

Learning from an Integrated Flood Risk Assessment for Vermont's Manufactured Housing Communities

July 2023 Flooding [DR-4720]

ABSTRACT

Manufactured housing communities (MHCs) provide critical affordable housing for over 7,000 households in Vermont. Severe flooding events, including Tropical Storm Irene in 2011 and the Great Vermont Flood of 2023, and recently adopted environmental justice legislation have led to increased awareness of these communities. This poster presents the process, key findings, and lessons learned from an assessment project that integrated geospatial analysis and community engagement with MHC residents.

Of the state's 238 MHCs, 66 were found to have at least some portion of property within a FEMA-mapped flood hazard area. Thirty-five unique MHCs had lot locations within FEMA-mapped flood hazard areas. Additional flood hazard data, including river corridor and dam inundation data were also analyzed to provide a more comprehensive understanding of flood risk to these communities. The results of the geospatial analysis were then used to identify three MHCs for community engagement workshops that featured the mapping results to foster conversations about flood risk. Residents raised many concerns about flooding and their communities, including social vulnerabilities to flooding, cost of flood insurance, lack of information about previous flooding events, flood risk perceptions, and questions about what can be done to mitigate flood risks.

Key findings are shared from response and recovery efforts to the Great Vermont Flood of 2023, which impacted six MHCs, destroying over 40 homes in these communities. Outcomes from this assessment process can inform policy and enhance future response, recovery, and resilience planning efforts for these unique communities in Vermont and beyond.

MHCs: VITAL AFFORDABLE HOUSING ACROSS VERMONT

Housing costs have significantly increased across Vermont since 2020 while incomes have stagnated. MHCs are the state's largest supply of "naturally occurring" unsubsidized affordable housing.

- Median sales price for a home was \$325,000 in 2023 and would require an annual household income greater than \$108,500 with more than \$27,000 needed for a downpayment to be "affordable" (VHFA, 2024).
- Median sales price for a MH unit (without land) was \$49,500 and the median monthly lot rent was \$390 (Hamlin, 2023).

Vermont has three different forms of MHC ownership: private, non-profit, and cooperative. A small but growing number of private MHCs are converting to resident-owned communities since 2011. Currently, 28% of MHCs are owned by non-profit or cooperative entities.

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CHARACTERIZING FLOOD RISK TO MHCs

Building from previous analysis completed in the wake of Tropical Storm Irene (Baker, Hamshaw, and Hamshaw, 2014), this project sought to characterize flood risk for the state's MHCs using best available FEMA flood hazard data, state-generated river corridor planning data, small stream setbacks, and dam inundation data.

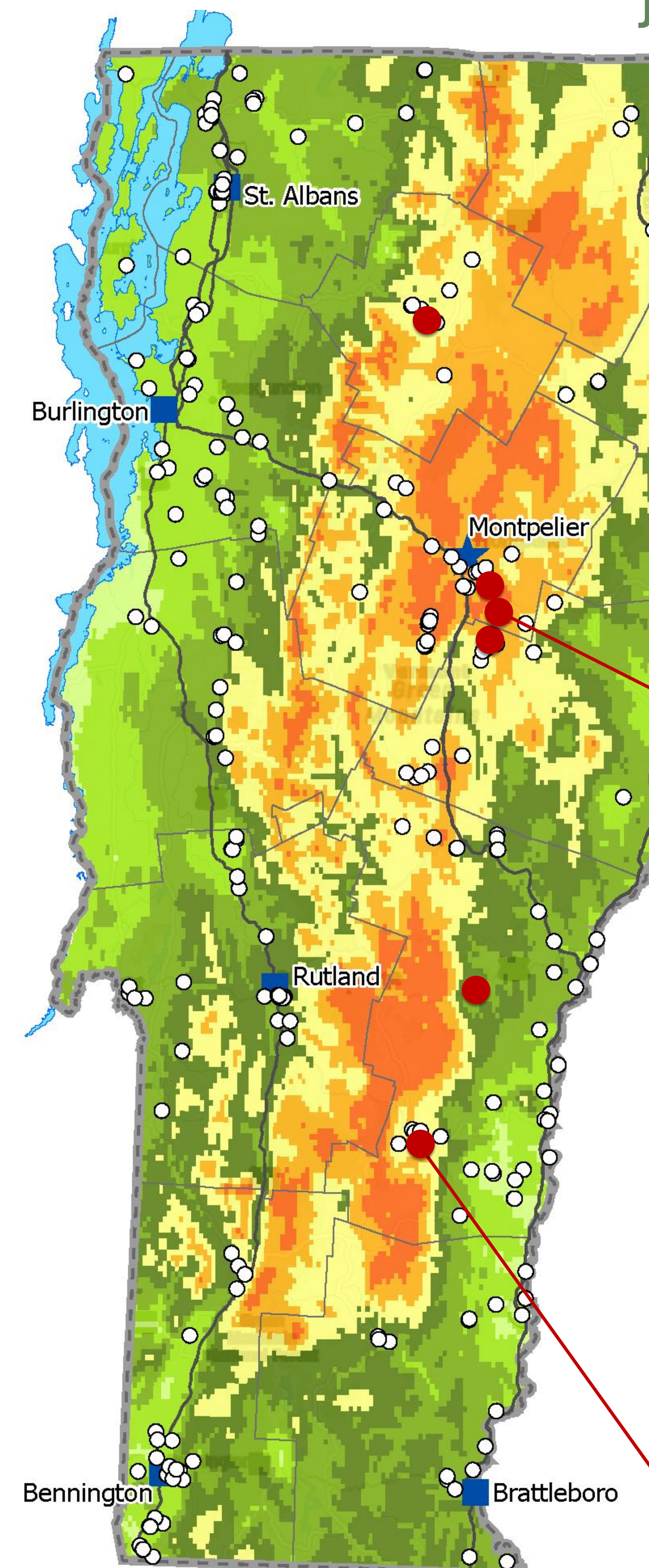
"What's scary is when you see these maps, which clearly show that you can flood, there's a whole lot of people in our state that really believe that if they weren't hit by Irene, they won't get flooded...Even though this park wasn't hit by Irene, we were talking earlier about how it was flooded, but that's just scary how you could show a bunch of people (the map) and they'd be like 'Eh, but I wasn't hit by Irene, I'm sure I'm fine.'"



Berlin Mobile Home Park Potential Flood Hazard Map
Maps are available via Flood Ready Vermont website for MHC residents, advocates, and policy-makers.

STATEWIDE ASSESSMENT RESULTS

Flood Hazard Area Type	Number of MHCs with land within mapped area	% of MHCs with land within mapped area	Number of MHCs with building locations within mapped area	% of MHCs with building locations within mapped area
Floodway	25	10.50%	11	4.20%
100-Year Floodplain	61	25.63%	30	12.61%
500-Year Floodplain	35	14.71%	14	5.88%
Any FEMA Flood Area	66	27.73%	55	23.11%
River Corridor	70	29.41%	48	19.75%
Small Stream 50' Setback	74	31.09%	23	9.66%
Dam Inundation Area	20	8.40%	18	7.56%
Any Hazard Area Type	139	58.40%	82	34.45%



- Two MHCs with over 40 households displaced in Central Vermont—both with previous flooding histories.
- Significant damages to four additional MHCs that have since been re-occupied.
- Challenges to recovery process include: difficulties in accessing FEMA assistance, unclear guidelines for debris removal and rent payments, and extremely limited alternative short-term and permanent housing options.



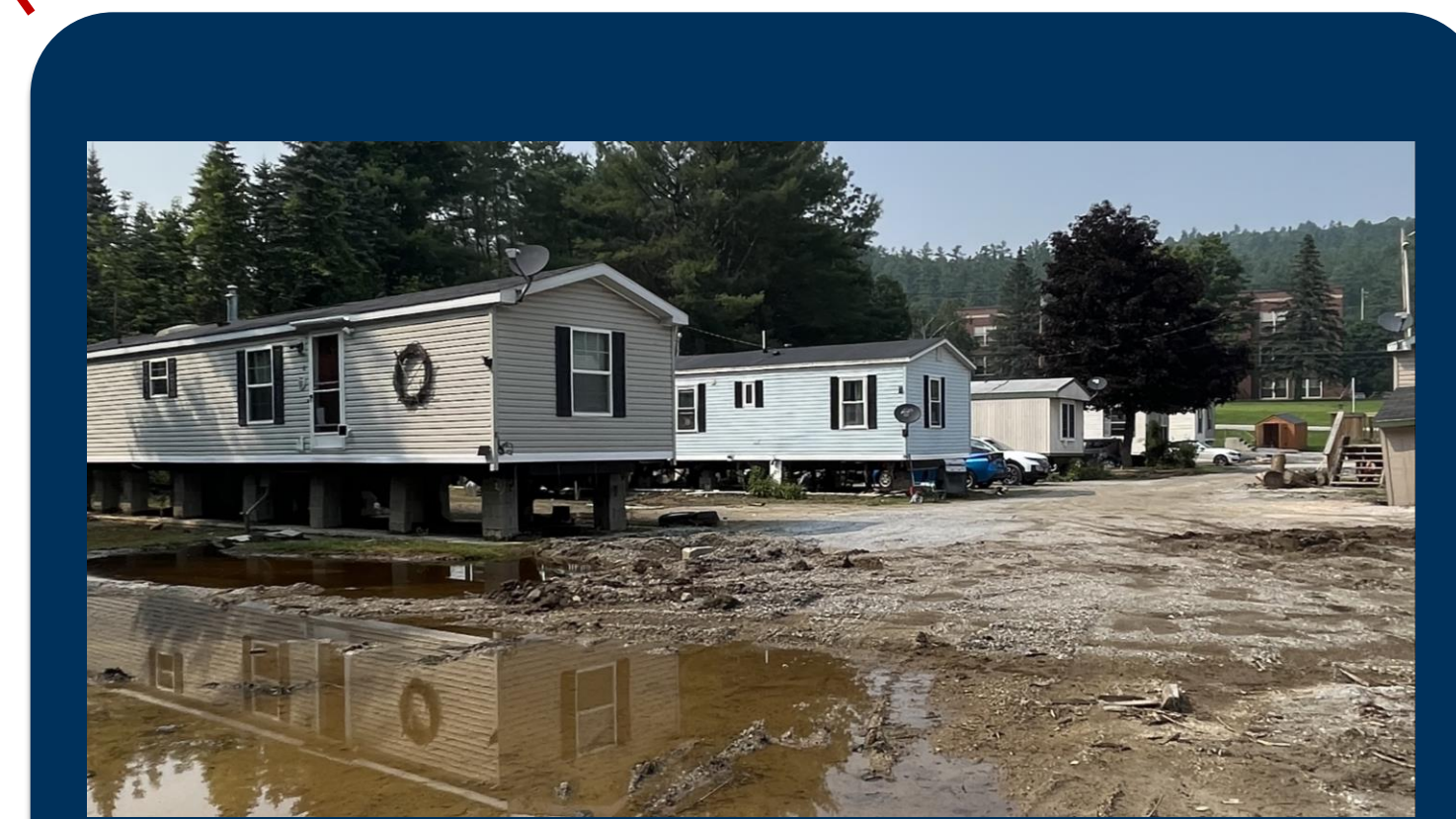
32-lot MHC in Berlin, VT fully located within FEMA floodway (UAS Imagery captured on July 13, 2023 by UVM Spatial Analysis Lab)

- Major City
 - ★ Capitol
 - Manufactured Housing Community
 - MHC Damaged in DR-4720
- North Country Storm (July 10-11, 2023)
Total Rainfall (in.)
- 1 - 2
 - 2 - 3
 - 3 - 4
 - 4 - 5
 - 5 - 6
 - 6 - 7
 - 7 +

COMMUNITY ENGAGEMENT HIGHLIGHTS

Residents from three MHCs with some level of flood risk were engaged in community conversations about their concerns and experiences with flooding to learn about risk perceptions, concerns, and opportunities for future engagement. Resources and ideas for continued work were shared.

- Socio-economic vulnerabilities & health concerns
- Variety of concerns about homes, park infrastructure, and hazards beyond flooding
- Challenges with internal and external communication
- Limited information about past flood events – even Tropical Storm Irene
- Concerns about accessing affordable flood insurance
- Interest in flood warning mechanism and evacuation information
- Opportunity for flood risk education and hazard mitigation best practices



15-lot MHC in Ludlow, VT with majority of homes salvageable due to elevation and anchoring efforts. MHC has fully re-opened as of July 2024.

FUTURE WORK

- Designing community storytelling project for communities displaced by flooding.
- Conducting MHC-specific site analyses to determine hazard mitigation activities in MHCs most at risk to flooding.
- Developing community outreach materials for preparedness, response, and recovery efforts.
- Piloting MHC Flood Emergency Response Plans with stakeholders and for communities.
- Continuing to provide technical assistance to MHC stakeholders during events.



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In Memoriam ~ Jarlath O'Neil Dunne