Resilient Yantic

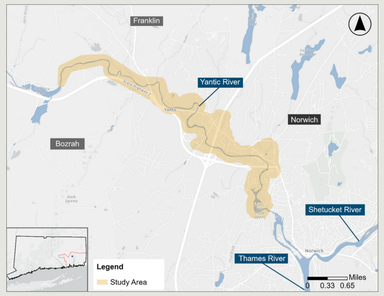
SECOG & GZA & Stantec

CIRCA
Connecticut Institute for Resilience and Climate Adaptation

Bozrah & Franklin & Norwich

Project Site Overview

The study area consisted of the Yantic River Corridor in Southeast Connecticut from downstream of the Fitchville Dam in Bozrah to Uncas Leap in Norwich, spanning three towns: Bozrah, Norwich, and Franklin. This urban river corridor is crossed by CT Route 2 and Interstate 395. The study area is approximately 4 miles long and includes a variety of land uses along the river with business and commercial towards the west of Interstate 395 and pockets of residential to the east of the interstate. Situated primarily in Norwich, the study area is considered an environmental justice community with high social vulnerability. The study area recently experienced a large flood in January 2024, which underscored this project's necessity. Riverine flooding is typically caused by heavy rain but can also be worsened by dam failures or misoperation, ice jams, snowmelt, runoff on top of frozen ground, or significant increases in impervious surface cover.



Yantic River Study Area

Project Objective

The objective of this project was to provide forward-looking adaptation strategies, with implementable recommendations and actions for governmental leaders, to mitigate the long-term impacts of climate-exacerbated flooding on residents and business owners along the Yantic River Corridor.

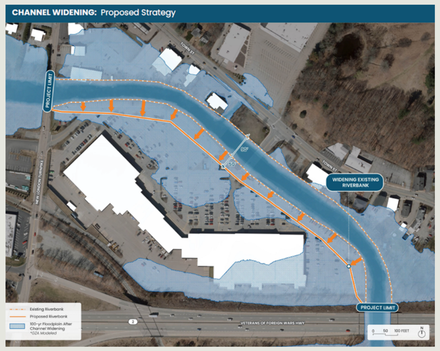
Technical Analysis

The Team conducted a preliminary hydrologic and hydraulic analysis to fill gaps in existing flood data for the Yantic River. With FEMA and USGS updates still pending in 2025, the team built targeted models to support scenario testing and mitigation planning. The hydrologic analysis used FEMA peak flow data and January 2024 stream gage observations, with the 500-year flow applied as a proxy for future 100-year events. A 2D HEC-RAS model covering 3.75 miles of river, calibrated with FEMA data and the 2024 flood, provided more realistic simulations than FEMA's 1D models, especially in urban terrain. Outputs included flood depths and velocities used to evaluate mitigation strategies.

Recommendations

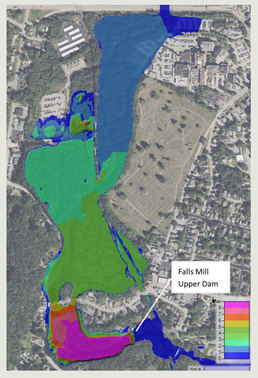
Based on the alternatives analysis, the top three options for the study area are channel widening, dam removal, and managed retreat.

Channel Widening: Widening the Yantic River near Norwichtown Commons (about 50 feet on the right bank) would increase hydraulic capacity, lowering flood depths along Town Street. The design must account for the Stop & Shop, maintain emergency access, and would remove ~19% of parking, but could provide community waterfront space. Modeling shows significant reductions during the 1% (100-year) flood, though some flooding would remain, and less benefit in the 0.2% (500-year) flood.
Cost Estimate: $1.8M; BCA (7%): 1.16.



Proposed Channel Widening

Falls Mill Upper Dam Removal: Removing the deteriorating 75-foot masonry dam, built in 1910, would eliminate safety risks, avoid costly reconstruction, and restore free-flowing river conditions. Modeling shows up to a one-foot reduction in 1% flood levels upstream to CT-2 and Backus Hospital, eliminating flooding at Asylum Street. Ecological benefits include habitat reconnection and biodiversity gains, plus community enhancements like trails and a river overlook.
Cost Estimate: $810K; BCA (7%): 1.66.



Falls Mill Upper Dam Removal Water Level Reduction 1% annual chance (100-year)

Managed Retreat: A phased retreat program along with channel widening would gradually reduce long-term flood risks while restoring riverfront space for public use. Phase one could begin with a voluntary pilot at Norwichtown Commons, offering relocation to low-risk areas and reducing emergency burdens. Later phases could expand to additional high-risk parcels, supporting the City's broader vision for resilient downtown development and allowing residents to relocate without leaving Norwich. Cost Estimate: $48.3M total (floodway $44M, 100-year $3.6M, 500-year $5M). With a BCA (7%) of 0.15, the project is not cost-effective, though life-safety and resilience benefits are not captured in the ratio.

Proposed Managed Retreat Pilot Approach

Concept Designs

The following concepts were analyzed by GZA, CIRCA, SECOG, and the CTAC before the 3 recommended alternatives were chosen.

Flood Mitigation Option	Flood Risk Reduction	Anticipated Cost	Solution Duration	Maintenance	Environmental Stewardship	Funding Sources
Dam Removal	Low to Medium	Medium	Long	Low	High	State, Federal
Channel Widening	Medium	High	Medium	Low to Medium	Low	State, Federal
Managed Retreat	Very High	Medium to High	Long	Low	High	State, Federal
Structural Flood Protection	High	High	Long	Medium to High	Low	City, State, Federal
Bridge Widening	Medium	Very High	Medium	Medium	Low	State, Federal
Dredging	Low to None	Medium to High	Short to None	High	Very Low	City
Upper Watershed Storage	Low to None	Medium to High	Long	Low	High	City & Town

Stakeholder Engagement

- Two public meetings.
- Two focus groups meetings: one with municipal leadership and one with the business community.
- Four Technical Advisory Committee meetings.
- Individual outreach to business owners.
- Monthly project group meetings.

Towards Implementation

Channel Widening: Advance with a detailed hydraulic assessment of the widened Yantic River reach. The study should evaluate impacts on adjacent and downstream properties, compliance with FEMA no-rise criteria, and alternatives for widening, including dimensions and bank stabilization.

Falls Mill Upper Dam Removal: Advance with a feasibility study to assess upstream sediment volume and quality, preliminary engineering, and design of the breached section, river restoration, and sediment stabilization. Permitting (local, state, federal) and additional community outreach, especially with dam abutters, are also required.

Managed Retreat: Advance with a pilot program focused on leadership alignment, community vision, funding strategies, buyout terms, and project administration. This voluntary option will allow residents and businesses to relocate safely while remaining part of the Yantic community.

For more information visit: https://resilientconnecticut.uconn.edu/resilient-norwich/

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