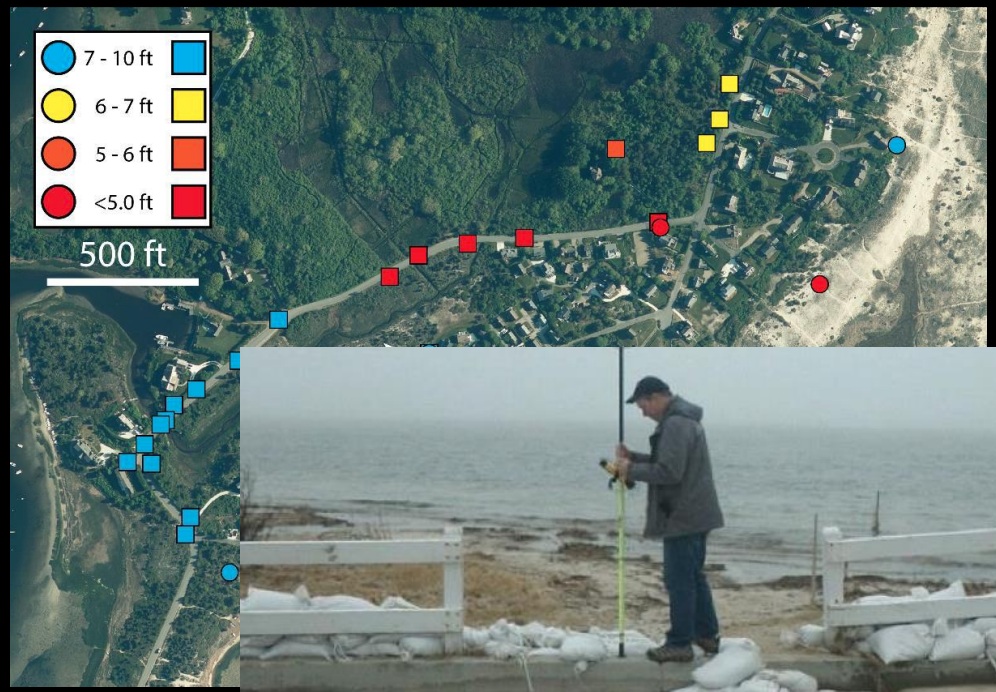
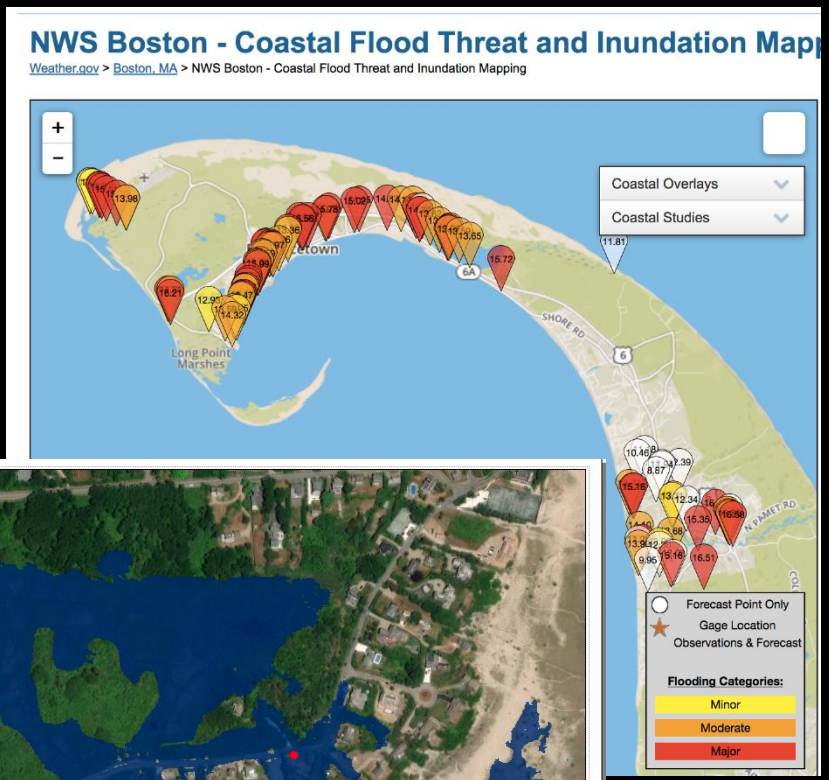
Mapping storm tide pathways in the Little Beach Area, Chatham





Presentation to Chatham Select Board

Mark Borrelli, Steve Mague, Bryan Legare

05 Nov 18

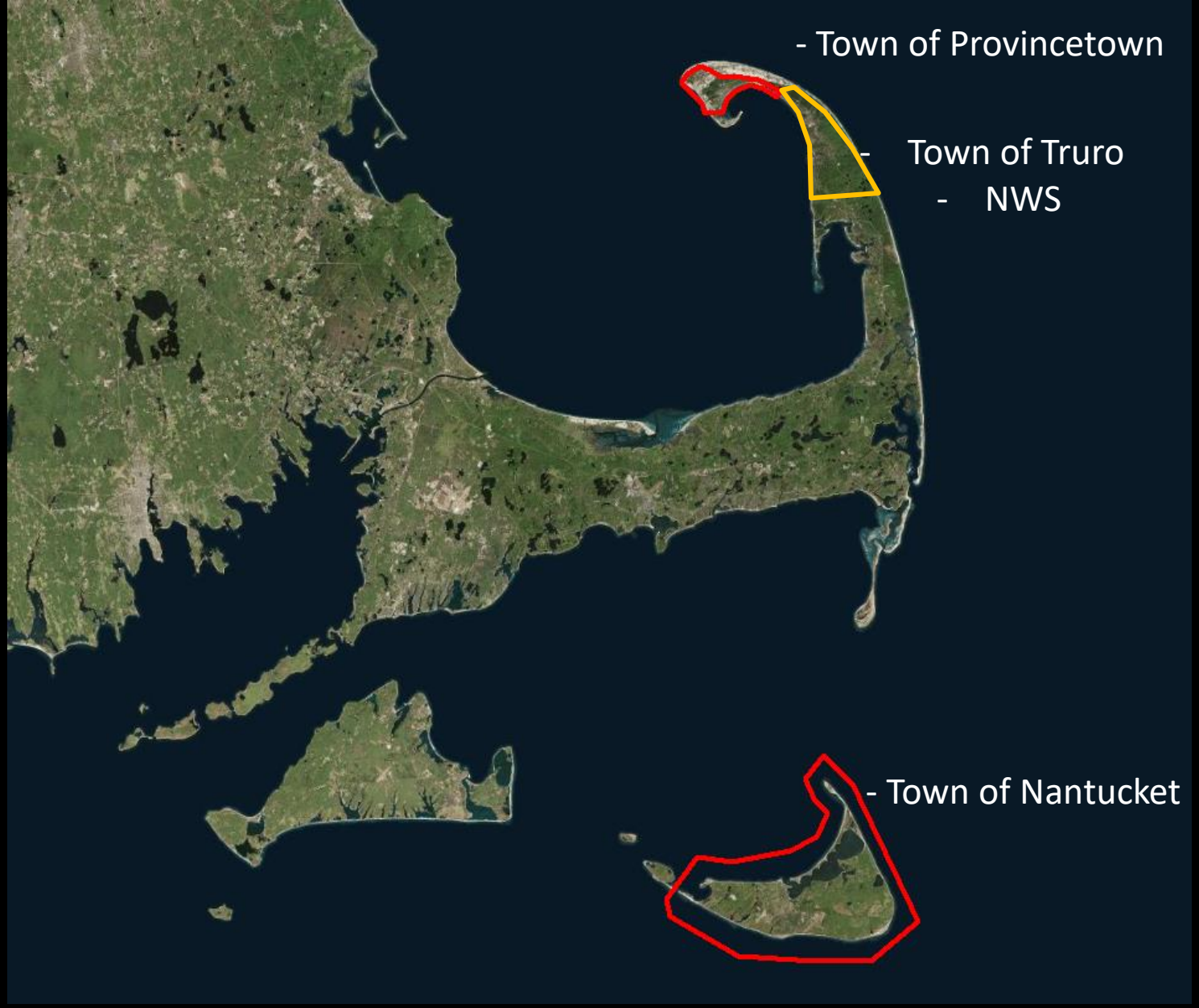
Center for Coastal Studies
Marine Geology

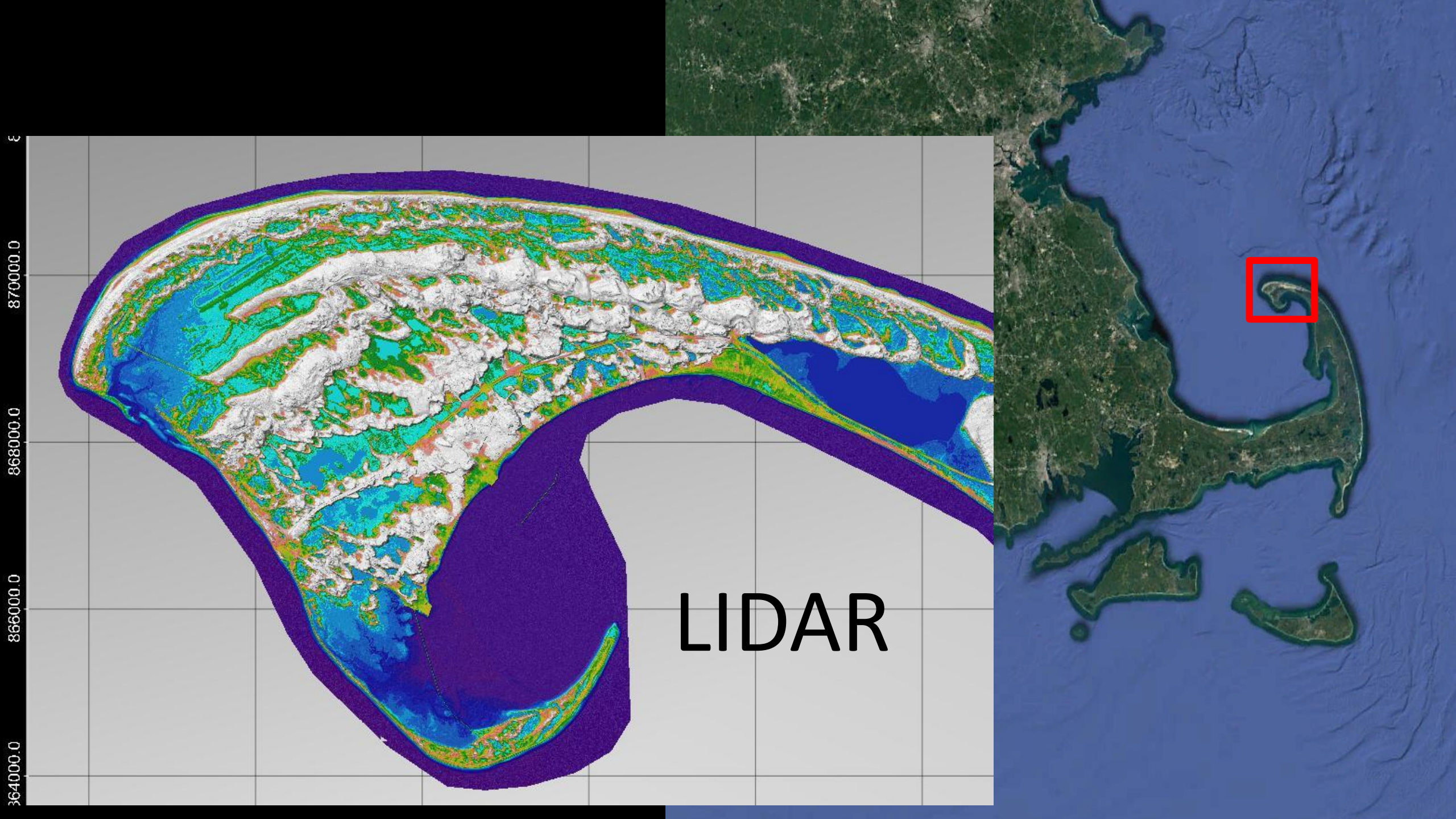
CAPE Lab
The Coastal Processes and Ecosystems Laboratory

The University of Massachusetts, Boston
School for the Environment

Mapping Storm-Tide (Inundation) Pathways

1. Useful AND usable to local entities/managers
2. Address current and future concerns
3. Little, to no, computing resources
4. Increase resiliency and autonomy


- Town of Provincetown
- Town of Truro
- NWS
- Town of Nantucket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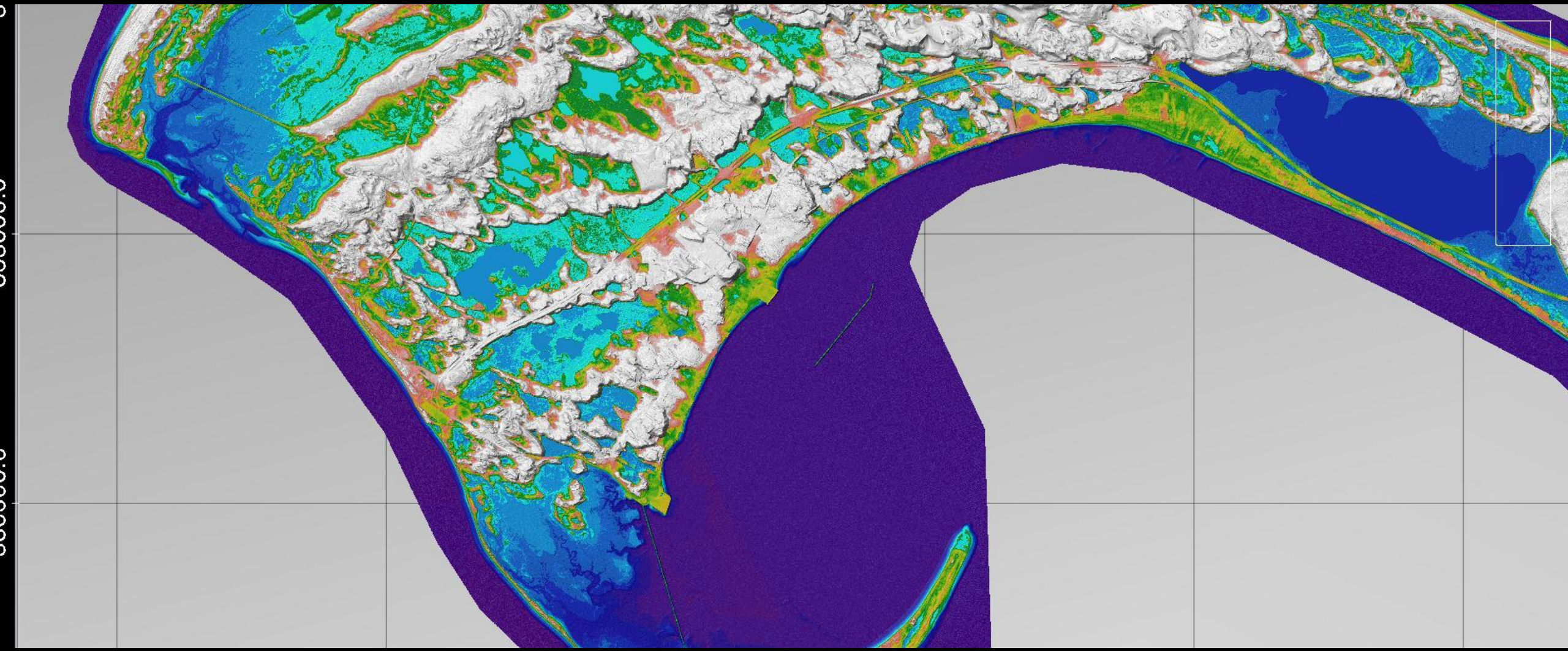
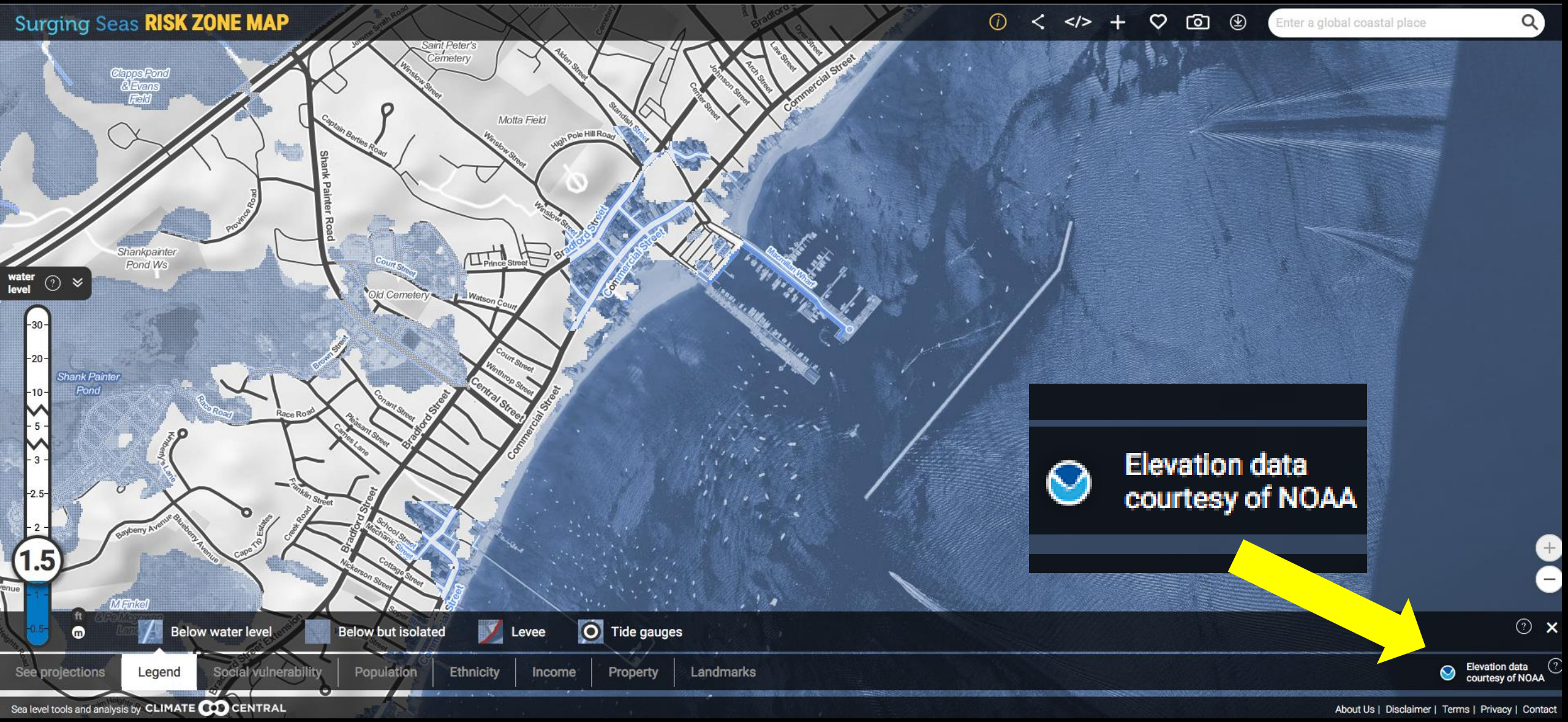
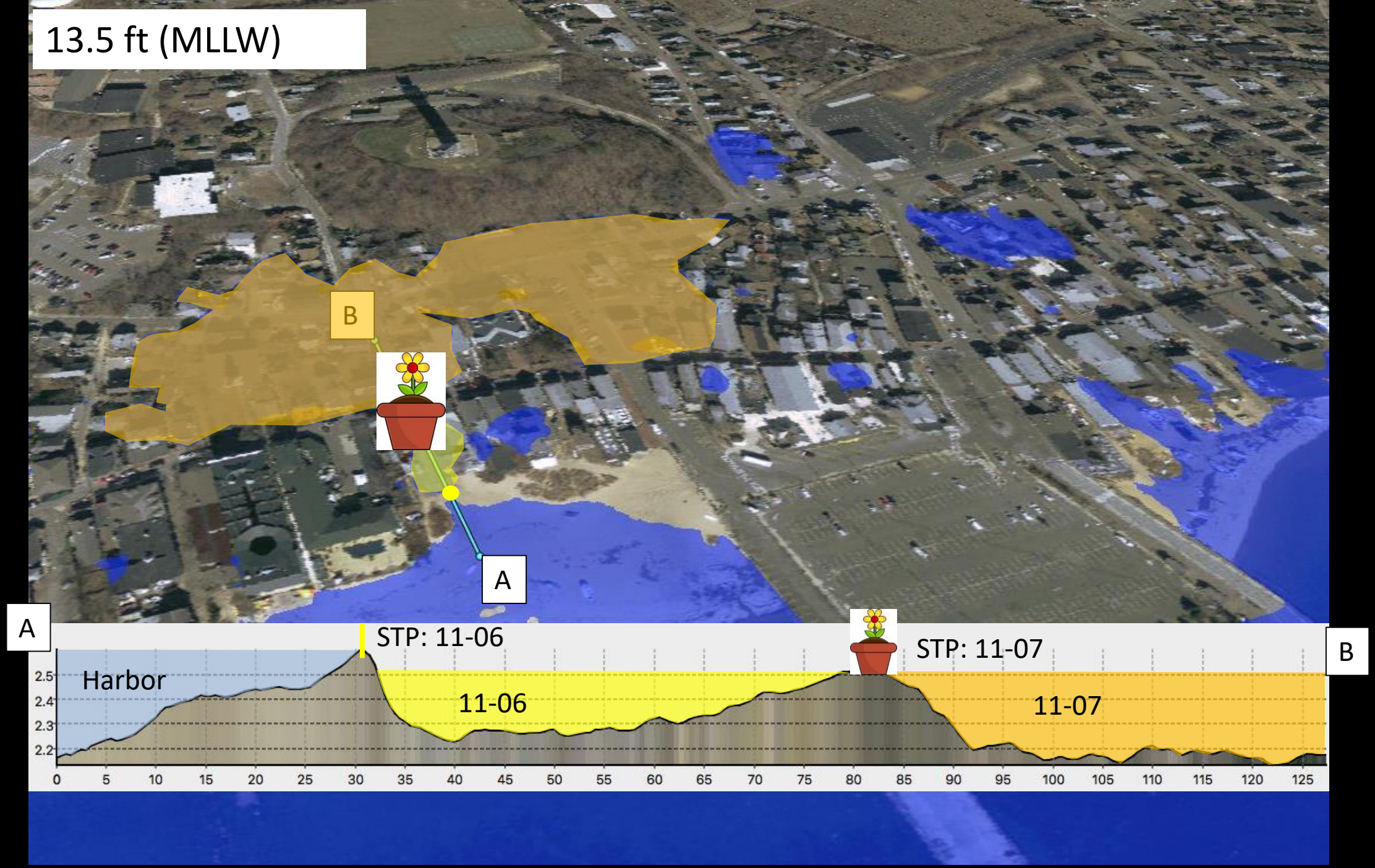
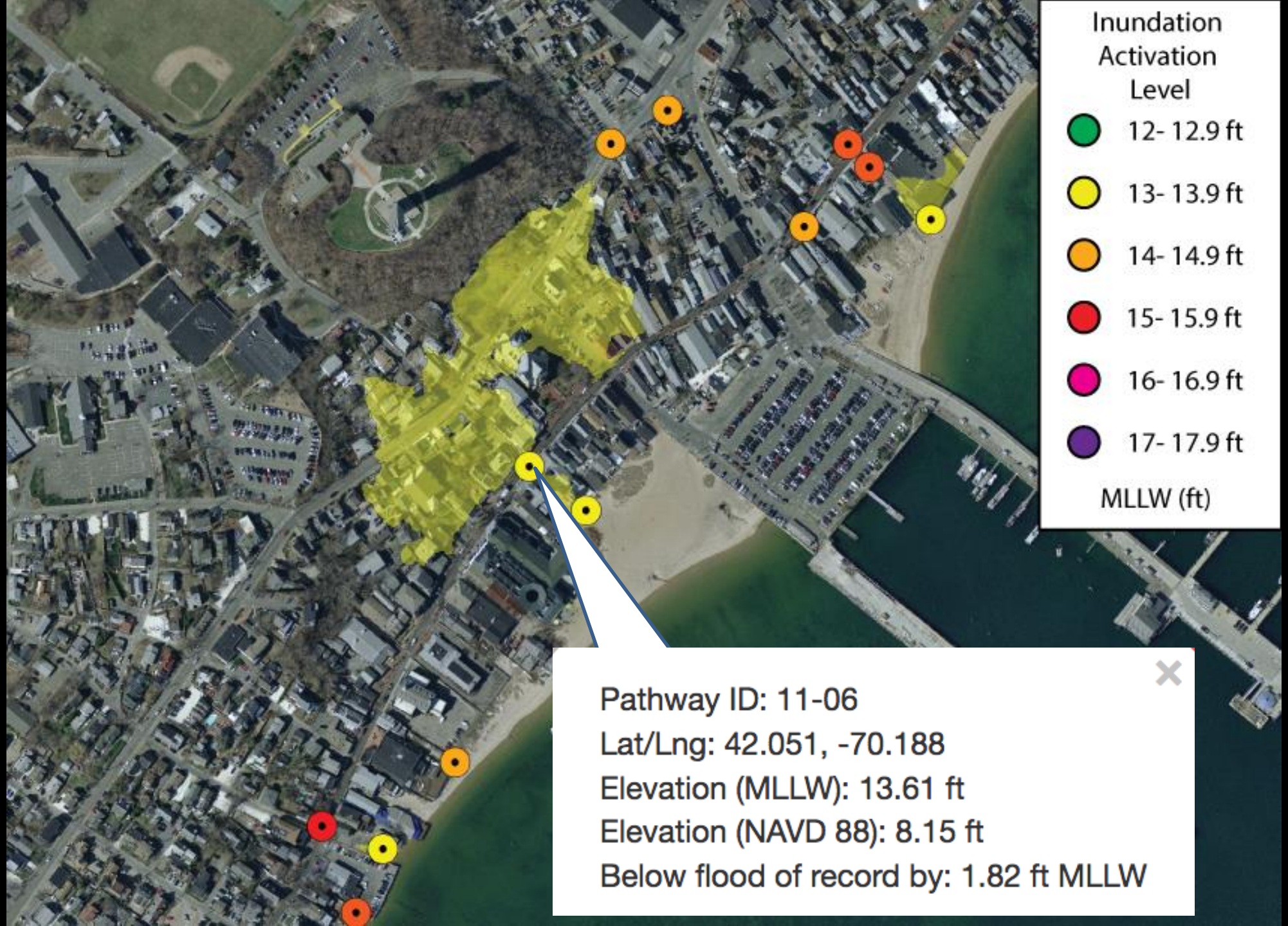


Surging Seas (http://sealevel.climatecentral.org/)




13.5 ft (MLLW)
B
A
A
STP: 11-06
STP: 11-07
B
Harbor
11-06
11-07
2.5
2.4
2.3
2.2
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
115
120
125

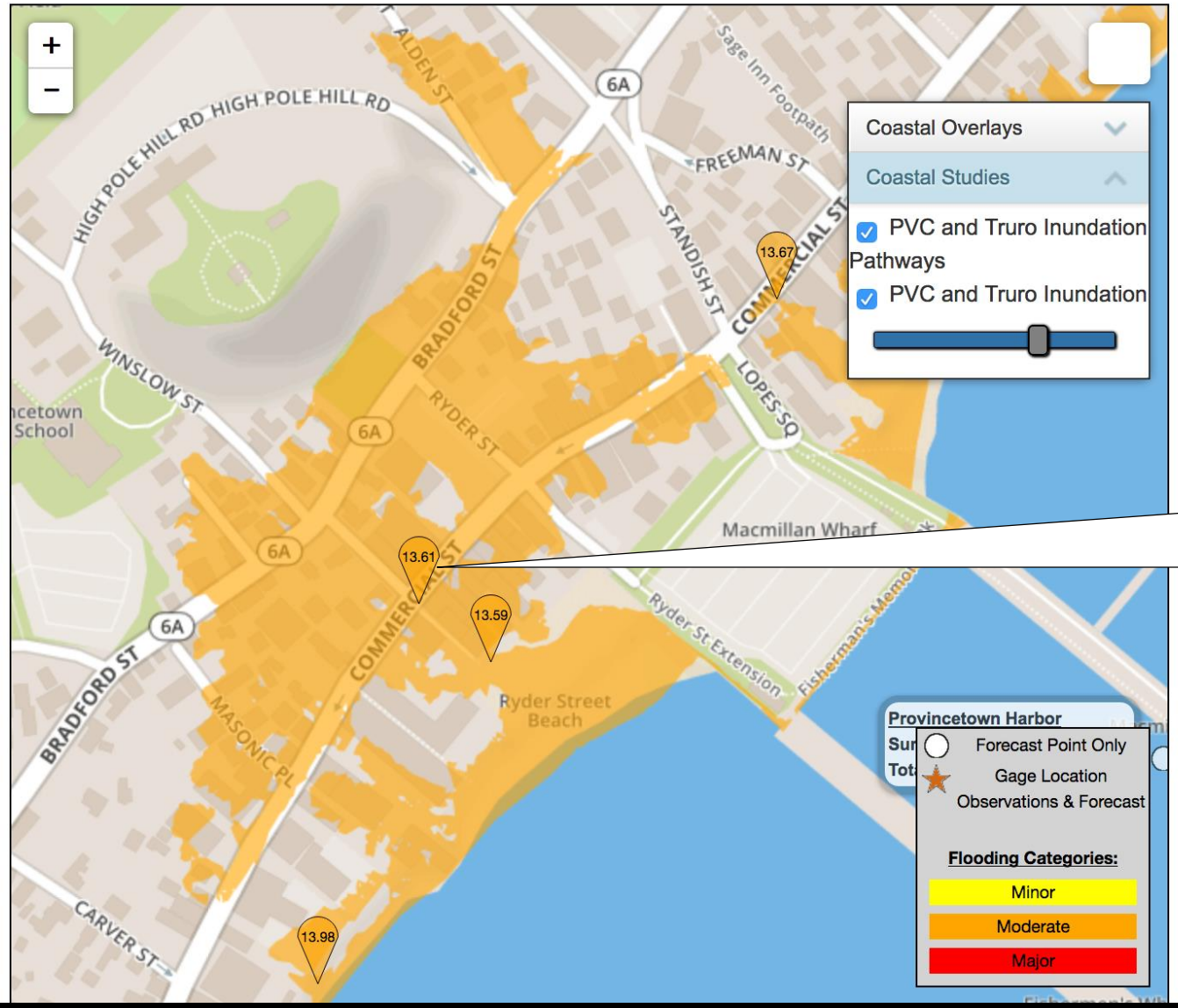

ADAMS


Inundation Activation Level
12- 12.9 ft
13- 13.9 ft
14- 14.9 ft
15- 15.9 ft
16- 16.9 ft
17- 17.9 ft
MLLW (ft)
Pathway ID: 11-06
Lat/Lng: 42.051, -70.188
Elevation (MLLW): 13.61 ft
Elevation (NAVD 88): 8.15 ft
Below flood of record by: 1.82 ft MLLW

NWS Boston - Coastal Flood Threat and Inundation Mapping

Weather.gov > Boston, MA > NWS Boston - Coastal Flood Threat and Inundation Mapping

Boston, MA
Weather Forecast Office



Forecast Issued:
NA

High Tide Cycle

5th PM | 6th AM | 6th PM | 7th AM | 7th PM | 8th AM | 8th PM

- Inundation Overlay -
Total Water Level Height (ft MLLW)

18 17 16 15 14 13 12

Pathway ID: 11-06
Lat/Lng: 42.051, -70.188
Elevation (MLLW): 13.61 ft
Elevation (NAVD 88): 8.15 ft
Below flood of record by: 1.82 ft MLLW


A


B

TOTAL STORM TIDE PATHWAYS FOR LITTLE BEACH

Source of water	Total Pathways	Standard (STP)	Spillway (STP-S)	Roadway (STP-R)	Unverified (STP-U)
Atlantic Ocean	15	1	9	0	5
Stage Harbor	21	1	12	4	4
TOTAL	**36**	**2**	**21**	**4**	**9**

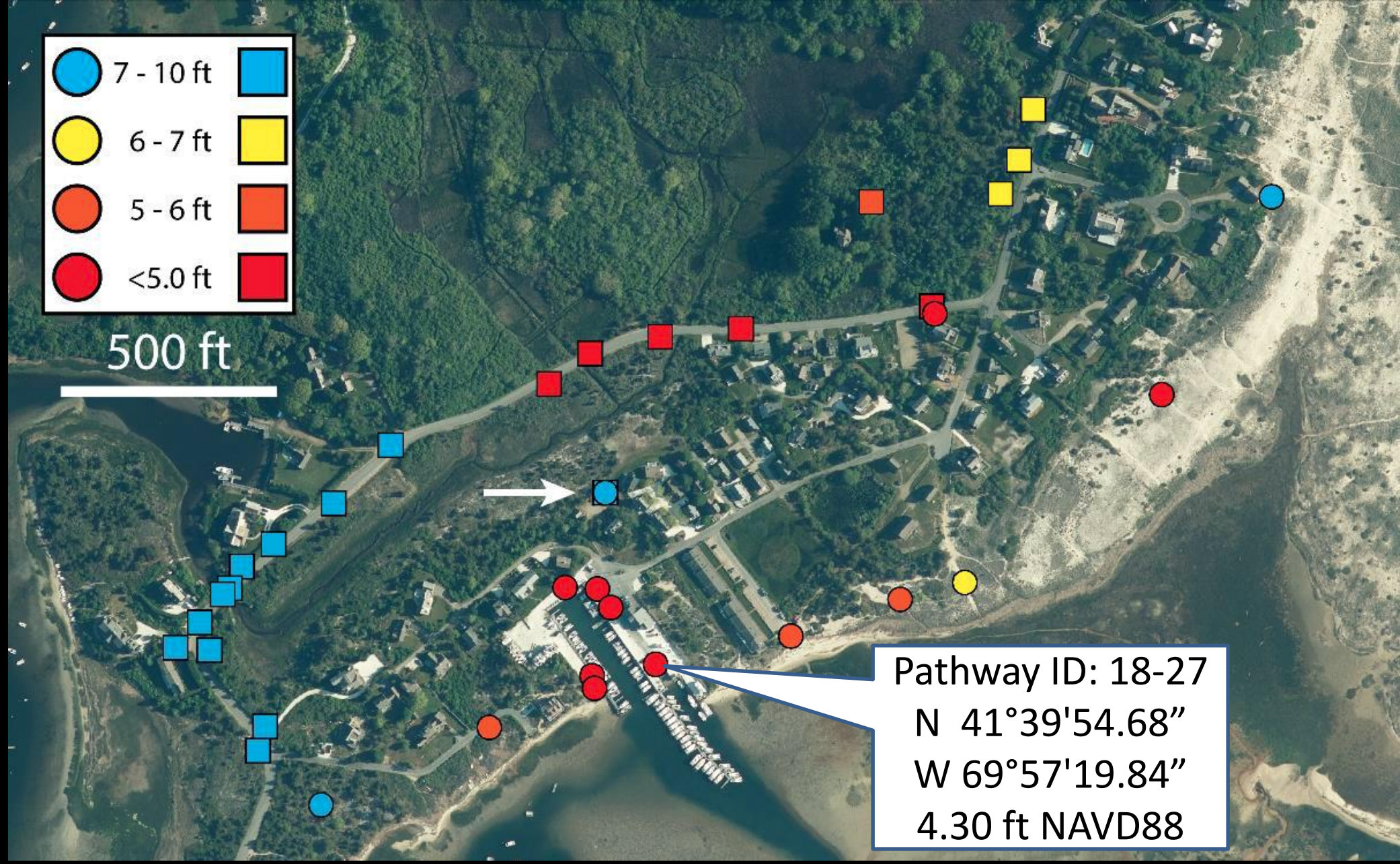
1) Standard
2) Spillway
3) Roadway
4) Unverified

36 Storm-tide Pathways

Shape = Source

Stage Harbor

Ocean




7
MLLW FT
N
0
0.05
0.1
Miles
CENTER FOR COASTAL STUDIES
PROVINCETOWN


7.5
MLLW FT
N
0
0.05
0.1
Miles
CENTER FOR COASTAL STUDIES
PROVINCETOWN

Recommendations

1. Address the low-lying storm tide pathways in areas proximate to Outermost Harbor Marina
2. Address the storm tide pathway low-lying areas at the end of Starfish Lane.
3. Evaluate and manage the existing tidal restriction under Morris Island to maximize its potential to control storm tide related flooding.
4. Conduct a detailed tide study of Stage Harbor and Outermost Harbor tides to understand the relationship between tidal flow in, and between, Nantucket Sound and the Atlantic Ocean and the potential effects on storm tide pathways of the Little Beach area.