

Homeowners and low-income households to be disproportionately impacted by increased flooding, UVM study says

**The flood waters disproportionately hit Vermont's affordable housing stock — at the worst time**

Mobile home residents face higher flood risk

**Flooding had outsized impact on 4 Vermont mobile home communities**

'Not going to live here again': Vermont manufactured-home residents return to destruction

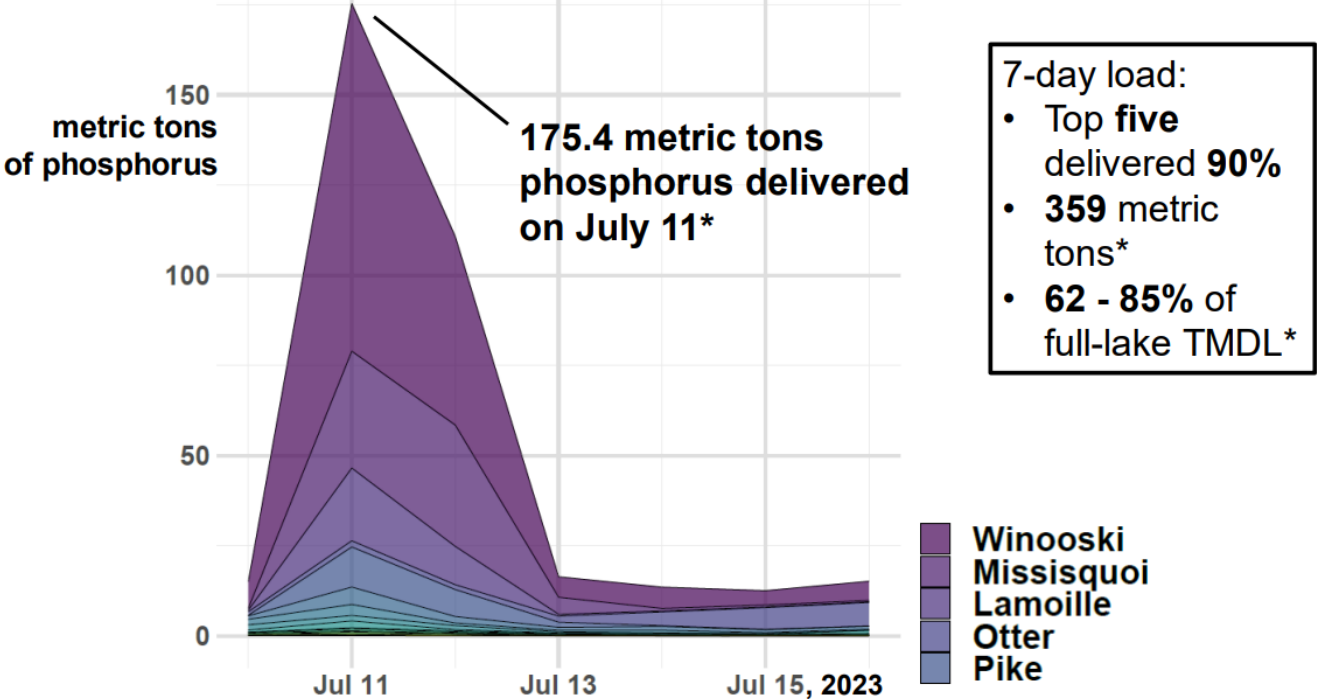
# Vermont Flood Costs Could Exceed \$5.2 Billion (UVM)



**Vermont Statewide Flood Risk**



### Daily phosphorus load from each tributary to Lake Champlain



Matthew Vaughan, LCBP, 2023

## State Plans, Assessments, Tools with Climate Resilience Recommendations

### 2021 Vermont Climate Assessment, UVM

**Key finding from Water Resources Chapter:** River corridor, floodplain, and wetland protection dampen flood impacts and improve water quality along with green infrastructure.

Flood damage avoidance in Vermont requires **more widespread adoption of “no adverse impact” standards** to support the natural and beneficial functions of river corridors and floodplains.

**Forested watersheds offer multiple benefits in terms of flooding mitigation** by intercepting rainfall and detaining snowmelt. Forests promote gradual groundwater infiltration and return water to the atmosphere, whereas deforested landscapes allow fast runoff that leads to earlier storm peaks and damaging flows

As the climate changes and heavy precipitation increases, along with extreme events like Tropical Storm Irene, **river corridor and floodplain protections are the least costly opportunity to avoid the loss of existing floodplain functions and heightened damages**

### 2021 Vermont Climate Action Plan

**Adopt legislation** to authorize ANR to revise the Flood Hazard Area & River Corridor (FHARC) rule to incorporate statewide jurisdiction and permitting authority for river corridors for all kinds of development.

Minimizing river corridor and floodplain encroachments will not only serve as a back-stop to limit future increases in phosphorus loading, but, overall, is the **most effective form of stream and riparian restoration and the reduction of the existing load**

**Land-use policies must be modernized to recognize the increasing threat of climate events on developed structures with an overall goal of no or very limited new development in river corridors**

Support for **river corridor easements** in several sections of the plan

## State Plans, Assessments, Tools with Climate Resilience Recommendations

### 2023 Draft State Hazard Mitigation Plan

Promote land management strategies and headwater storage on state and private lands
Support floodplain management and <b>river corridor protection</b>
Complete a stakeholder process to identify <i>feasible</i> opportunities to <b>protect river corridors and flood hazard areas</b>
Complete a stakeholder process to develop recommendations on the <b>implementation of a riparian protection program</b> for the State (as required under Act 79)
Several references to increasing support for river corridor and wetland easements

### 2018 State Hazard Mitigation Plan

Work with land conservation organizations to include <b>river corridor and floodplain protection provisions, and/or headwater storage in conservation easements</b>
Convene a working group of State agencies, academic partners, regional and local stakeholders to review the effectiveness of the existing ERAF criteria and river corridor bylaws
Revise ERAF criteria to <i>more effectively incentivize communities to improve their flood resilience</i>
River Corridor Easement Program needs to be expanded; identified as a <b>high priority of the 2018 SHMP</b>

### 2016 Lake Champlain TMDL Implementation Plan

"EPA's expectation of Vermont for the new Lake Champlain are divided into two distinct planning phases. For the first phase, EPA expects Vermont to provide policy <b>commitments</b> relating to nonpoint source phosphorous reductions in a basin-wide scale implementation plan. This Vermont Lake Champlain TMDL Phase I Plan contain those policy commitments."
"An estimated 22.3% of the total nonpoint phosphorus load delivered to the Lake comes from stream erosion and the loss of floodplain function"
"With respect to implementing the Lake Champlain TMDL, the current River Corridor and Floodplain Protection Program is limited in the following areas: 1) <b>Many developments in floodplains and river corridors, falling outside of state jurisdiction are not currently regulated....</b> "
"Minimizing river corridor and floodplain encroachments will not only serve as a back-stop to limit future increases in phosphorus loading, but, overall, is the <i>most effective form of stream and riparian restoration and the reduction of the existing load.</i> "

## State Plans, Assessments, Tools with Climate Resilience Recommendations

### 2017 Vermont Forest Action Plan

**Forests are the best form of land use for sustaining water quality and quantity.** Studies clearly show that the amount of forest land within a watershed is an indicator of water quality and healthy aquatic ecosystems. In urban areas, trees and forests are the community's "green infrastructure" and help reduce stormwater runoff. In rural areas, forests protect municipal water supplies, mitigate the impacts of flooding, replenish groundwater aquifers, and provide recreation and critical fish and wildlife habitat, as well as a variety of wood products.

**Development in flood-prone areas is likely to significantly exacerbate [increased flooding impacts],** as well as chronic instability from historic and current channelization of rivers and streams.

Because headwater streams have significant influence on downstream river processes, it is important to **direct protection and conservation efforts to maintain and enhance forest cover in these watersheds**

### Vermont Conservation Design, as prioritized through Act 59

"Although many riparian areas and river corridors are highly altered by agriculture, roads, and urbanization, the **risk of flooding [in these areas] serves as a natural deterrent for future development.**"

"An aquatic system's ecological integrity depends on the condition of the watershed in which it occurs, but it is critically tied to the condition of the adjacent riparian area. **River channel equilibriums need to be maintained or restored. Artificial barriers to aquatic organism movement (culverts, dams, etc.) should be removed or mitigated. Natural vegetation should be maintained or restored along shorelines, and should have adequate width to maintain water quality, stabilize shorelines, and provide shade and the recruitment of downed wood and other natural organic matter. Runoff and erosion should be minimized along developed shorelines.**"