FACT SHEET

Preparing for Floods at K-12 Schools and Institutions of Higher Education

READINESS AND EMERGENCY MANAGEMENT FOR SCHOOLS TECHNICAL ASSISTANCE CENTER

According to the National Oceanic and Atmospheric Administration, flooding occurs when water overflows onto land that is normally dry. There are several potential causes of flooding, including heavy rains, waves coming onshore, the melting of snow, or dams breaking. Floods can happen within minutes or over a long period and may last for days, weeks, or longer. As reported by the Federal Emergency Management Agency (FEMA), 99 percent of U.S. counties have experienced a flood since 1998 at some point; therefore, every part of the country is susceptible to flooding, regardless of topography or location, including coastal, urban, rural, and mountainous areas.

Floods can have a devastating impact on institutions of higher education (IHEs), K-12 schools, and districts, affecting school infrastructure, equipment, and supplies, which can lead to costly repairs. FEMA estimates that a single inch of floodwater can cause up to $25,000 in damage. Flooding can also contaminate school drinking water and lead to power outages, as well as negatively impact safe routes to school, as flooded roads and bridges can make it difficult for students and staff to safely travel to and from campus, which can cause interruptions in education and affect student learning. Finally, the emotional toll of experiencing a flood can have a significant impact on students and staff and may require education agencies to seek additional support and resources for recovery and rebuilding. Education agencies should consider these significant risks and develop a Flood Annex to mitigate the risks of floods and ensure the safety of their students and staff.

Develop a Flood Annex to Strengthen Your Emergency Operations Plan

A high-quality emergency operations plan (EOP) is a comprehensive document that outlines procedures and protocols for responding to various emergencies. The six-step planning process described in the *Guide for Developing High-Quality School Emergency Operations Plans*, *The Role of Districts in Developing High-Quality School Emergency Operations Plans*, and the *Guide for Developing High-Quality Emergency Operations Plans for Institutions of Higher Education* can be used by schools, districts, and IHEs to plan for flood events.

A Flood Annex is a specific component of an EOP that focuses exclusively on flood events. It provides detailed procedures, personnel, and resources for responding to, mitigating the effects of, protecting the school/campus community from, and recovering from floods. This includes goals, objectives, and courses of action for before, during, and after a flood. Facility managers and custodial staff, transportation directors and bus drivers, administrators, information technology specialists, environmental health and safety personnel, emergency managers, and local floodplain administrators are particularly important to include on the planning team for Flood Annex development. Walk through the approaches below with those key stakeholders as you develop a Flood Annex for your EOP.

Evaluate Flood Vulnerability

Local agencies, such as the city or county emergency management office, contain information on flooding vulnerability. Communities that participate in the National Flood Insurance Program (NFIP) are required to adopt a flood hazard map. These maps, which are updated as new data and studies become available, are excellent sources of data for planning teams. Contact the local emergency manager or floodplain administrator for access. NFIP participating communities also have a local hazard mitigation plan, which contain the geographic areas affected by floods, their strength or magnitude and duration, a history of previous occurrences, and the possibility of future events. Historical flood databases and other GIS/mapping platforms from state or federal agencies can also provide information. The planning team can use these data sources to evaluate the education agency's vulnerability to flood and determine whether to create a Flood Annex in the EOP.

Establish Mitigation Strategies

Mitigation involves eliminating or reducing the loss of life and property damage by lessening the impact of an emergency. Mitigation activities may be selected based on data collected from the site assessment or subsequently created facility improvement plan. Flood mitigation strategies can include constructing flood-resistant infrastructure, installing flood barriers, and in some cases elevating structures above potential flood levels. Improving drainage systems, restoring natural wetlands, and implementing land use planning to avoid building in high-risk areas are also crucial.

Identify Evacuation Routes

Planning teams should review evacuation routes outlined in the Evacuation Annex to ensure that they accommodate for flooding incidents. They can develop new evacuation routes by mapping out the school's layout, identifying potential low-lying safe areas, and determining the best path to higher ground or an evacuation site. A backup route should also be established if the planned route cannot be followed. Evacuation routes should be determined in coordination with local emergency medical services personnel and flood relief agencies to ensure routes are viable and safe and not being used by first responders.

Stockpile Equipment

Education agencies can stockpile both emergency supplies and protective equipment such as first aid kits, non-perishable food, clean water, flashlights, and

batteries. If students are not dismissed and must remain in school, these essential supplies can be used while they remain at school. Additionally, having sandbags, plastic sheeting, life jackets, ropes, and other safety equipment on hand can help with evacuations, prevent flood damage, and related injuries. Consider where equipment and supplies are stored, such as high off the floors, so that they are protected from a flood.

Coordinate Training and Outreach Efforts

To reduce the risk of harm in the event of a flood and facilitate a smooth response, staff and students must be educated about flood safety and procedures. Flood safety preparedness can be integrated into science, health, and Teen CERT curricula to teach students how floods occur and what to do to mitigate/respond to/recover from them. Schools can conduct outreach to educate parents on flood safety by organizing informational sessions, disseminating brochures, and sharing resources through newsletters and/or school websites.

It is important that students and staff receive training before a flood emergency to ensure they understand their roles and take necessary precautions to protect themselves and others. The knowledge gained from training can prevent panic and confusion.

Develop a Communications and Warning/Notification Annex

All stakeholders, including community partners, students, staff, and parents, should be aware of the processes and procedures for floods through regular communication. This should be outlined in a Communications and Warning/Notification Annex, as well as potential communication channels, roles and responsibilities, and protocols for disseminating information and updates. It also delineates how to effectively communicate with different stakeholders.

Conclusion

Floods are a substantial natural hazard to schools across the United States, causing extensive damage and disruptions in learning. It is essential for education agencies to develop a comprehensive Flood Annex as part of their EOP. This annex should include detailed procedures for flood preparation, mitigation, protection, response, and recovery, ensuring all stakeholders understand their roles. By developing a Flood Annex, education agencies can enhance their preparedness efforts, ensure the safety and well-being of their students and staff, and minimize damage during flood events.

Resources

- Flood Maps, Web Page (U.S. Department of Homeland Security [DHS], FEMA)
- Hurricane and Flood Mitigation Handbook for Public Facilities, Handbook (DHS, FEMA)
- Food and Water Safety During Power Outages and Floods, Publication (U.S. Department of Health and Human Services, Food and Drug Administration)
- Planning for Natural Hazards That May Impact Students, Staff, and Visitors, Web Page (REMS TA Center)

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