construction, substantial improvements are made to existing buildings, and repairs are made to substantially damaged buildings to comply with the NFIP (FEMA, 2000)
- ▶ **Flood Proofing** – Moving key or essential equipment from low-lying elevations within a structure to areas that would not be subject to flooding. Having building support systems such as computers, heating and air-conditioning units, and electrical stations located in the basement areas puts the functionality of the entire building at risk.



MITIGATION ACTIONS FOR MUNICIPALITIES

- ▶ **Adopt the York County Hazard Mitigation Plan** by resolution or develop and implement a municipal hazard mitigation plan. [York County Hazard Mitigation Plan](#)
- ▶ **Prepare a Continuity of Operations Plan** to ensure that essential functions continue to be performed under a broad range of circumstances, protecting residents and minimizing business interruption. Consider what capital improvements are needed to adequately protect business or properties. [FEMA Continuity of Operations Brochure](#)
- ▶ **Prepare an Emergency Operations Plan** which describe who will do what, as well as when, with what resources, and by what authority – before, during, and immediately after an emergency. [FEMA Guide for All Hazards Emergency Operations Planning Guide](#)
- ▶ **Coordination** – Develop pre-disaster Memorandums of Agreements or Memorandum of Understanding with adjacent jurisdictions. Build partnerships (neighborhoods, emergency management/first responders, businesses, utility service providers, and local government agencies to strengthen response and recovery.
- ▶ **Public Education and Outreach** – Educate residents regarding risk and impact of hazards, how to prepare and protect themselves and their property. Facilitate funding for mitigation measures and technical assistance programs that address measures that citizens can take. Raise awareness of levee issues, facilitate cooperation, and provide a forum for the exchange of information.
- ▶ **Vulnerability Analysis** – Conduct a vulnerability analysis to enhance mitigation and inform development. Determine whether critical or essential facilities require mitigation and retrofitting such as wet or dry flood proofing.

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- ▶ **Land-Use Planning and Zoning** – Although the NFIP requires regulation of the land within the SFHA, it does not require flood-prone communities to regulate areas beyond the one percent annual chance flood level or areas behind levees even though both areas face flood risks. When a community’s land-use plans treat all areas behind a levee the same way even though some areas are substantially below the BFE and would be fully inundated in the event of a major levee failure, these land-use plans ignore the risk in placing occupants of the lower areas at an economic and safety disadvantage.
- ▶ **Early Warning Systems** – Advance information about potential failures of levees or dams can significantly reduce the consequences should failures occur.
- ▶ **Risk Mapping** – Accurate mapping of risks provides those living or working in flood-prone areas, in front of or behind levees, with the information necessary to make rational decisions in developing their personal or corporate flood risk management strategies.
- ▶ **Interior Drainage Systems** – Consider interior drainage systems to ensure that water “trapped” behind the levee during a storm will not create internal flooding.