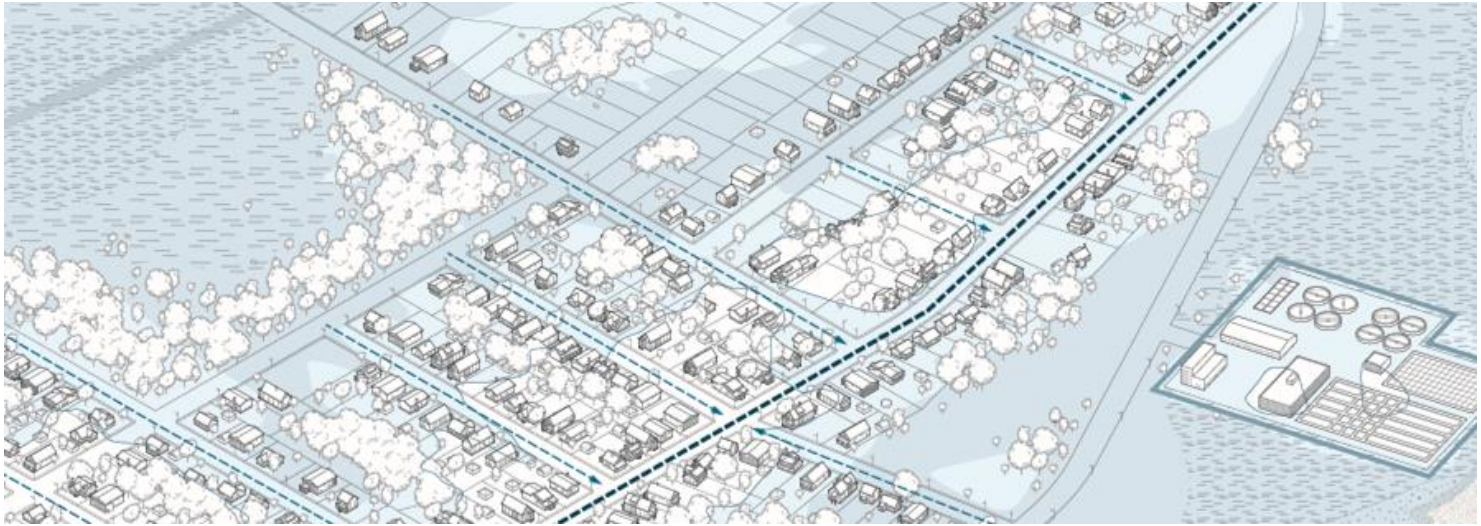
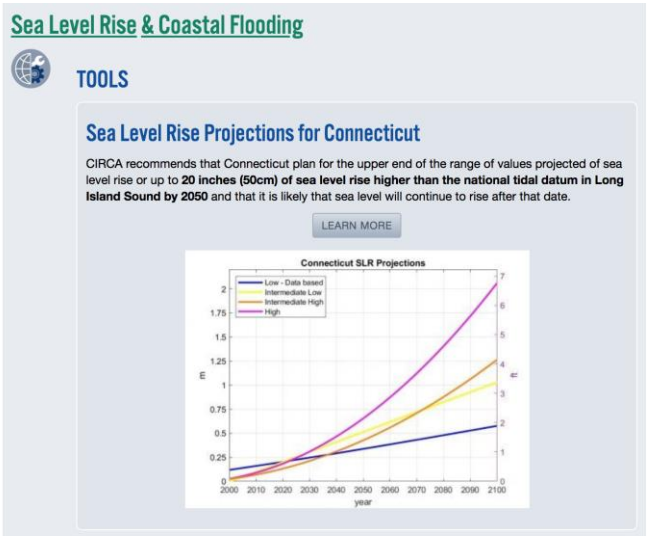
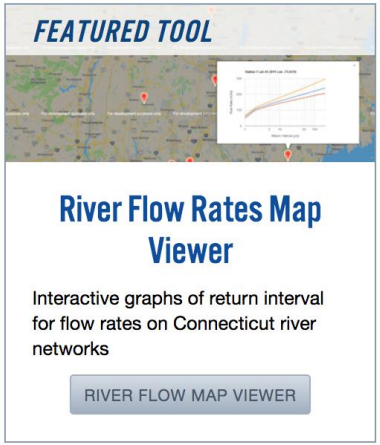
23 July 2019



New Planning and Visualization Tools for Sea Level Rise

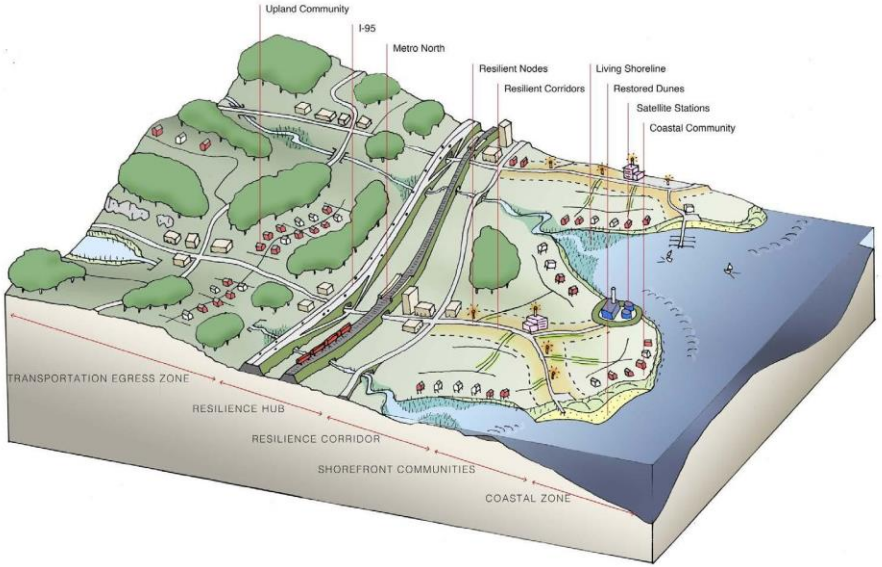




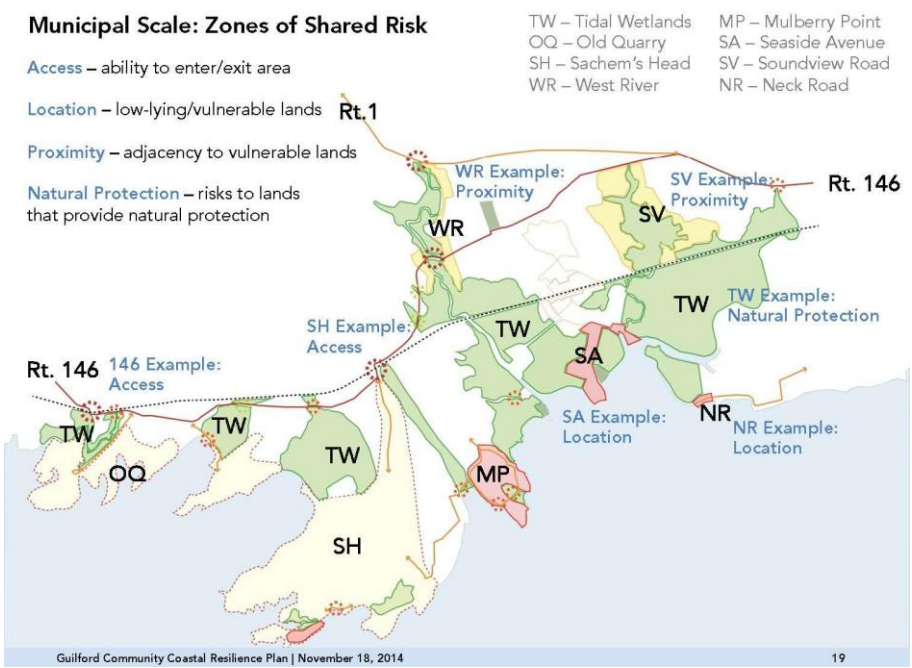
- "Municipal Resilience Planning Assistance Project" was funded through the State of Connecticut Department of Housing CDBG-Disaster Recovery Program and the US Department of Housing and Urban Development.
- Combined science, policy, and planning at the state and local levels to address vulnerable communities along Connecticut's coast and inland waterways to climate change.
- Developed tools for municipalities to assess vulnerable infrastructure to inundation by river flow, sea level rise, and storm surge in the next 25-50 years.

https://circa.uconn.edu/projects/municipal-resilience-planning/

Resilient Connecticut, HUD National Disaster Resilience Grant

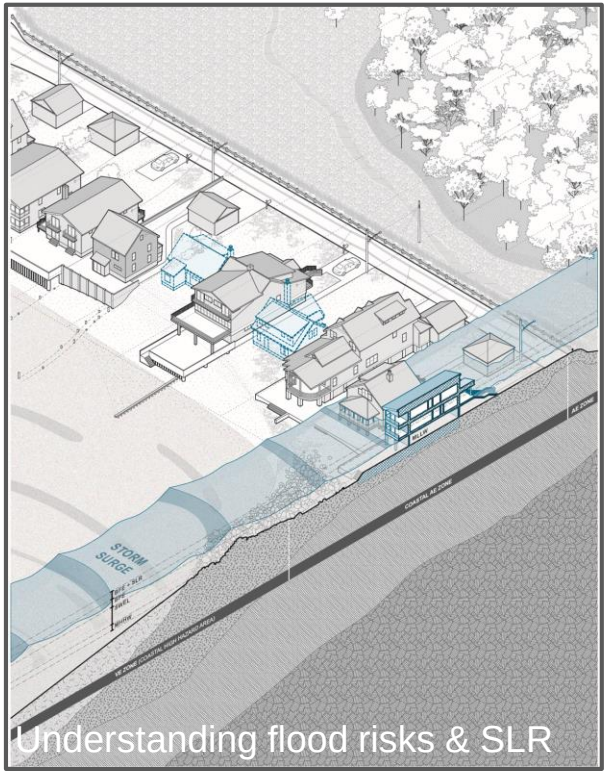


Zones of Shared Risk

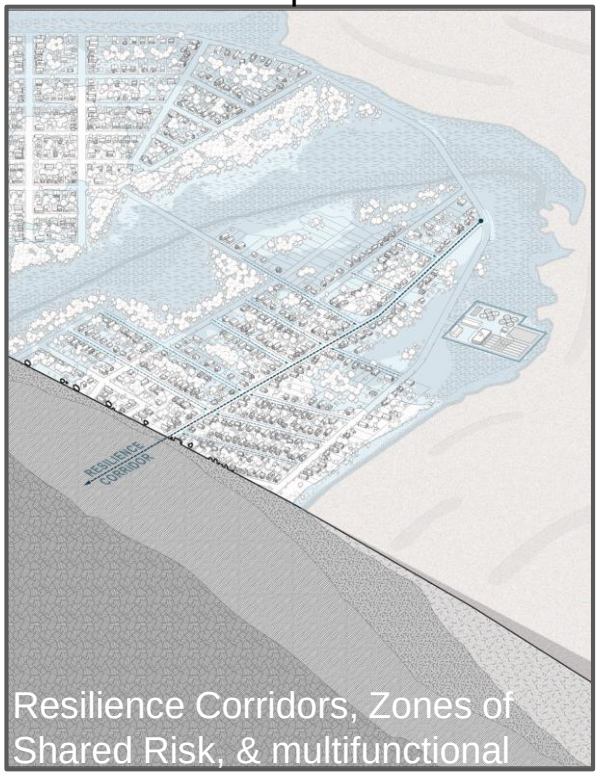


Visualizations

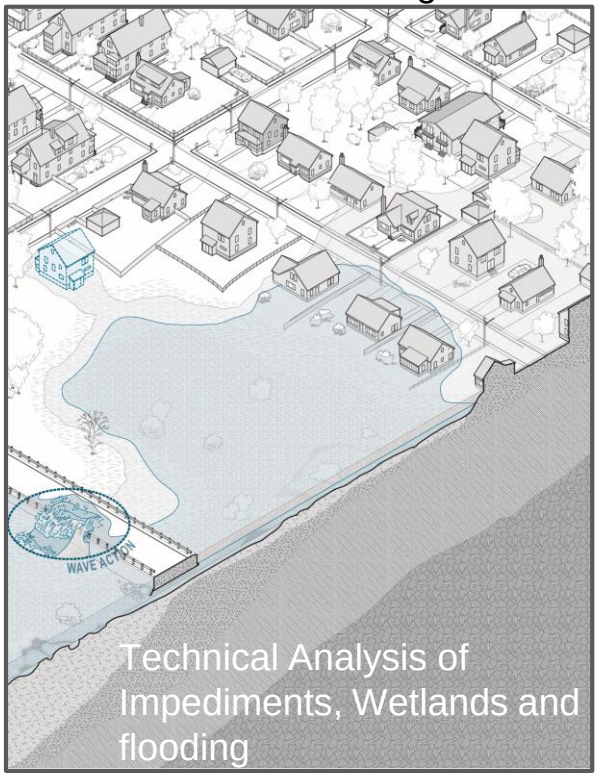
Barrier beach with housing

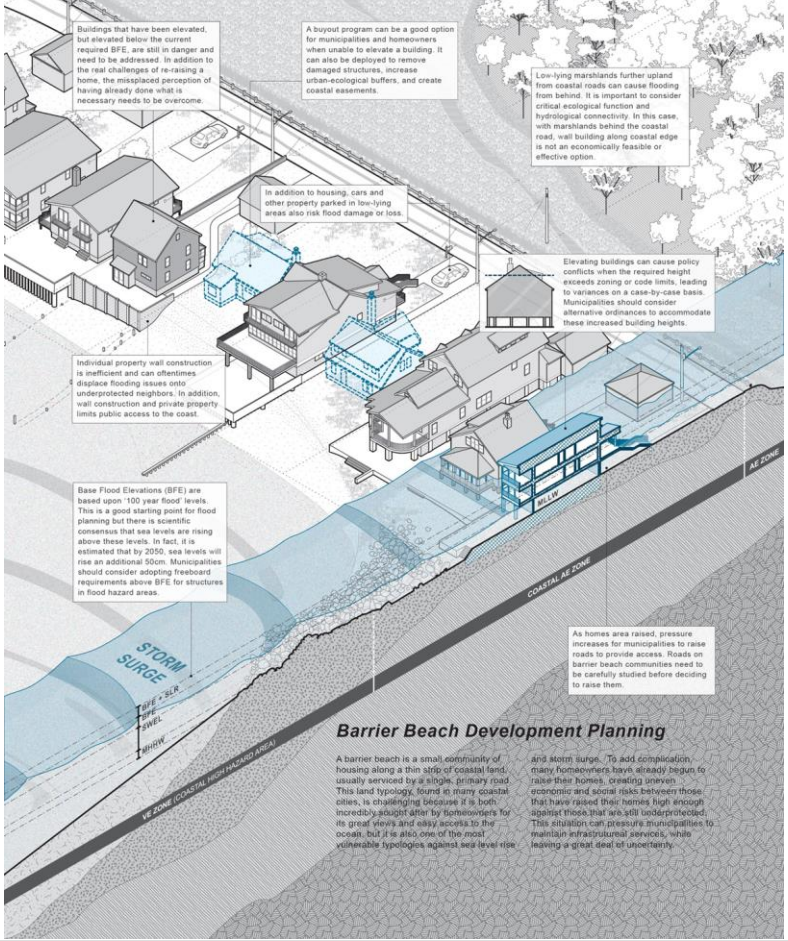


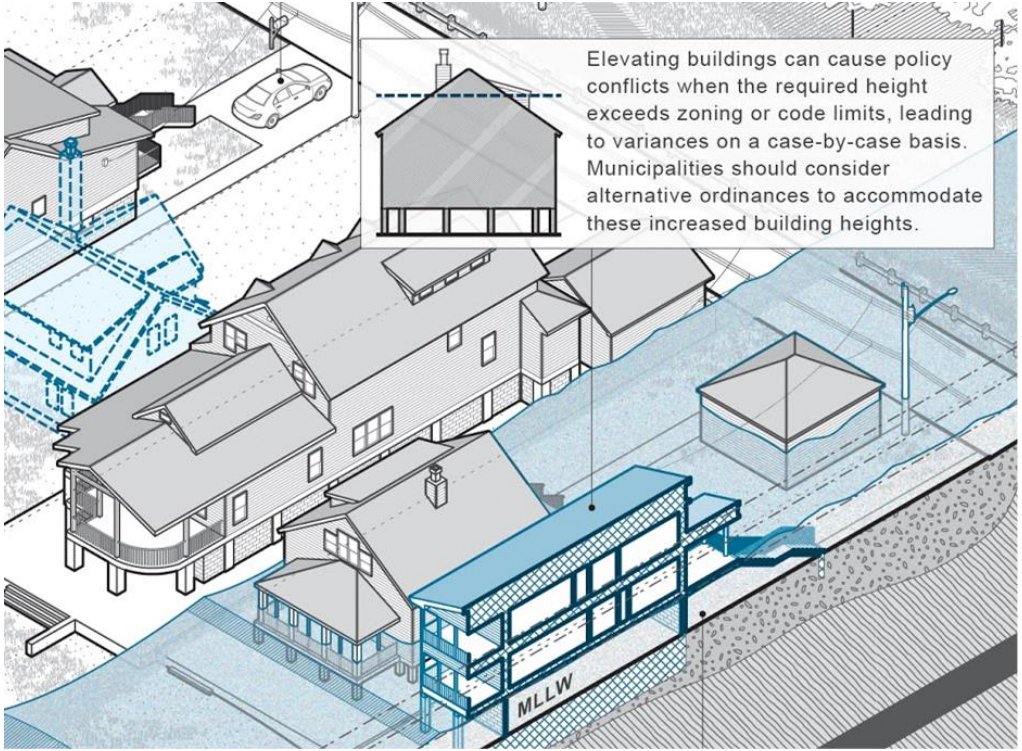
Peninsula and impounded marsh



Inland marsh with housing





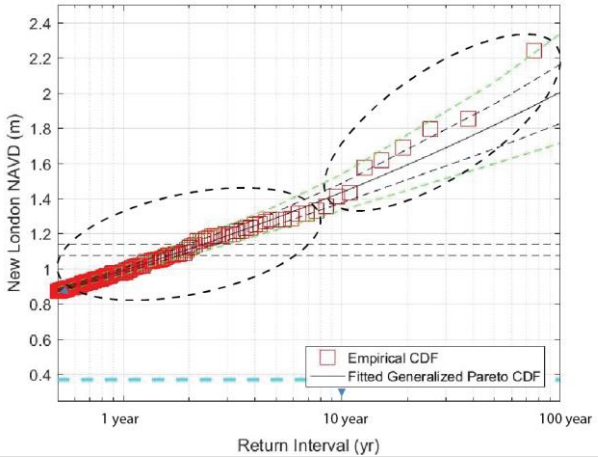


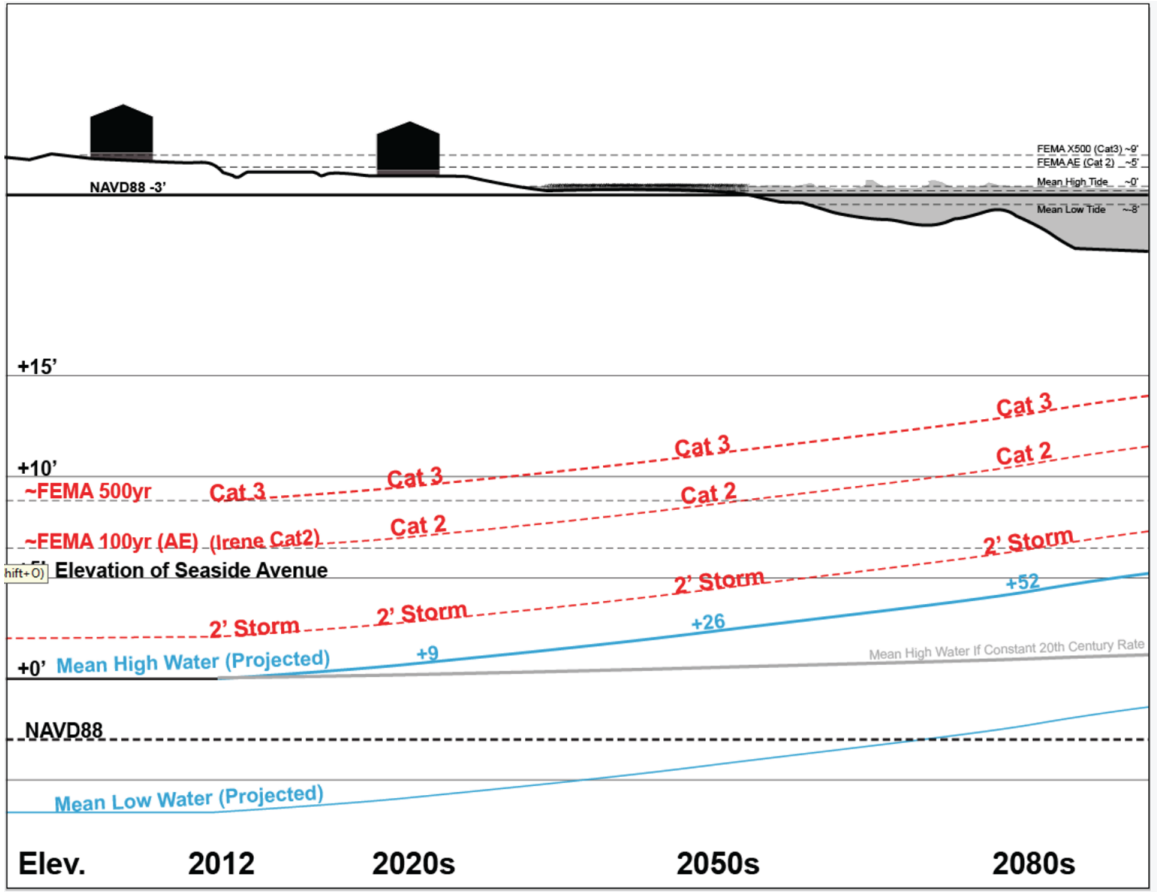
Barrier Beach Development Planning

Differentiating hurricanes from nor'easters

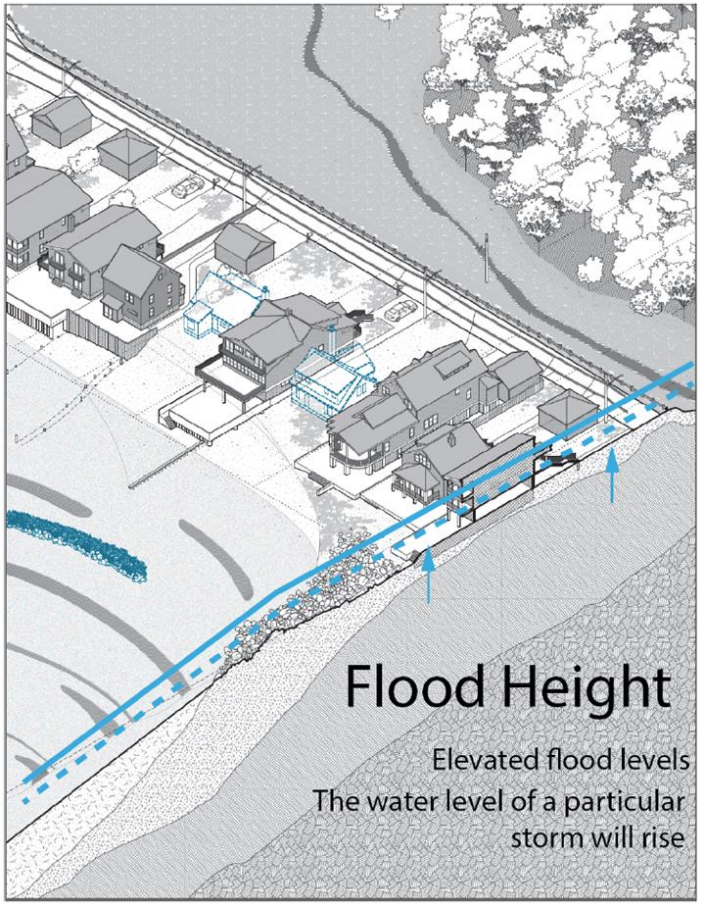
Understanding the impact of sea level rise (slr) overtime

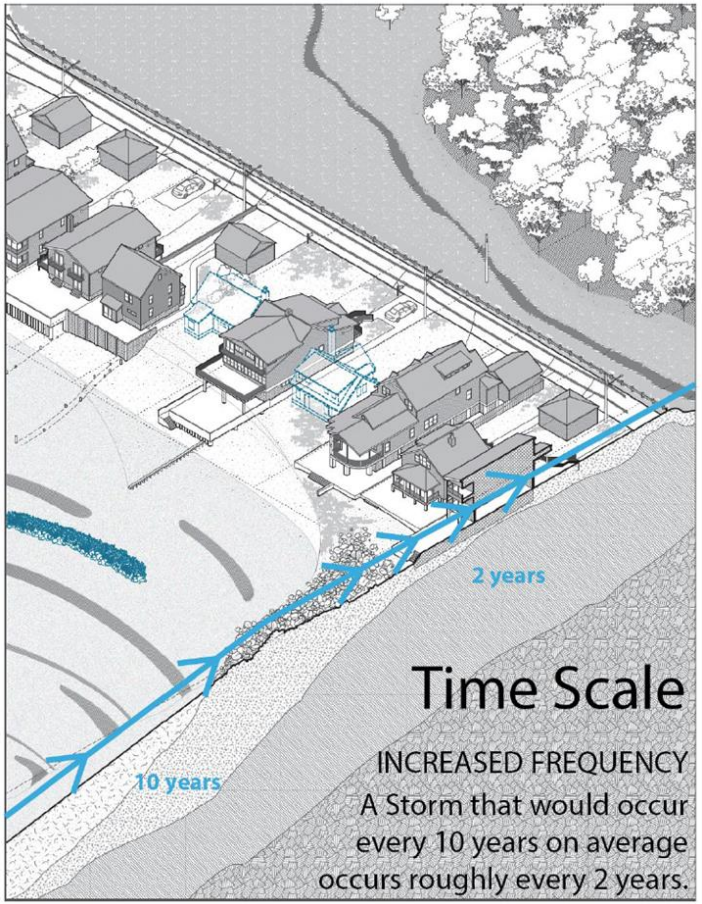
Understanding the combined impact of SLR and storms

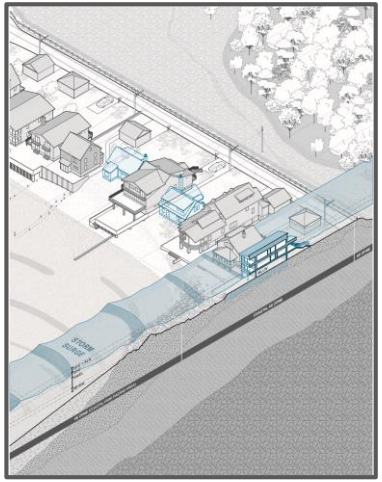


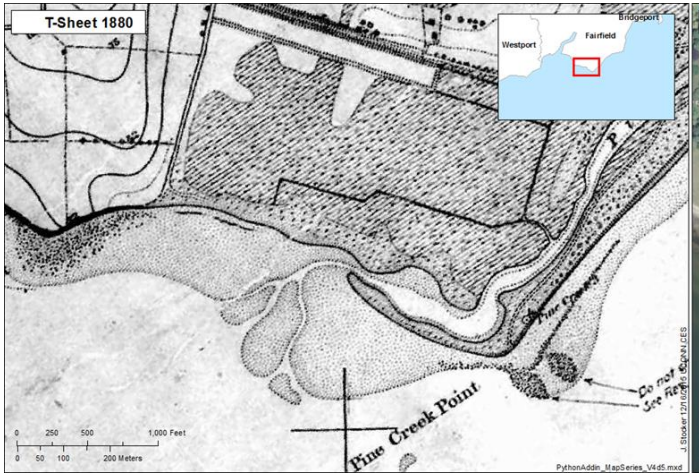


UEDLAB


Flood Height
Elevated flood levels
The water level of a particular storm will rise

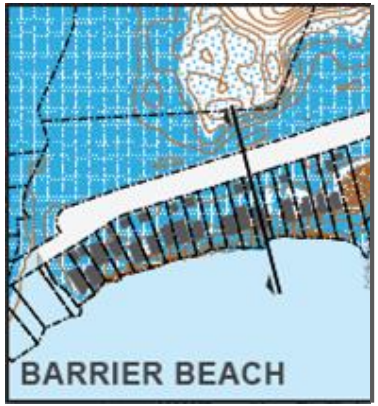

2 years
10 years
Time Scale
INCREASED FREQUENCY
A Storm that would occur every 10 years on average occurs roughly every 2 years.





Fairfield, 1880

Fairfield



East Haven, 1893

East Haven

Connecticut's Coast: Then and Now

UCONN CLEAR

Coastal features subject to constant wave and wind energy likely took many years to reach a type of steady state. When modified, the forces remain, often pressuring the site back towards stability. The result is that areas heavily altered are usually the most impacted by storm events. Fighting this rebound effect can be extremely difficult and expensive.

Ocean Beach in New London is one such case. In the **1934** aerial, notice the number of homes built on the beach. The hurricane of 1938 washed over the barrier beach and destroyed and damaged many of the homes, evident in this **photo** taken by the Air Guard right after the hurricane. Today it is the home of **Ocean Beach Park**.

See the same area from a different perspective (below). The left is just after the 1938 hurricane and the right is today. The houses have been replaced by a recreational area. The sand spit is now a jetty built by the US Army Corps of Engineers.

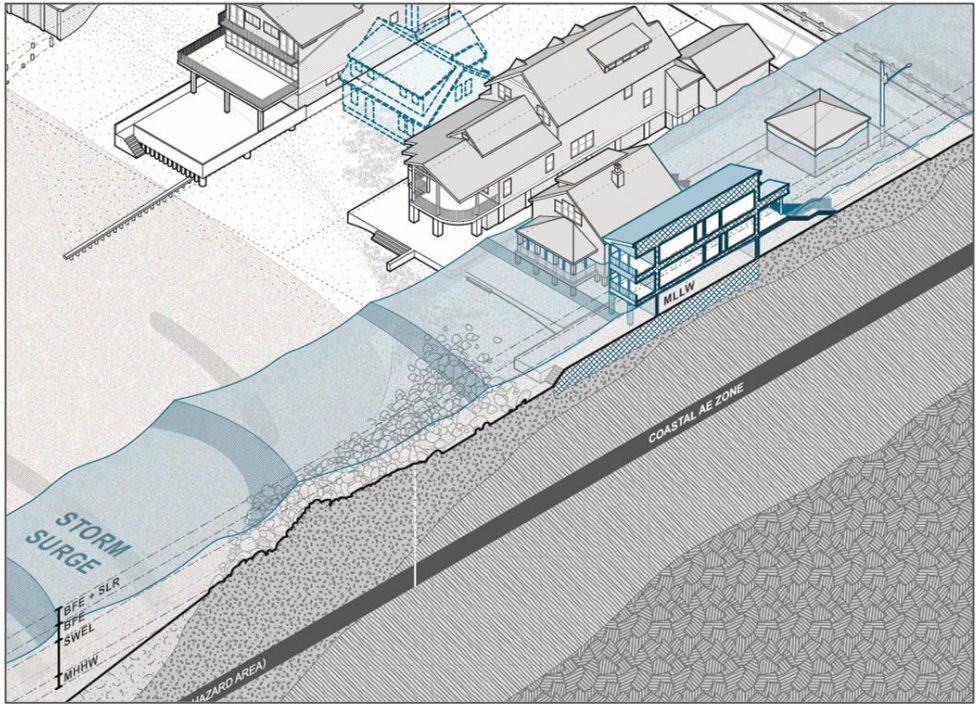
16

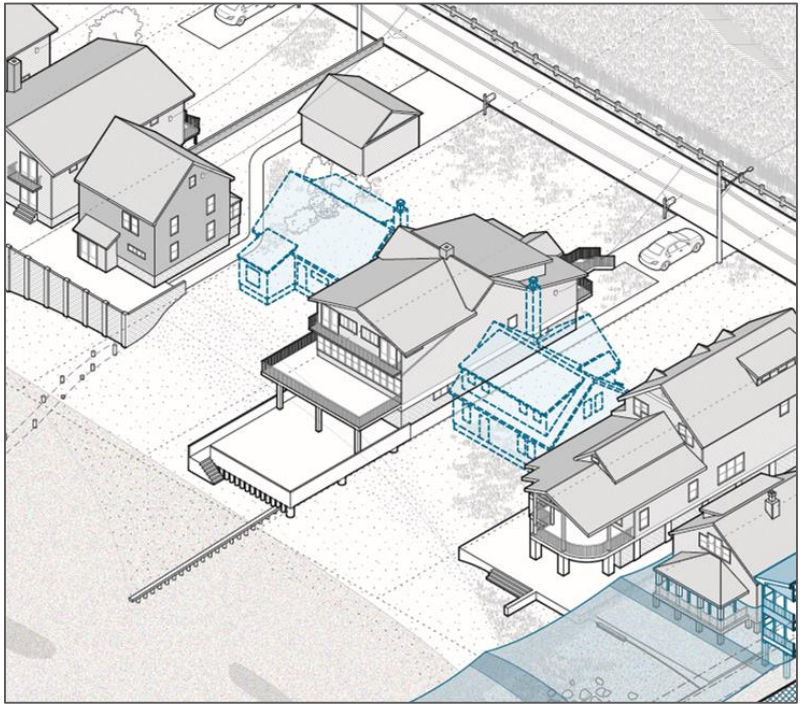
https://clear3.uconn.edu/viewers/Coast1934/

Lidar data, Downloaded from CT ECO

Circle Beach Road 1934, Madison

http://cteco.uconn.edu/map_services.htm



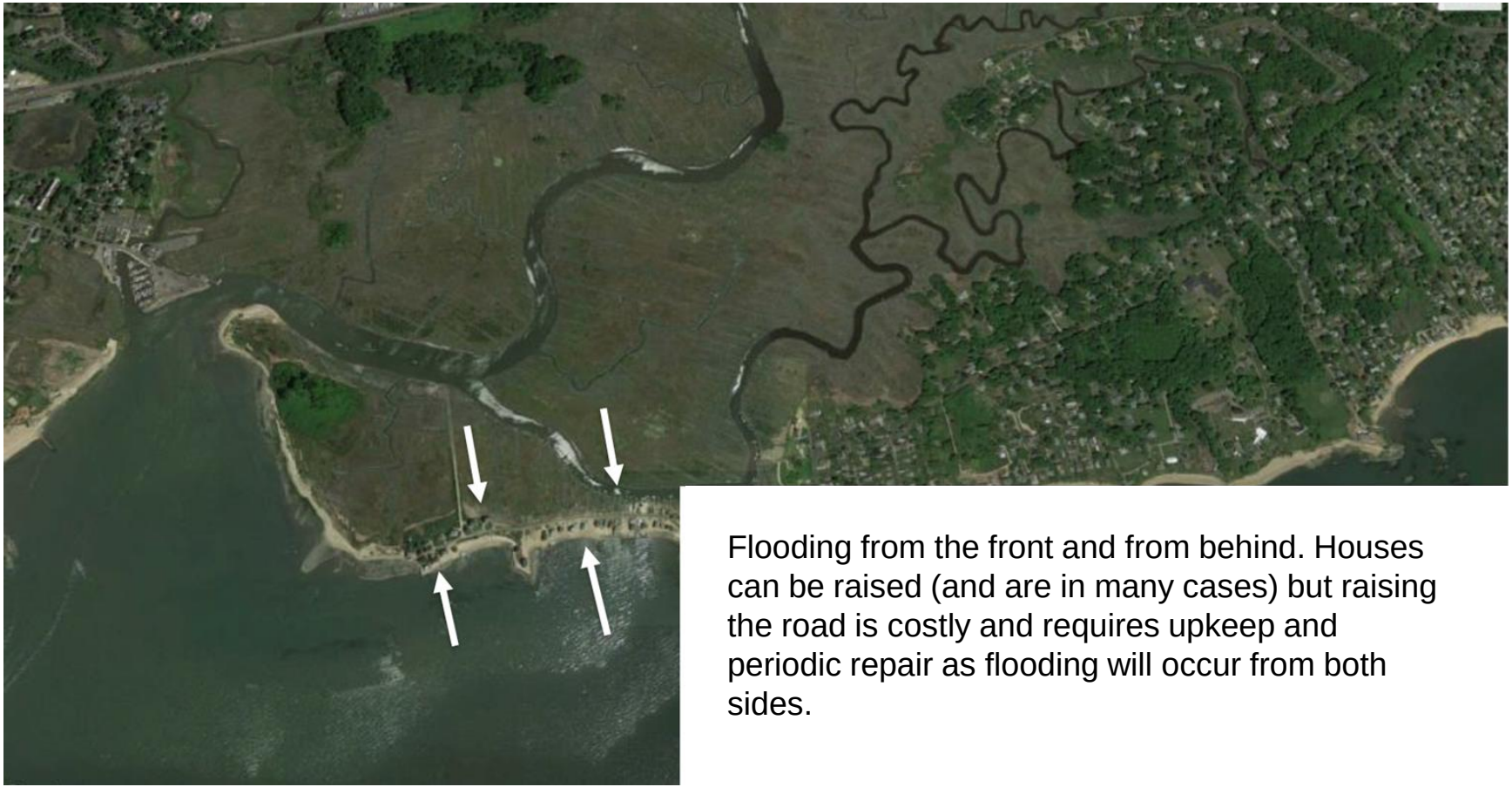


Barrier Beach Development Planning

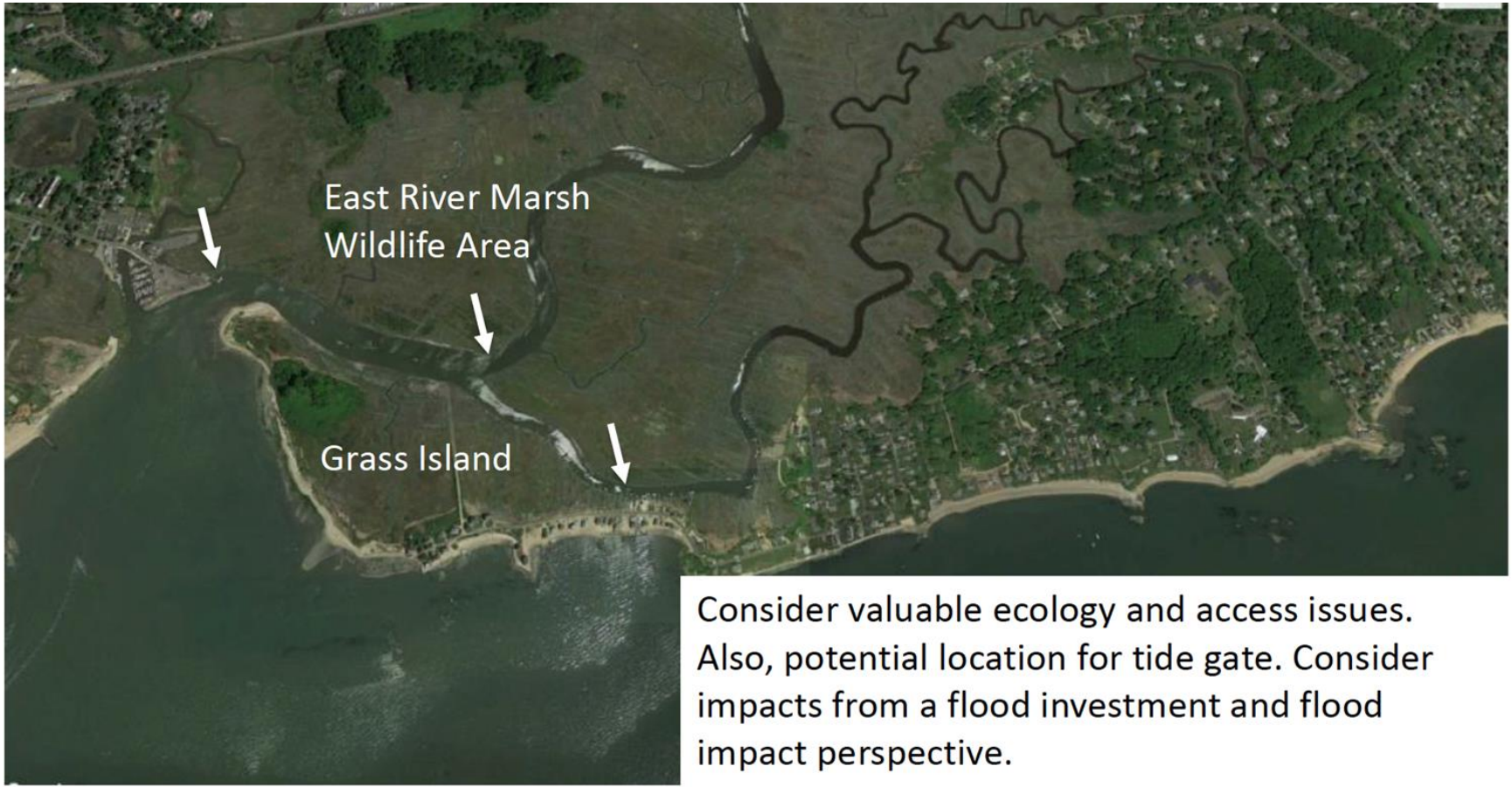

Neck Rd
Circle Beach Rd
Long isolated low-lying road
N


Zones of shared risk:
Isolated Housing area
with one egress

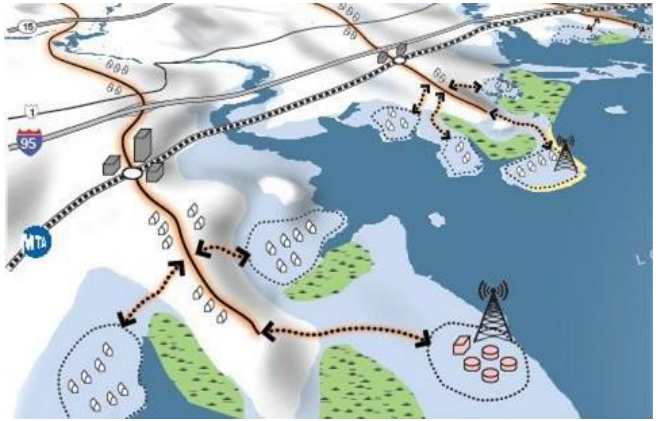
Potential for septic failure and a lack of options for sewage. Demand on municipality to provide services to homeowners.



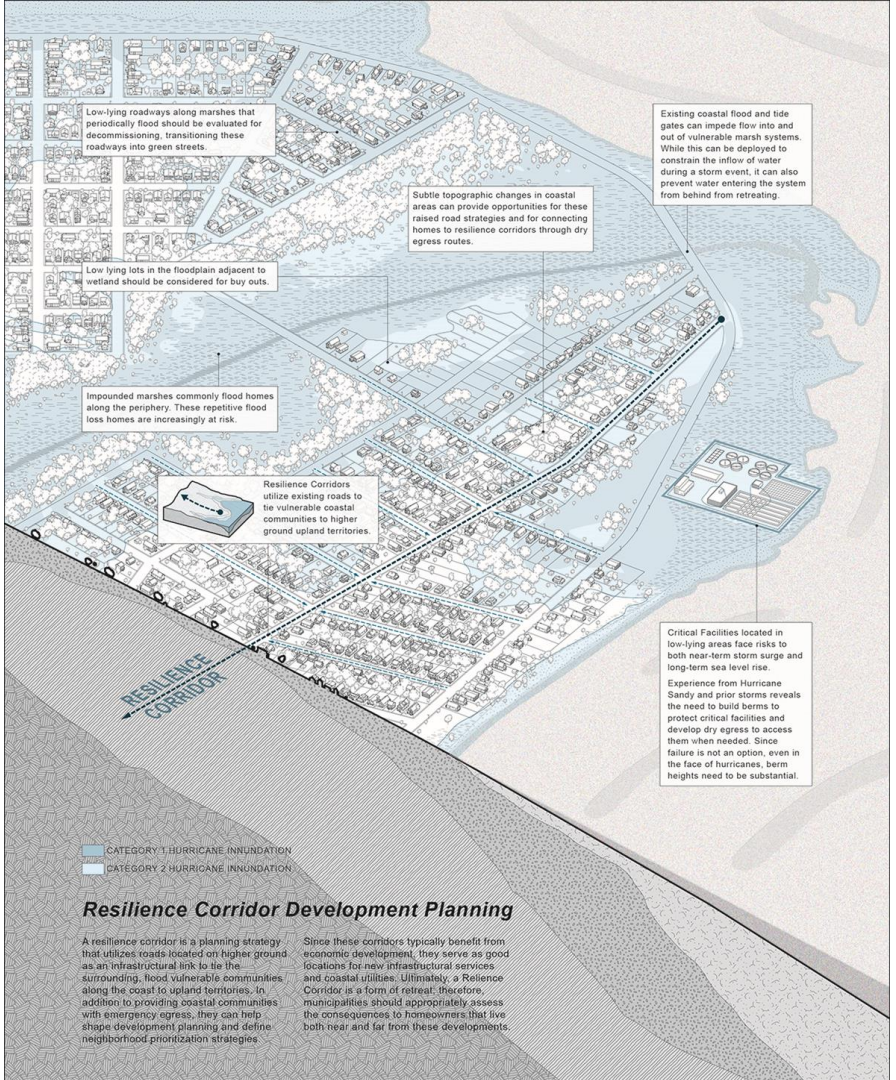
Flooding from the front and from behind. Houses can be raised (and are in many cases) but raising the road is costly and requires upkeep and periodic repair as flooding will occur from both sides.



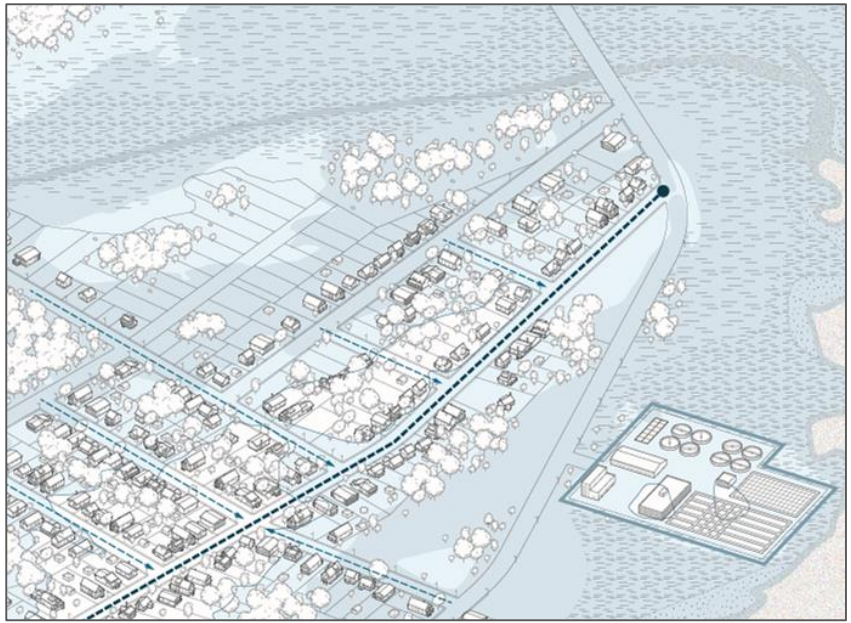
Consider valuable ecology and access issues. Also, potential location for tide gate. Consider impacts from a flood investment and flood impact perspective.

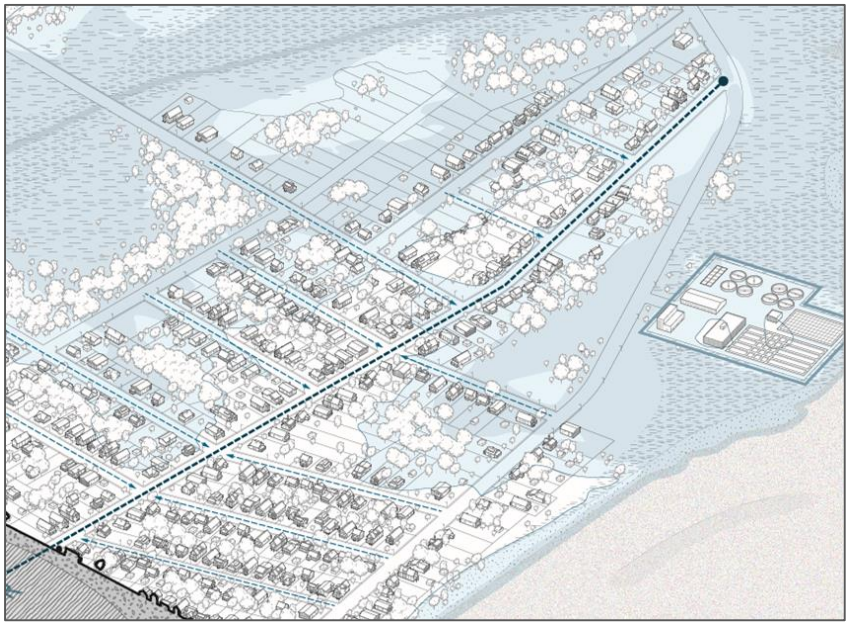


Resilience Corridor Development Planning

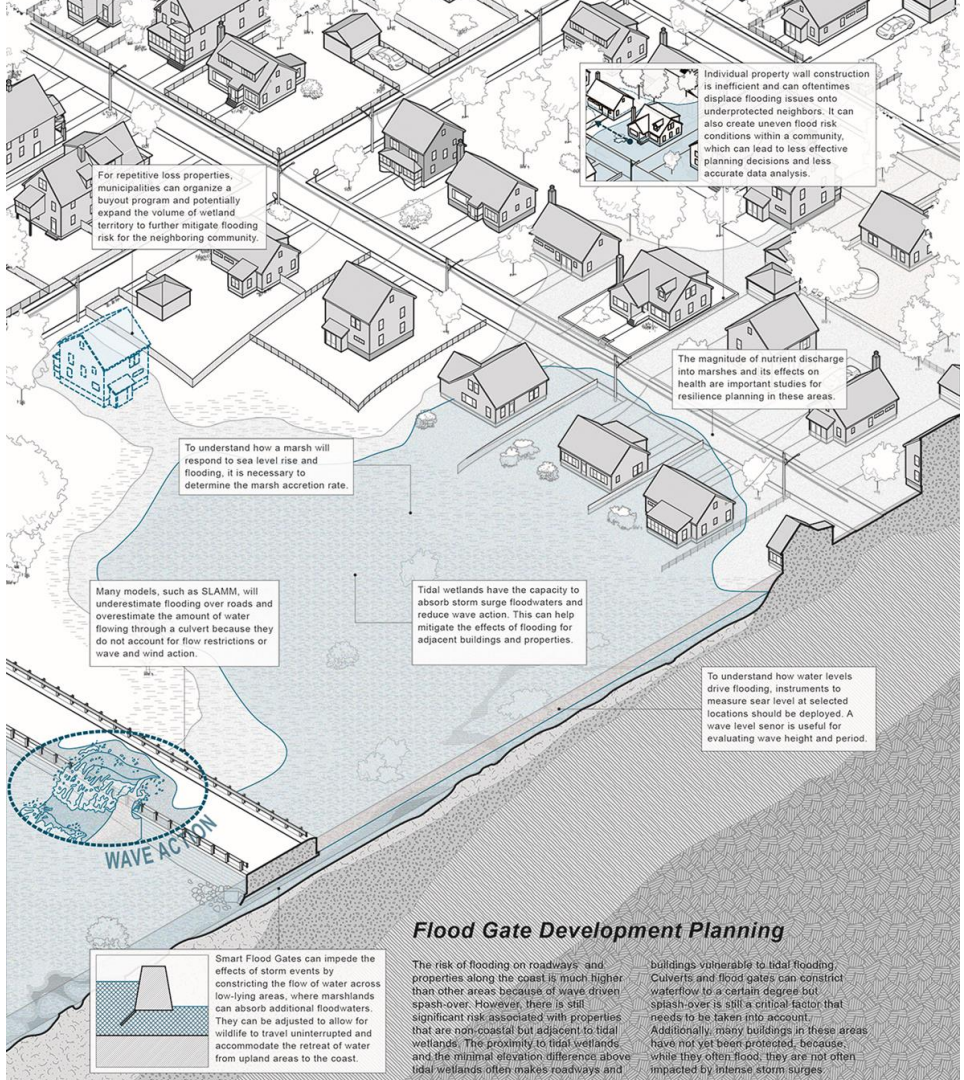


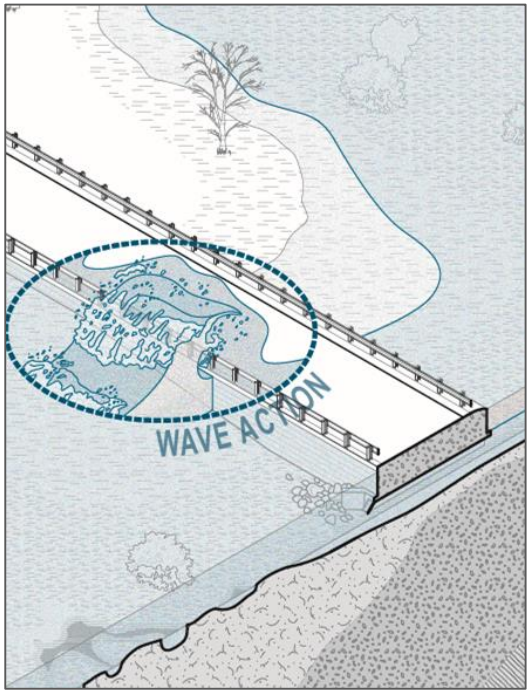
Multifunctional Benefits for Investment in Resiliency



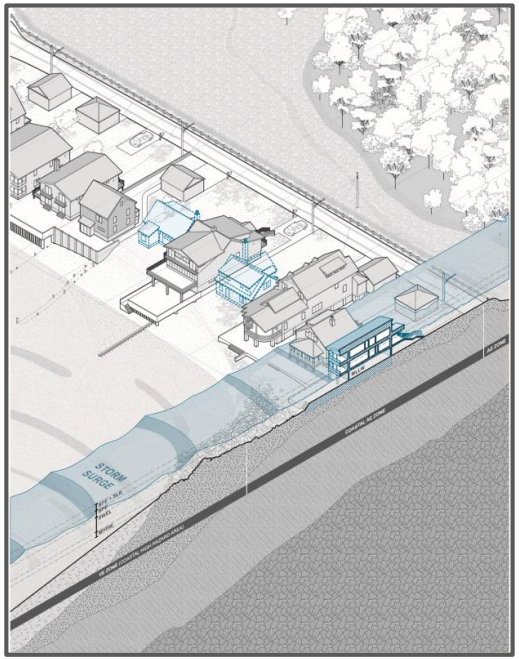


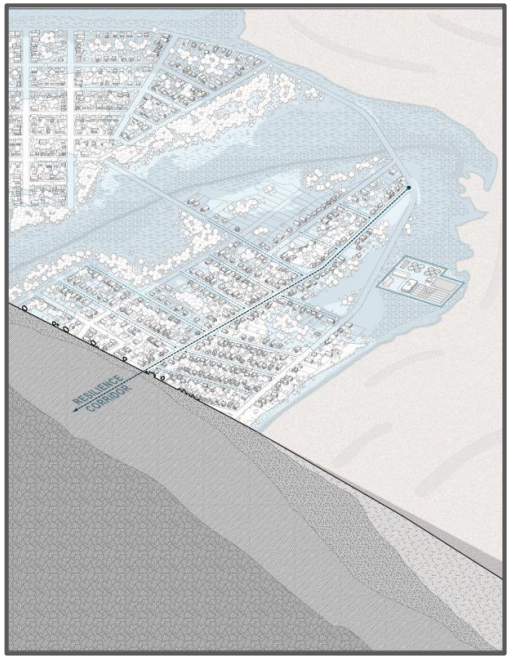
Flood Gate Development Planning

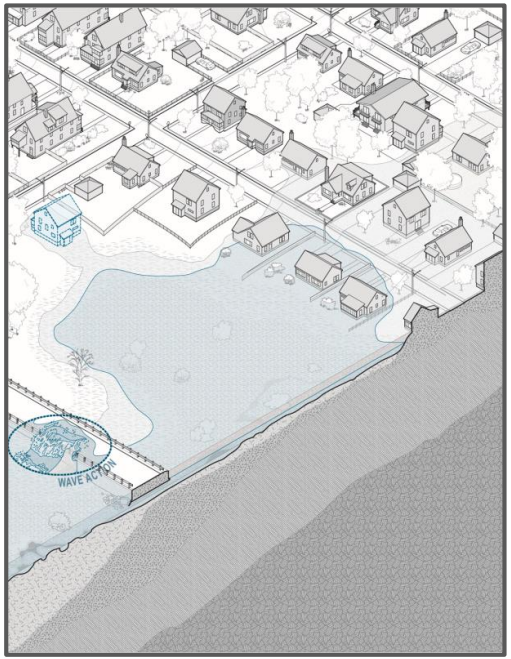



WAVE ACTION

Conclusion







Contact: alexander.felson@uconn.edu

Talk Outline (clean up and/or remove)

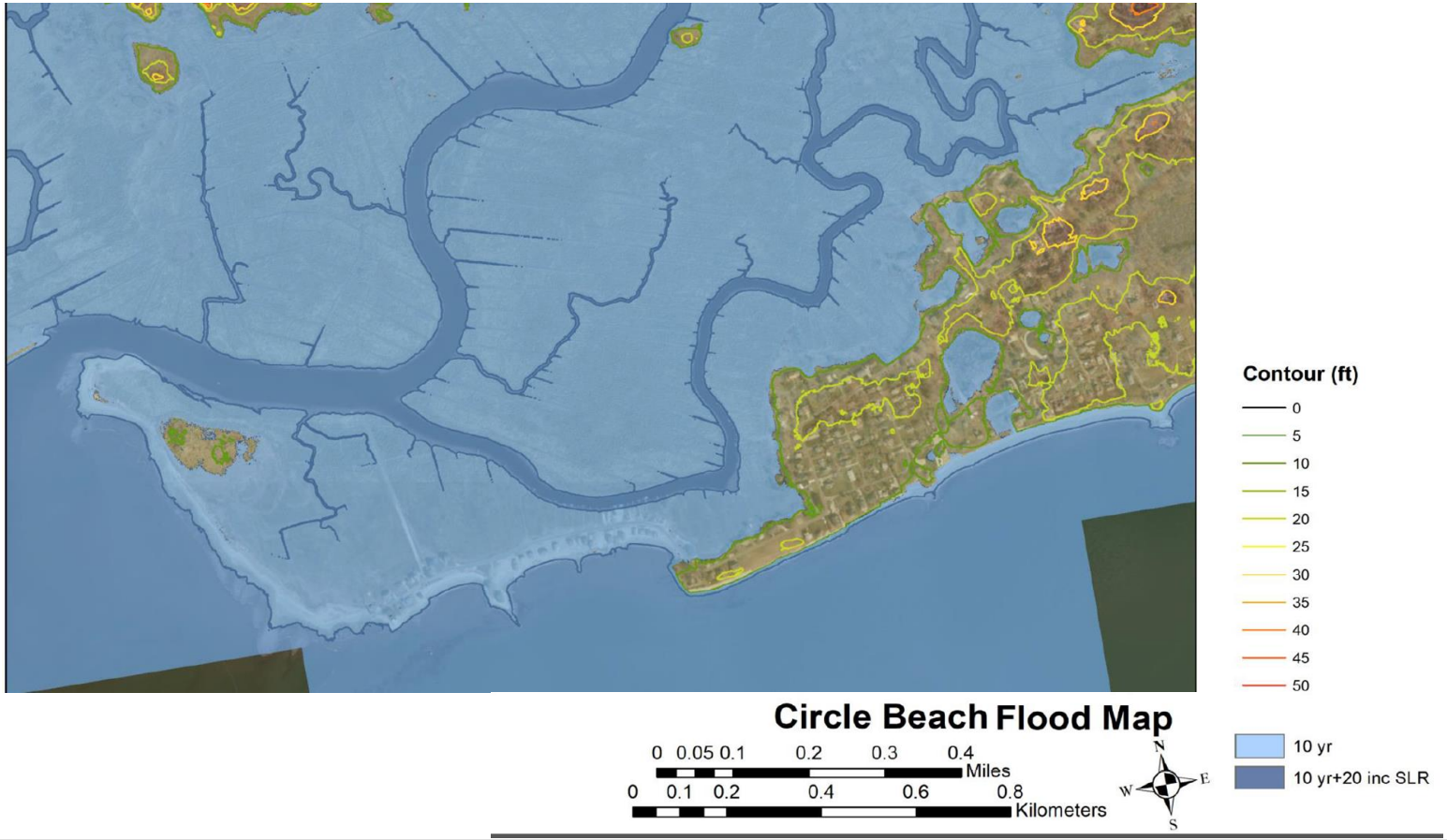
1) <Review State of CT challenges and opportunities and need for coordinated communication>
2) Projections to the state - TASK 9 WORK AND POLICY AND PLANNING PAPERS and the way that visualization is situated in the grant (specific tools) >
3) Discuss zones of shared risk / Resilience Corridor

4) Example one – barrier beach issue (zones of shared risk definition)
a. Understanding the hurricane impact vs. nor'easters
b. Pressure of raising homes on the municipalities (services and utilities)
c. Broader value for town? Or individual homes – how to prioritize.

5) Example two – **Resilience Corridor**
a. Critical facility –need to address hurricanes – dry egress is a near term
b. Define multifunctional benefits for investment in resiliency for the utility/infrastructure
c. Value of a resilience corridor as a raised egress. Functions like a spine providing dry egress
d. Homeowners can raise and have access while allowing wetland function to occur
e. Roll out methodology using a zones of shared risk approach
f. Give and take (built environment and water) (giving and taking of wetland) (wetland takings and mitigation)

6) Example three – impounded marsh and housing and the importance of field observations
a. Importance of understanding constrictions (wave height, elevation of road)
b. Capacity of wetland volume (reduces flood risk) define value for flood abatement
c. Wetland function considerations

7) Value of visualization as a tool for understanding the tradeoffs and challenges and for understanding the technical risks.
8) Feedback regarding the value of the visualizations and the content provided.
9) Next steps – vulnerability assessment as a tool to define typological conditions


Contour (ft)
0
5
10
15
20
25
30
35
40
45
50
Circle Beach Flood Map
0 0.05 0.1 0.2 0.3 0.4
Miles
0 0.1 0.2 0.4 0.6 0.8
Kilometers
N
W
E
S
10 yr
10 yr+20 inc SLR