

# Cold Spring Brook Marsh Erosion 1934-2022

Westbrook/Old Saybrook boundary





# Cold Spring Brook



Planet Labs, Dec. 2021



1934



Source: UConn Library

- Sand moves towards mouth from both directions
- Beach already starved for sand in 1934 because of trapping behind groins, jetties, and promontories



# Historic Ground View Images



Low Tide 1972 showing 8' Beach Head



Low Tide 2021, same view

Source: John Phillips



# Contemporary Conditions: High tide 2020



Source: Gail Hirst

View East at Cold Spring Brook, inland incursion of tide



# Shoreline and Marsh Retreat

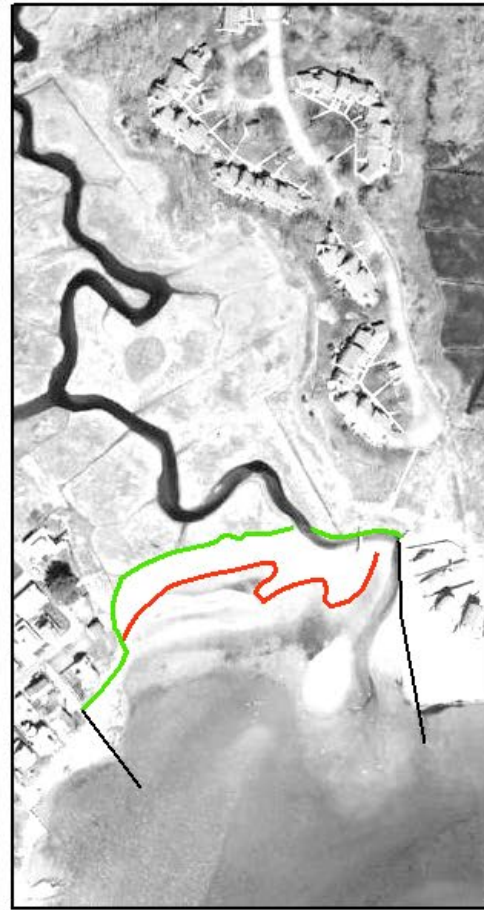
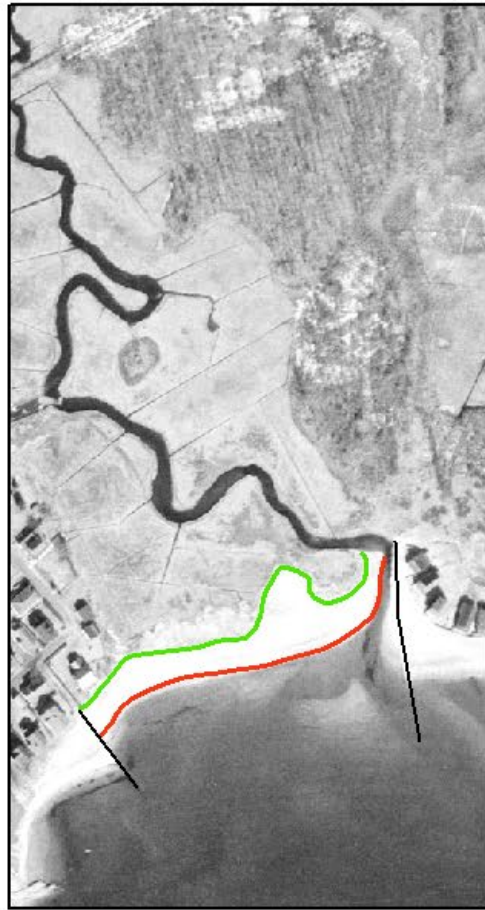
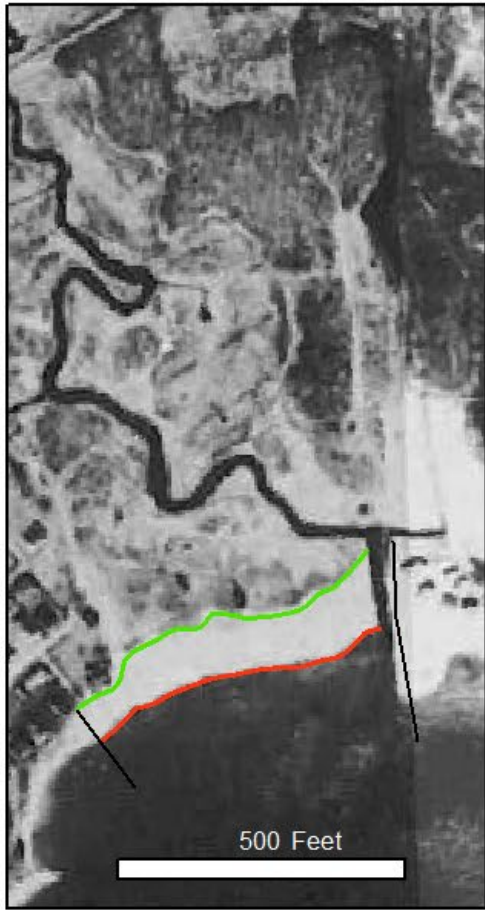
1934

1965

1990

2004

2016



- Marsh edge (green) and shoreline (red) retreat with time
- Accelerated in early 2000's after beach berm breached

Source: UConn Library



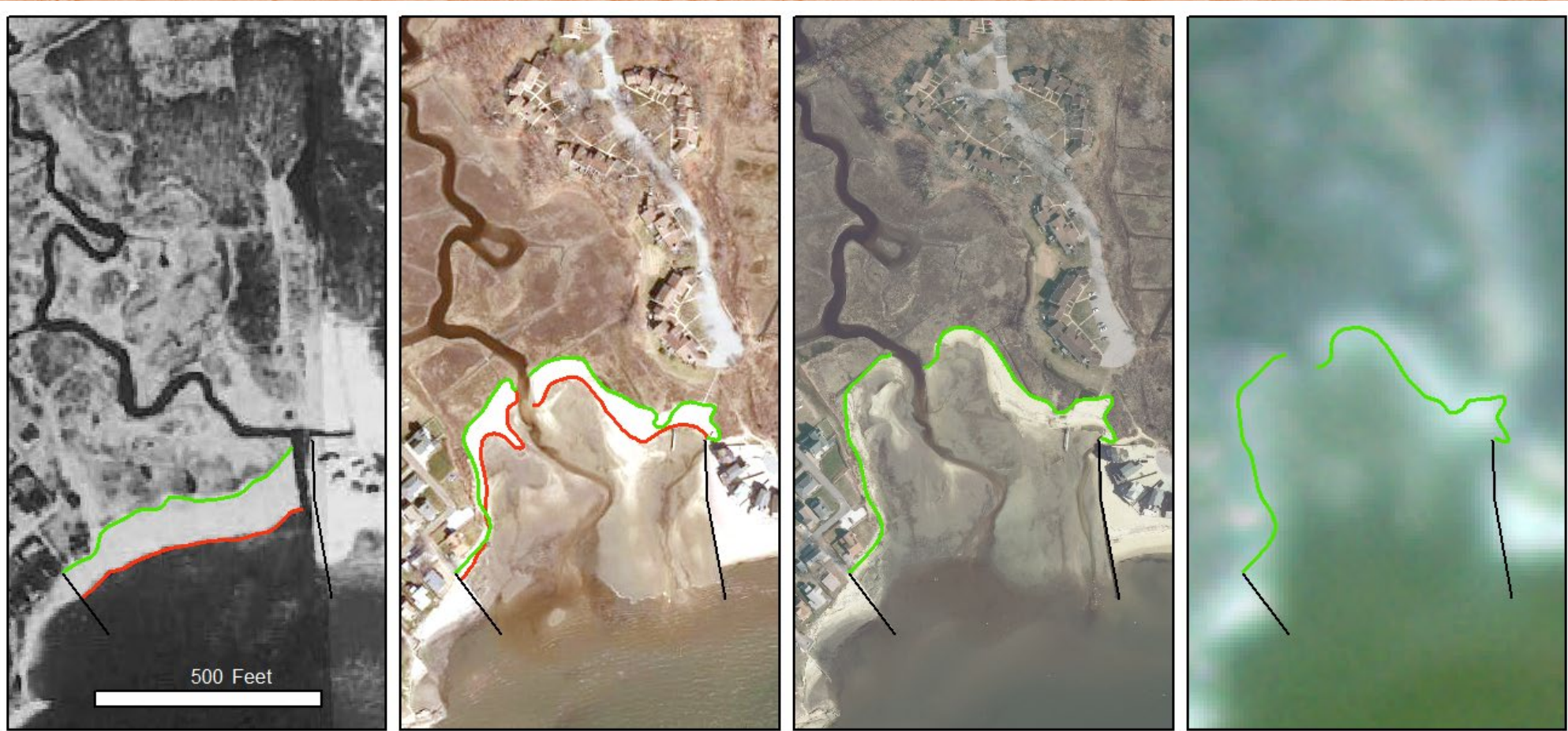
# Shoreline and Marsh Retreat

1934

2004

2016

March 21, 2022



UConn Library

Planet Labs



1991



2021



- With retreat, creek straightens and widens
- Tides are now swifter, waters saltier
- Both creek and marsh habitat area reduced



## Environmental factors: Sand availability, sea level



- Drowned rivers
- Sand from erosion of glacial till
- Sand trapping by groins and jetties (see Bohlen 2002)

- Excavation of sand for Chalker Beach replenishment, June 1991

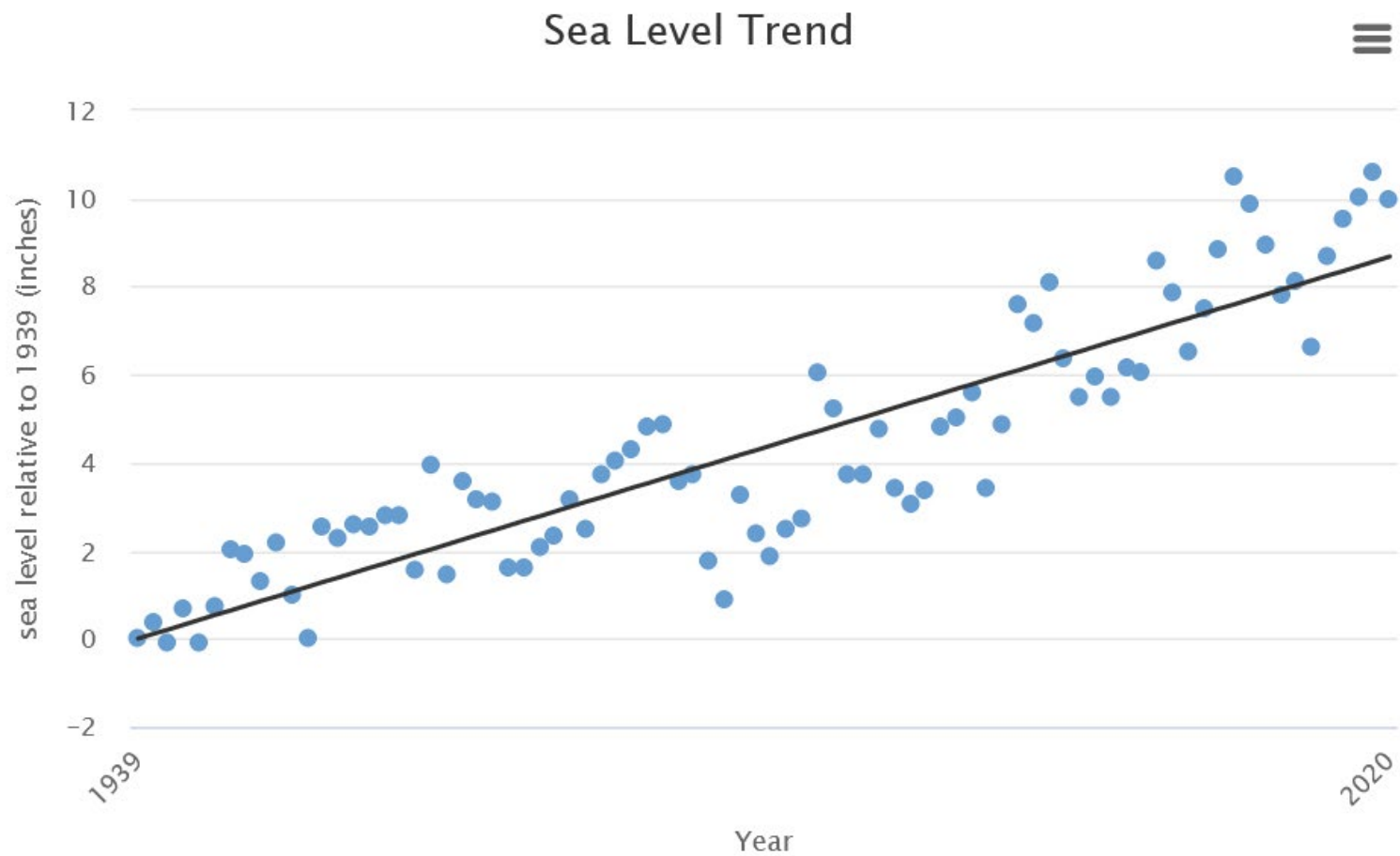


Kings Point, NY

Bridgeport, CT

New London, CT

The Battery, NY



Highcharts.com

Sea level rose 8 inches over the period of aerial photography





WATER LEVEL

VIEW BY SCENARIO

VIEW BY YEAR

?

Chapman Beach Rd, Westbrook, CT, 06498, USA

Scenario Year

2022 Projections

This viewer models coastal flooding with sea level rise. This is today.

Rise



Local Scenarios



Mapping Confidence



Marsh Migration



Vulnerability



High Tide Flooding

7ft

6ft

5ft

4ft

3ft

2ft

1ft

MHHW

2100 : 5.05ft

2080 : 3.35ft

2060 : 2.00ft

2040 : 1.05ft

2020 : 0.43ft

High

Intermediate High

Intermediate

Intermediate Low

Sea level

Wet area

NEW LONDON, CT  
FOR INTERMEDIATE HIGH SCENARIO





WATER LEVEL

VIEW BY SCENARIO

VIEW BY YEAR

?

Scenario Year

2022 Projections

An additional foot of sea level rise will flood the entire marsh. Assuming the default scenario, that will occur by 2040.



Local Scenarios



Mapping Confidence



Marsh Migration



Vulnerability



High Tide Flooding

7ft

6ft

5ft

4ft

3ft

2ft

1ft

Current MHHW

UNITS

2100 : 5.05ft

2080 : 3.35ft

2060 : 2.00ft

2040 : 1.05ft

2020 : 0.43ft

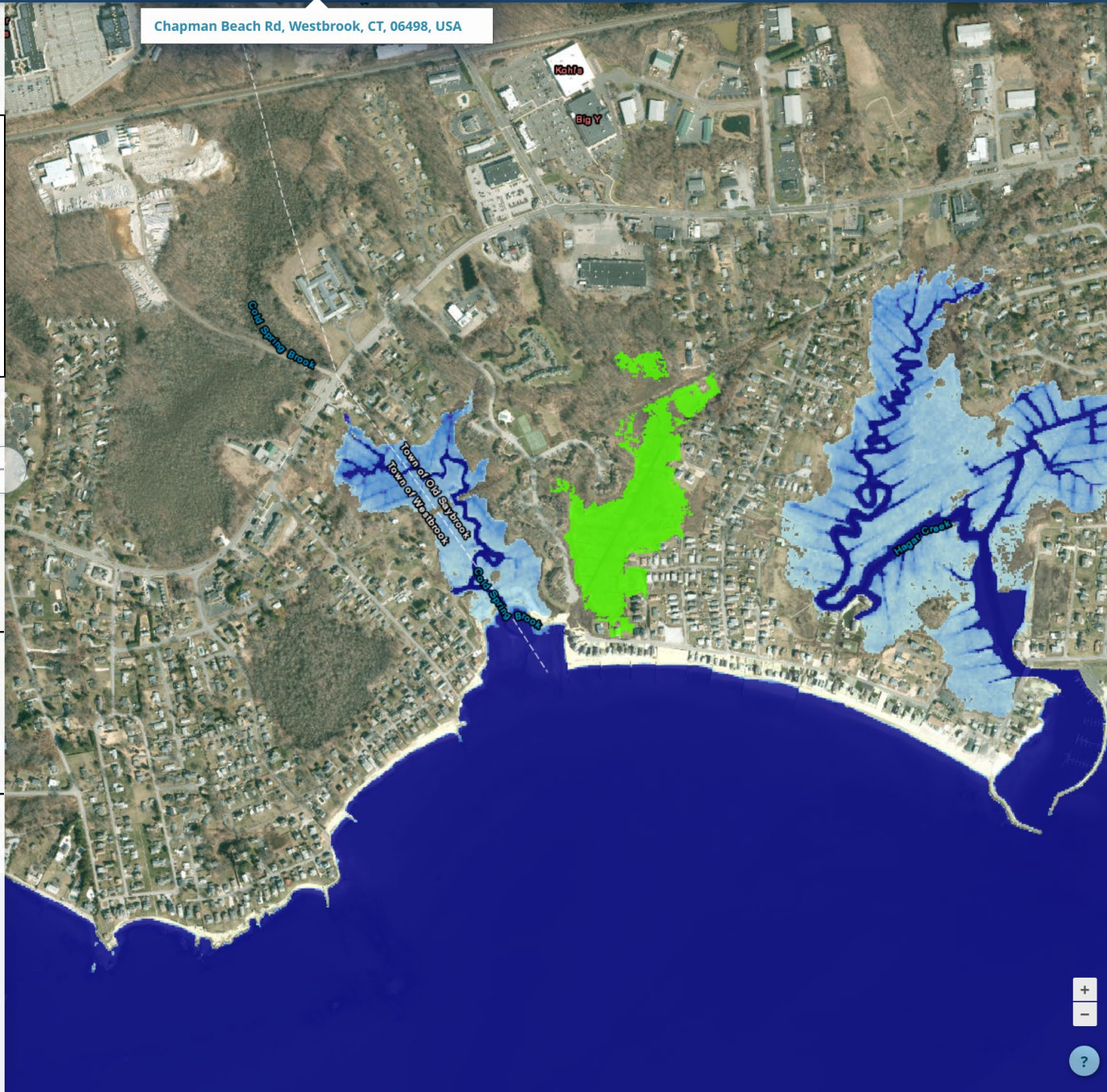
Intermediate High

Intermediate

Intermediate Low

NEW LONDON, CT

FOR INTERMEDIATE HIGH SCENARIO





# Where do we go from here?

- **On March 30, 2022, a discussion was held with several of the private and community landowners, officials from Westbrook, Old Saybrook, CT Sea Grant, Save the Sound, and others**
- **Westbrook will lead a proposal to the NFWF National Coastal Resilience Fund**
- **Possible proposal to NFWF Long Island Sound Futures Fund**