
Flood Resilience

Goal: Strengthen flood resiliency by anticipating, preparing for, responding to, and recovering from flood events with minimum impact to the well-being of the community, local economy, and environment.

Background:

Weston's historic settlement pattern is along the West River valley, taking advantage of the gentle terrain, rich soils, and proximity to the river. Much of the area where human activity has altered the landscape is within the West River floodplain and as a result increased the community's vulnerability to flooding over time. This is of particular concern in the village which has a concentration of civic, commercial, and cultural facilities. The mountainous topography on either side of the valley also includes streams that can quickly overbank during heavy rain events causing flooding. Weston has experienced several significant flood events, the most notable recent ones being the July 2023 flood and Tropical Storm Irene in 2011.

The impacts of flooding go beyond damage to buildings and roads and also affect community well-being. For example, the July 2023 flood led to the closure of the only gas station and market in town because of flood damage. As a result, residents have needed to travel to adjacent towns for shopping and services, but this has also taken away a place where community members were able to gather and socialize. There are also significant municipal costs associated with repairing town roads following severe weather events. While state and federal funding is available to assist in repairs if there is a declared disaster, municipalities often bear the full cost of localized flood events.

Weston is susceptible to two types of flooding: inundation flooding and fluvial erosion. Inundation flooding occurs when there is a rise in water levels that results in a flood event. Fluvial erosion occurs when streambanks are eroded by the movement of rivers and streams during storm events. Areas vulnerable to inundation flooding are identified by the Federal Emergency Management Agency (FEMA) on Flood Insurance Rate Maps. Fluvial erosion hazard areas have been mapped by the Vermont Agency of Natural Resources (ANR).

Flood resilience refers to a community's ability to anticipate, prepare for, respond to, and recover from a significant flood event with minimum impact to the well-being of the community, local economy, and environment. This chapter identifies areas of risk and vulnerability in Weston and strategies for better preparing for future flood events. Weston has an adopted Local Hazard Mitigation Plan (LHMP), last updated in 2022, that address flood hazards and mitigation actions in more detail as well as other natural hazards the community needs to plan for. The Town Plan incorporates the Weston LHMP by reference. Additional information on is available at <http://floodready.vermont.gov/>.

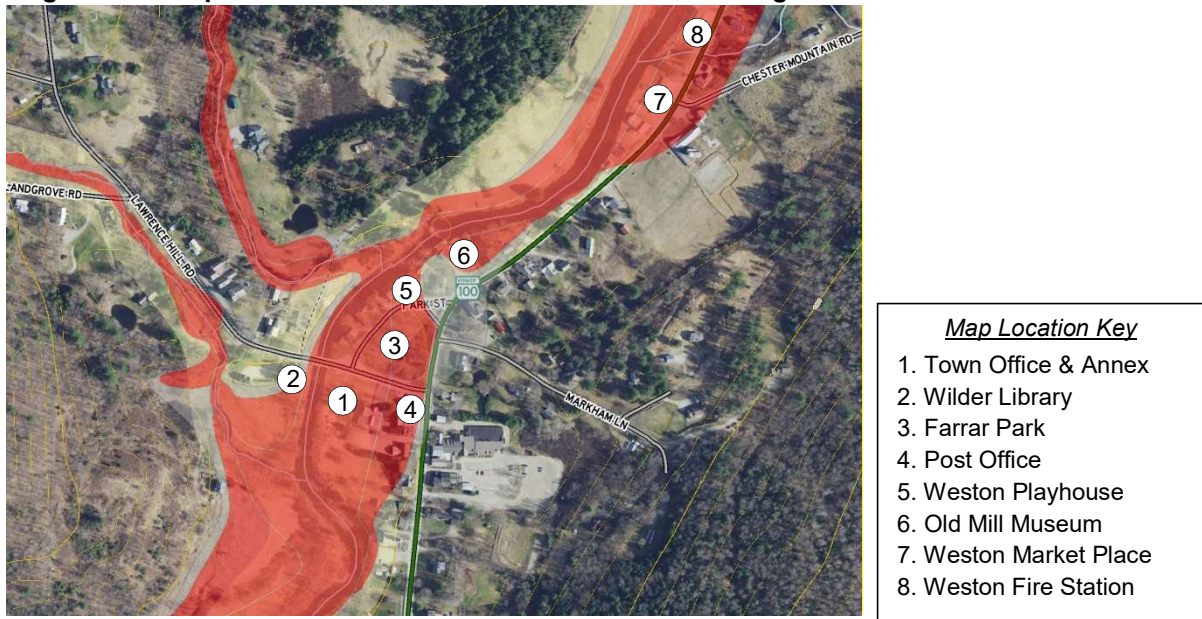
Inundation Flood Hazard Areas:

Inundation flooding occurs when there is a rise in water levels in a stream channel or other waterbody that results in water spilling out onto the floodplain. This type of flooding can result from heavy rainfall or snowmelt, or when a stream channel is blocked by ice or debris. Areas vulnerable to inundation flooding have been mapped by FEMA and are referred to as Special Flood Hazard Areas. This include the *floodway*, which is the channel of a watercourse and the adjacent area needed to convey floodwaters, and the *flood fringe*, which is the remaining area of the floodplain.

The Natural Resources Town Plan Map shows the location of Special Flood Hazard Areas (SFHA) in Weston. The entire length of the West River is located within the SFHA. Other waterways in the SFHA include Greendale Brook, and the unnamed streams along Route 100 east of Route 155, Trout Club Road, and Parker Lane and Moses Pond Road. According to FloodReady Vermont, there are 39 buildings in the SFHA, most of which are in the village area. This includes prominent civic and cultural buildings and sites such as the Town Office, Town Office Annex (currently used by The

Little School), Wilder Library, Weston Fire Station, Weston Playhouse, and Farrar Park. The map below of the village shows the location of the SFHA in red and the mapped River Corridor in yellow.

Figure X-X: Map of SFHA and River Corridor in Weston Village



Source: FloodReady Vermont

For property owners to be eligible for insurance through the National Flood Insurance Program a town must adopt and administer flood hazard regulations for designated Special Flood Hazard Areas. Weston has adopted these regulations as part of its zoning bylaws and the Zoning Administrator and Development Review Board are responsible for administering the regulations. The zoning bylaws identify areas that are unsuitable for their intended purposes because of flood hazards, restrict or prohibit uses that are dangerous to health, safety, or property in times of flood, and require that uses vulnerable to flooding be protected against flood damage.

Fluvial Erosion Hazard Areas:

A significant portion of flood damage in Vermont occurs outside of the FEMA mapped floodplain areas and along smaller upland streams, as well as along road drainage systems that fail to convey the amount of water they are receiving. This type of flooding is referred to as fluvial erosion. If a stream cannot spill out of its banks, the power of the trapped water increases and the channel digs down or cuts out further to the sides. Where roads, bridges, culverts, or buildings are nearby, these adjustments can cause significant and costly damage. Property owners in fluvial erosion hazard areas outside of FEMA SFHAs are not required to have flood insurance and may be less aware of their flood vulnerability.

The Vermont ANR released updated River Corridor maps in 2019 showing the area needed to address fluvial erosion hazards. A River Corridor is the area that provides the physical space that a river or stream needs to express its energy and meander without having to dig down into or cut out to the sides of a stream bed. The River Corridor includes a 50-foot buffer on both sides of the meander belt to prevent disturbance and allow for bank stabilization.

Weston has areas of mapped River Corridor as shown on the Natural Resources Town Plan Map. There is significant overlap between the River Corridors and SFHAs, particularly along the West River and Greendale Brook. Portions of Jenny Coolidge Brook and the unnamed stream adjacent to Trout Club Road are identified as River Corridors but are not within the SFHA. It is important to note that fluvial erosion can occur outside of River Corridors as well, in particular along road drainage systems. According to GIS mapping analysis by the Windham Regional Commission, there are 49 buildings within River Corridors and 20 of these buildings are also in the SFHA. Most of the

structures within River Corridors are located in the village and north along the West River to Chester Mountain Road.

Towns can adopt fluvial erosion hazard regulations that apply to River Corridors to mitigate the impacts of this type of flooding. Typically, regulations address the types of structures and land use activities permitted within the overlay district and may include vegetation and buffer requirements along rivers and streams. Municipalities with adopted River Corridor regulations are eligible for the maximum Emergency Relief and Assistance Fund State match in the event of a declared disaster. Weston does not have fluvial erosion hazard regulations at this time.

Addressing Flood Resilience:

There are several steps a community can take to reduce the risks associated with flooding, many of which Weston has already implemented or is pursuing. The following are the four main strategy areas for towns to improve flood resilience:

- **River Corridors:** Conserve land in flood hazard and flood storage areas and discourage further development in vulnerable areas. Weston benefits from having much of the upland forest in the community protected in National or State Forests. There may be opportunities to conserve additional upland forests and land along the West River that naturally stores floodwaters, in particular immediately north of the village.
- **Vulnerable Settlements:** Provide information to residents and property owners in vulnerable areas on how to reduce future flood risks by completing floodproofing measures to their homes and businesses. This includes elevating heating and HVAC systems, utilities, and propane tanks, and converting basements to flood-vented flood storage.
- **Safer Areas:** Plan for and support development in preferred safer areas in the community that are less vulnerable to flood risks. The Land Use chapter identifies proposed land uses and takes into consideration flood risks in identifying areas for future growth.
- **Watershed-Wide:** Participate in watershed-wide planning efforts, such as Vermont ANR basin planning, to address flood resiliency and implement stormwater management techniques that reduce flood risk. Towns can consider restricting development on steep slopes and adopting stormwater management and erosion control standards for new development.

Weston has taken several steps in response to the most recent flood event in July 2023. The Selectboard has appointed a Flood Resilience Committee to guide the Selectboard in spending funding from the State's Municipal Technical Assistance Program. The Town will be hiring a consultant to evaluate the upstream and downstream effects of removing the Old Mill Dam and increasing the hydraulic capacity of the Lawrence Hill Road bridge over the West River. The study will also evaluate possible additional flood mitigation measures.

Separate from this study, a Corridor Plan for the northern portion of the West River is expected to be completed in September 2024 by the Vermont Department of Environmental Conservation. The Plan will identify additional flood and fluvial mitigation projects in Weston. The Town has also begun to have conversations with the towns of Londonderry and Jamaica to discuss flood resiliency projects within the three communities.

The 2022 Weston Local Hazard Mitigation Plan identifies several mitigation activities to address flooding and fluvial erosion hazards:

- Form an advisory committee to make recommendations to the Selectboard on costs, benefits, and possible funding sources to minimize flood impacts to the Weston Fire Station, including upgrades to the existing station, building a new station, and improving coordination or consolidating with other local Fire Departments. A similar action step is included in the Town Government, Community Facilities, and Services & Recreation Chapter of the Town Plan.
- Complete bank armoring of the West River near Boynton Road and on Greendale Brook adjacent to Greendale Brook.

- Complete culvert upgrade projects on Upper Old Tavern Road, Holden Hill Road, Dale Road, and Johnson Hill Road.

Flood Resilience Policies:

1. Foster the protection and restoration of river corridors, floodplains, wetlands, and upland forested areas that attenuate and moderate flooding and fluvial erosion.
2. Protect floodplains, river corridors, and land adjacent to streams through adoption and administration of flood and fluvial erosion hazard area regulations governing development in designated Special Flood Hazard Areas and River Corridors, in order to reduce the risk of flood damage to infrastructure, improved property, people, and the environment.
3. New development in identified flood hazard, fluvial erosion, and river corridor protection areas should be avoided. If new development is to be built in such areas, it should not exacerbate flooding and fluvial erosion.
4. Support the protection and restoration of geomorphic equilibrium, floodplains, wetlands, and upland forested areas that attenuate and moderate flooding and fluvial erosion.
5. Support flood emergency preparedness and response planning.
6. Promote coordination with other towns within the West River watershed to address flood resiliency.
7. Ensure that land use regulations adequately support new development in safe locations not located with flood hazard, fluvial erosion, and river corridor protection areas.
8. Support best practices for stormwater management and green infrastructure.

Recommendations for Action:

1. Ensure that the Selectboard, Development Review Board, Planning Commission, and Zoning Administrator are familiar with Flood Insurance Rate Maps (FIRMs) that delineate areas that could be inundated by water during flooding and with ANR River Corridor maps that delineate the land area adjacent to streams and rivers that are required to accommodate a stable channel.
2. Pursue a flood resilience management approach that identifies and maps flood and fluvial erosion hazard areas based on studies and maps provided by the Vermont ANR Rivers Program, and designate those areas for protection to reduce the risk of flood damage to infrastructure and private property.
3. Update the ~~zoning bylaws Flood Hazard Areas Regulations~~ to include ~~regulation of fluvial erosion hazard area regulations river corridors~~, and include provisions for advance notification of and specific limits on new development activities in identified flood hazard areas, fluvial erosion areas, and/or River Corridors, based on regulatory templates developed by the ANR DEC Rivers Program.
4. Regulate any new development in identified flood hazard areas, fluvial erosion hazard areas, and/or River Corridors to ensure that development does not exacerbate flooding and fluvial erosion.
5. Consider updates to the zoning bylaws to strengthen regulation of development activities that might increase the amount and/or rate of runoff and soil erosion from upland areas. This may include stormwater management guidelines, restrictions on development on steep slopes, or other measures.
6. Implement the recommendations from the Local Hazard Mitigation Plan, the hydraulic study for the Old Mill Dam and Lawrence Hill Bridge, the DEC West River Corridor Plan, and other

strategies for restoring the stream geomorphic equilibrium conditions and enhancing the emergency preparedness that will mitigate the risks to public safety, critical infrastructure, historic structures, and municipal investments.

7. Seek grant funding or other financing to flood proof or relocate critical municipal facilities located in the SFHA, River Corridor, or other flood-prone areas.
8. Provide emergency responders and municipal officials with proper training and adequate equipment to respond to anticipated disasters and severe weather events.
9. Provide education to residents and property owners about flood proofing strategies and resources and emergency preparedness activities.
- 9.10. Review the Town's policies and regulations on an annual basis to ensure the Town is eligible for the maximum amount of federal and state funds to prepare for, respond to, recover from, and mitigate flood events.