

Ripton Comprehensive Flood Resilience Project

Linked Policy and Projects

The Project in a Nutshell:

In 2008, Ripton suffered two federally declared disasters related to flooding. To mitigate future flood risk, the town adopted a river corridor protection policy, conserved floodplain area, armored the river bank with riprap, and created a flood chute designed to enable the river to access its natural floodplain.

Getting Started: What was the genesis of this project/action?

Ripton's vulnerability to flooding became apparent well before Tropical Storm Irene devastated much of the state. In 2008, Ripton experienced two 100-year floods in one year. A 100-year flood is a flood event that has a 1% chance of occurring in any given year. These flood events heavily damaged Route 125, caused significant erosion, and threatened property, public infrastructure, and life (See Figure 1). The town of Ripton decided that they must take action to reduce their vulnerability to the increasing risk of flood damage.

Tim Bouton, Senior Emergency Management Planner at Addison County Regional Planning

Commission, suggested that in general, communities should prepare for increasingly intense severe weather events; "...maybe this is the new normal...if we keep trying to plan for the old normal, that's just not going to work". To begin planning for enhanced flood resiliency, the town conducted a geomorphic assessment process. This process identifies the area that the river needs in order to establish its proper balance, or equilibrium. Using the information collected during the geomorphic assessment process, the town of Ripton established a river corridor protection policy, or Fluvial Erosion Hazards zoning policy. This step prohibits future development and encroachment on the river corridor, or area where the river wants to meander. These processes helped build community support for the project. After Ripton adopted its river corridor protection policy, the Vermont Agency of Natural Resources stepped forward to offer financial and technical assistance through its Ecosystem Restoration Program. The town considered



Fig 1: East Middlebury River flooding Rte. 125 in Ripton (2008)

several options- including a floodplain buyout and a plan to flood-proof homes and public infrastructure- both options were prohibitively expensive, even with grant funding. When Ripton decided to protect floodplain area and pursue river engineering projects, the town applied for funding from FEMA's Hazard Mitigation Grant Program (HMGP), which "...provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration" (FEMA.gov). FEMA approved the town's grant application, and agreed to pay 75% of the \$125,000 project cost. The state funded the remaining 25% through the Agency of Natural Resource's Ecosystem Restoration Program. The project has proved to be cost effective, as it has mitigated costly damage that would've occurred during Tropical Storm Irene. Amy Sheldon, a watershed scientist who worked on the project, asserted that a "...big investment today might not seem like a big investment after flood damage..."

How was the Project or Action Accomplished?

After securing funding from the state and FEMA, the town began construction in 2009. They installed 700 feet of rip rap along the river bank in the village area, which prevents erosion and enables water absorption. They also opened up a flood chute, accessed on the left side of the river bank (See Figure 2). The flood chute is designed to enable the river to access its natural floodplain, deposit sediment, and serves to dissipate excess energy within the river. Additionally, the Middlebury Area Land Trust coordinated conservation easements upstream from town, within the natural floodplain area (See Figure 3). This conserved floodplain was accessed during Irene, serving its purpose of dissipating the river's energy, thereby protecting the town from damage. Amy Sheldon remarked, "...these guys dodged a bullet when Irene came because of this". This project would not have been successful without productive collaboration between state, federal, and local government. Barry Cahoon, a river scientist at Vermont Agency of Natural Resources, cited "...a positive, mutually beneficial partnership with the community..." as a significant benefit of the project.



Figure 2: Flood chute opening

Perspectives on Results

This project was highly successful in achieving its main goal of mitigating flood risk in Ripton. Further, the cost of the project was miniscule compared to the avoided cost of damages from Tropical Storm Irene. The project has also resulted in conserved floodplain upstream. The Vermont Department of Environmental Conservation asserts that ensuring floodplain access is key to successful river management and flood hazard mitigation. According to the Vermont Department of Environmental Conservation, "Without floodplain access, which serves the essential purposes of slowing floodwater and storing sediment, stream banks are subjected to the full power of flood flows, leading to extensive fluvial erosion". Also, the work that has been done provides an educational benefit to the local community.

This project proves that thinking holistically about an issue can generate a better solution. Amy Sheldon enthused, “...all of the elements of the project are helping with flood resiliency”. Although Ripton has implemented an exemplary flood resilience plan, the town must be careful to keep development outside of the river corridor. Also known as the Fluvial Erosion Hazard zone, the river corridor is the area of land nearby a river that is at risk of flash flooding during intense precipitation events. Tim Bouton notes that oftentimes, people want to rebuild in floodplains after floods have destroyed property and infrastructure and threatened lives. In order to be successful in the long term, Ripton must remain vigilant in keeping development out of the river corridor area.



Figure 3: Conserved floodplain along the E. Middlebury

