

A photograph of a lush green marsh with a narrow dirt path leading through tall grasses and reeds. The text is overlaid on the image in a bright yellow color.

CITY OF MILFORD CALF PEN MEADOW MARSH & BEACHLAND AVE. FLOOD MITIGATION PROJECT

State of Connecticut

Department of Housing

Community Development Block Grant – Disaster Recovery
(CDBG-DR)



CONNECTICUT DEPARTMENT OF HOUSING

Select Language | ▼

Translation
Disclaimer

Home

About Us

Press Room

Contact

PROGRAMS

FUNDING OPPORTUNITIES/RFPs

APPLICATIONS

HOUSING PARTNERS

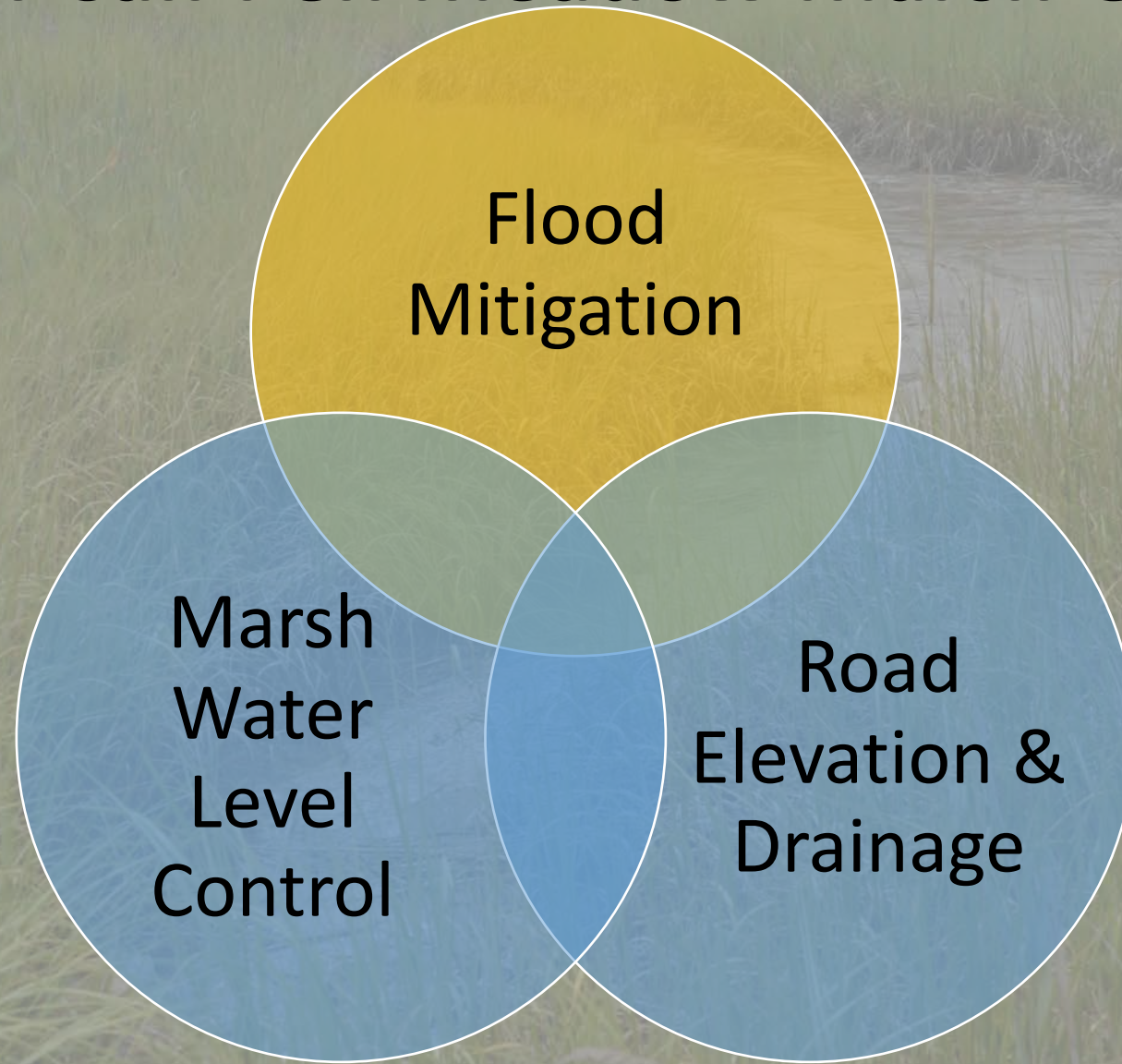
POLICY & RES

Second Tranche Infrastructure Application Calf Pen Meadow Marsh

Welcome to
Connecticut
Department of Housing



2014 Calf Pen Meadow Marsh Goals

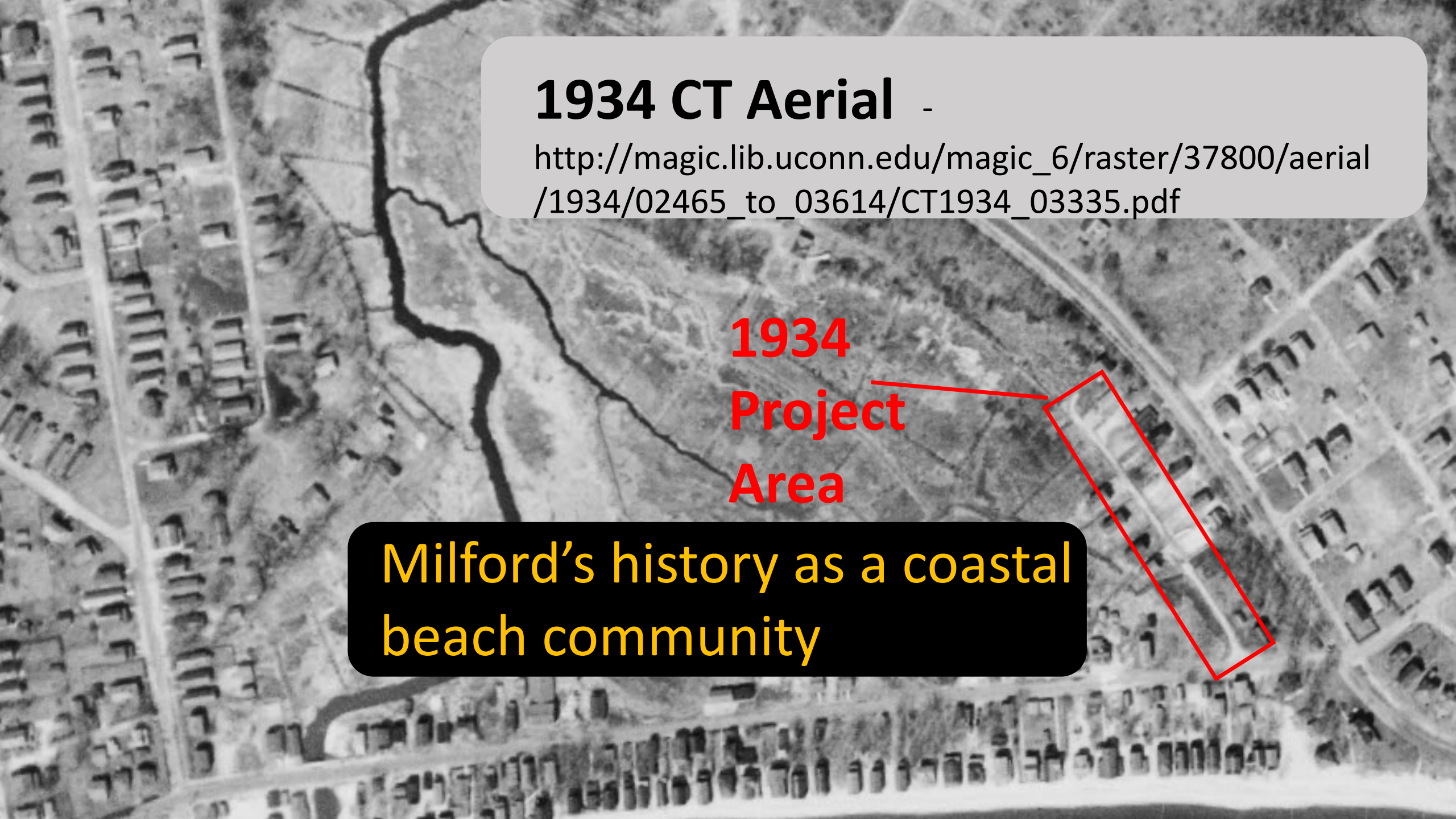


1934 CT Aerial -

http://magic.lib.uconn.edu/magic_6/raster/37800/aerial/1934/02465_to_03614/CT1934_03335.pdf

1934
Project
Area

Milford's history as a coastal
beach community





**Current
Project
Area**

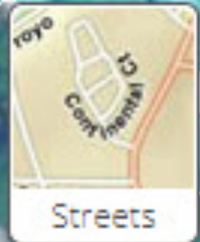
0 145 290 580 Feet

This Map was made from the City of Milford Geographic Information System. The City expressly disclaims any liability that may result from the use of the map.



1 inch = 170 feet

Milford has an estimated eighty five coastal access locations identified leading to Long Island Sound and the Housatonic River coastal resources. The access points are noted as a red triangle. These coastal access locations are undergoing a review process to determine if these locations are publically available to be used by the general public. Milford's extensive 17.5 miles of shoreline includes many private beaches. Please respect these private areas by remaining below the high tide area.



Calf Pen Meadow Creek

AE 11 Special Flood Hazard Area

Zone AE
(EL 11 Feet)

Zone AE
(EL 12 Feet)

AREA OF MINIMAL FLOOD HAZARD
Zone X


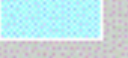

City of Milford
090082

09009C0534J
eff. 7/8/2013

Zone VE
(EL 13 Feet)

Long Island Sound

Zone VE
(EL 19 Feet)

SPECIAL FLOOD HAZARD AREAS	
	Without Base Flood Elevation (BFE) Zone A, V, A99
	With BFE or Depth
	Regulatory Floodway Zone AE, AO, AH.

Phil Forzley, PE, Vice President & Department Manager of the Water and Natural Resources Department.

City's Flood Erosion Control Board & Public Works selected Fuss & O'Neill for the design and permitting of the Calf Pen Meadow Marsh Flood Mitigation Project



Calf Pen Meadow Marsh Goal



Tide Gate



Manual Tide Gate before 2000

0 145 290 580 Feet

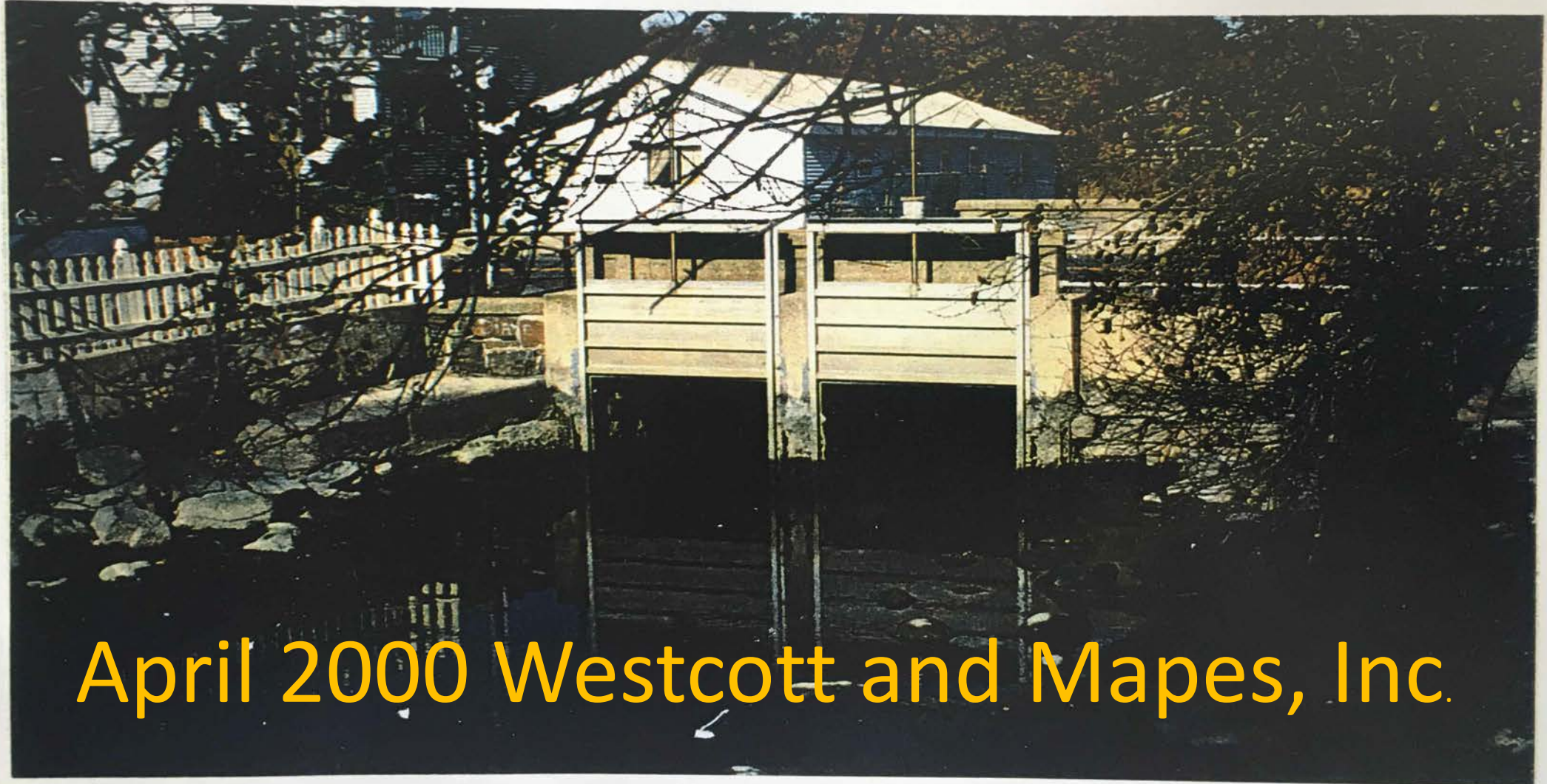
1 inch = 170 feet

This Map was made from the City of Milford Geographic Information System. The City expressly disclaims any liability that may result from the use of the map.



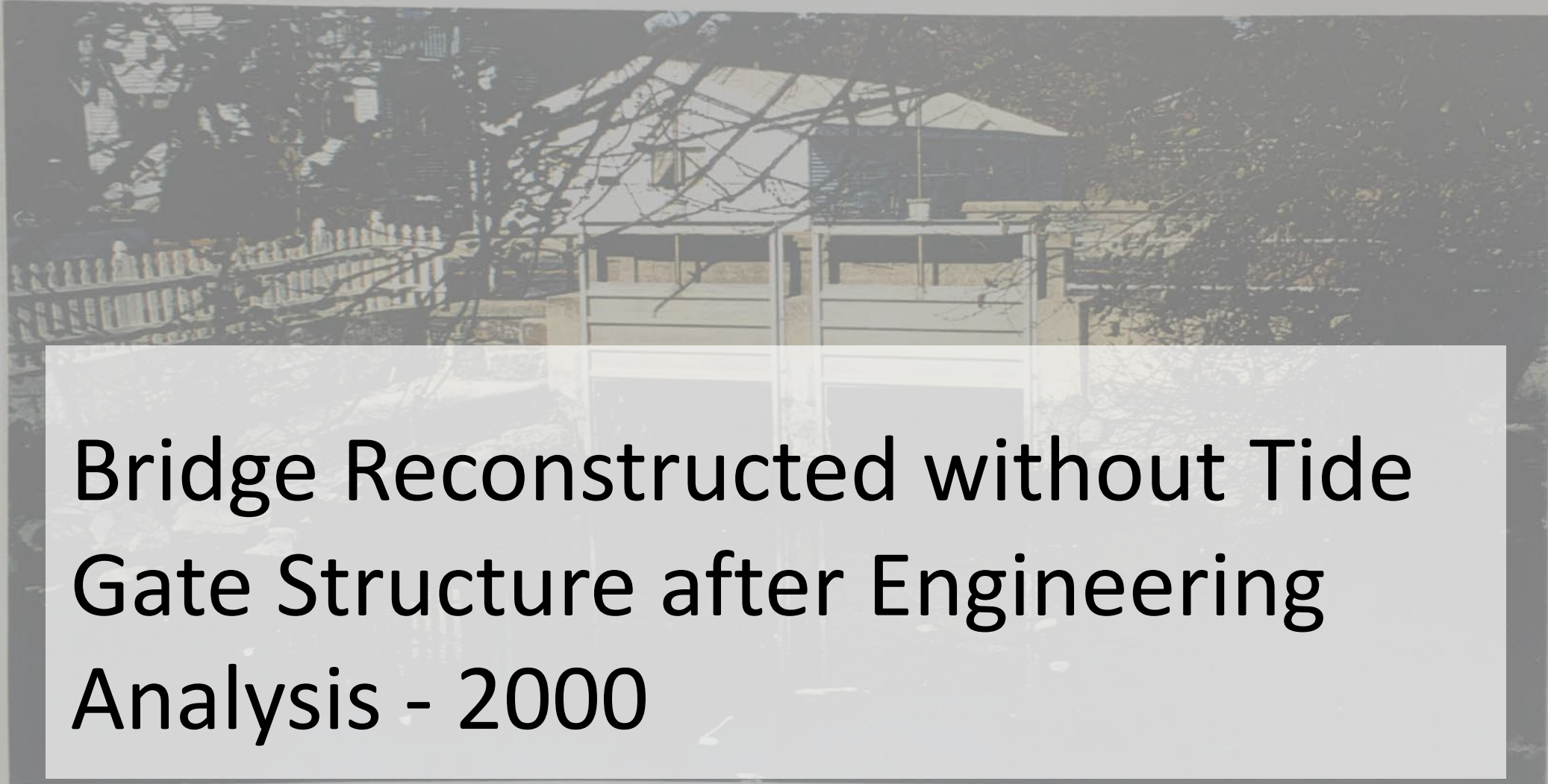
Milford has an estimated eighty five coastal access locations identified leading to Long Island Sound and the Housatonic River coastal resources. The access points are noted as a red triangle. These coastal access locations are undergoing a review process to determine if these locations are publically available to be used by the general public. Milford's extensive 17.5 miles of shoreline includes many private beaches. Please respect these private areas by remaining below the high tide area.

**MELBA STREET BRIDGE
CALF PEN MEADOW CREEK
DRAINAGE STUDY**

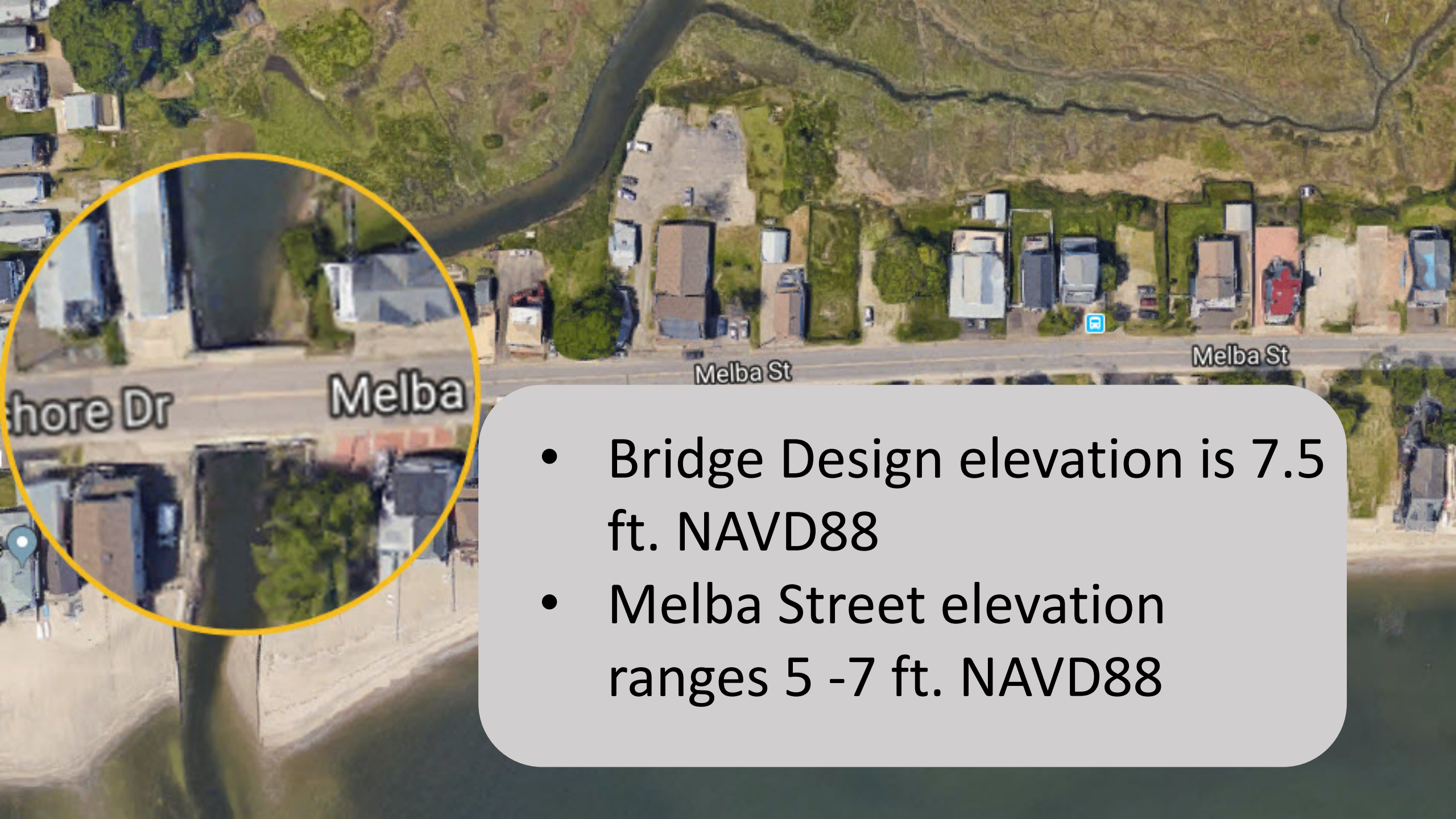


April 2000 Westcott and Mapes, Inc.

MELBA STREET BRIDGE
CALF PEN MEADOW CREEK
DRAINAGE STUDY



Bridge Reconstructed without Tide
Gate Structure after Engineering
Analysis - 2000



- Bridge Design elevation is 7.5 ft. NAVD88
- Melba Street elevation ranges 5 -7 ft. NAVD88

Upland Flooding Potential Alternatives

Fuss & O'Neill

CT DEEP Office of Long Island Sound Program



Fuss & O'Neill

Woods Hole Group

Hydrodynamic Study



First Order Assessment Conclusions

Tide Gate Not Recommended

Tide Gate Assessment by Woods Hole Group

- ❖ **Roadway elevations would be over topped limiting the effectiveness of the structure under 5-10 year storm events.**
- ❖ **Additional roadway, bridge, and coastline resiliency work would be required.**

Calf Pen Meadow Marsh Goal

**Beachland
Ave. Road
Design &
Adaption**

Permits

- ✓ Certificate of Permission (COP)
- ✓ Flood Management Certificate
- ✓ CAM / CSPR

Connecticut Department of
Energy and Environmental Protection



✓ General Permit 18 under the Connecticut General Permit

NEW ENG



US Army Corps of Engineers



[ABOUT](#)

[BUSINESS WITH US](#)

[MISSIONS](#)

[LOCATIONS](#)

[CAREERS](#)

[MEDI](#)


[HOME](#) > [MISSIONS](#) > [REGULATORY](#) > [STATE GENERAL PERMITS](#) > CONNECTICUT GENERAL PERMIT

[Nationwide Permits](#)

[Connecticut General Permit Document](#)

...d Ave
...ecticut
... Inc.

View - Apr 2008



Currently shown: Apr 2008

2015



2008 Google Maps Photo



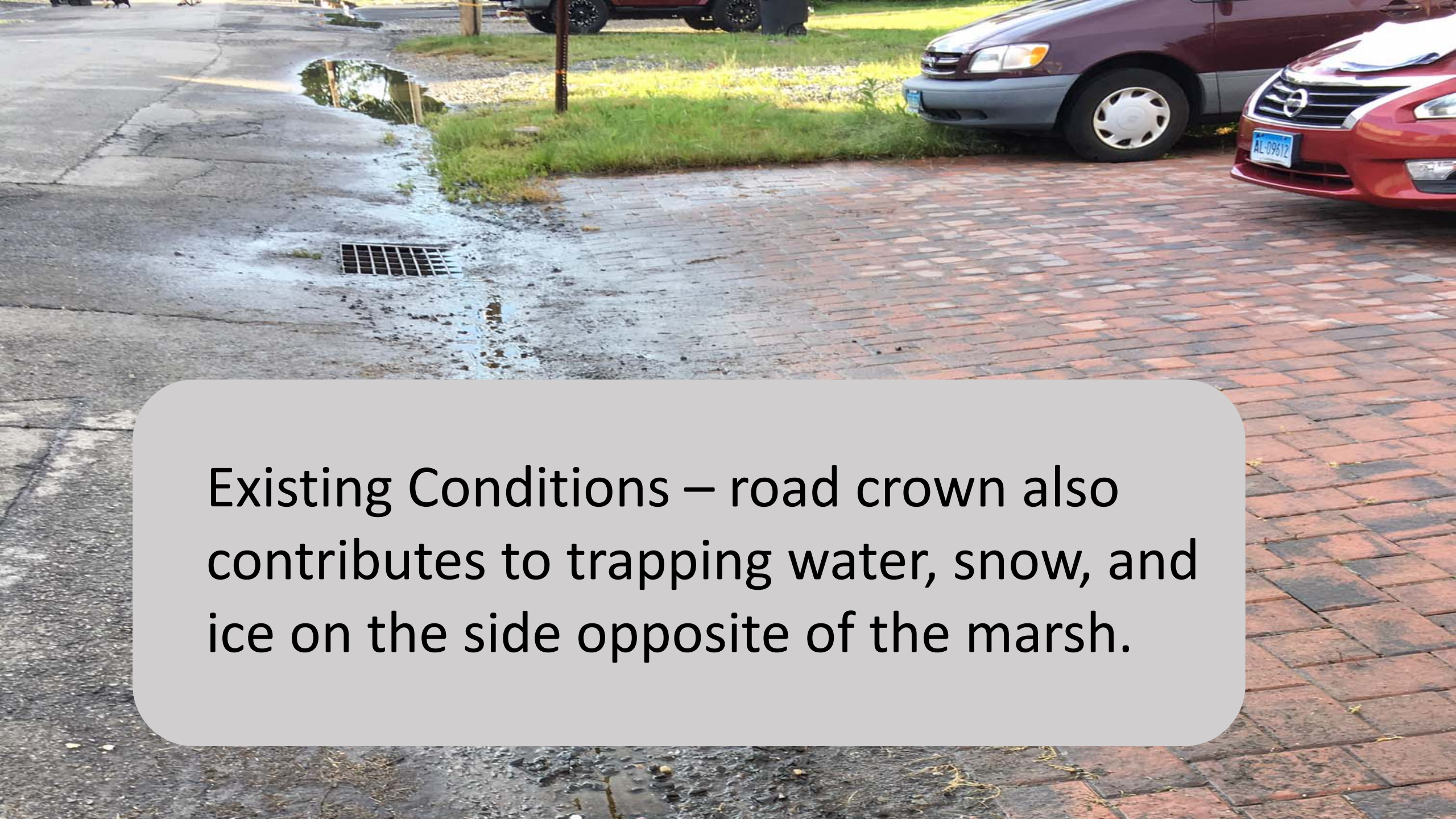
After Storms Irene 2011 & Sandy 2012 some properties are re-built & elevated - 2018 photo



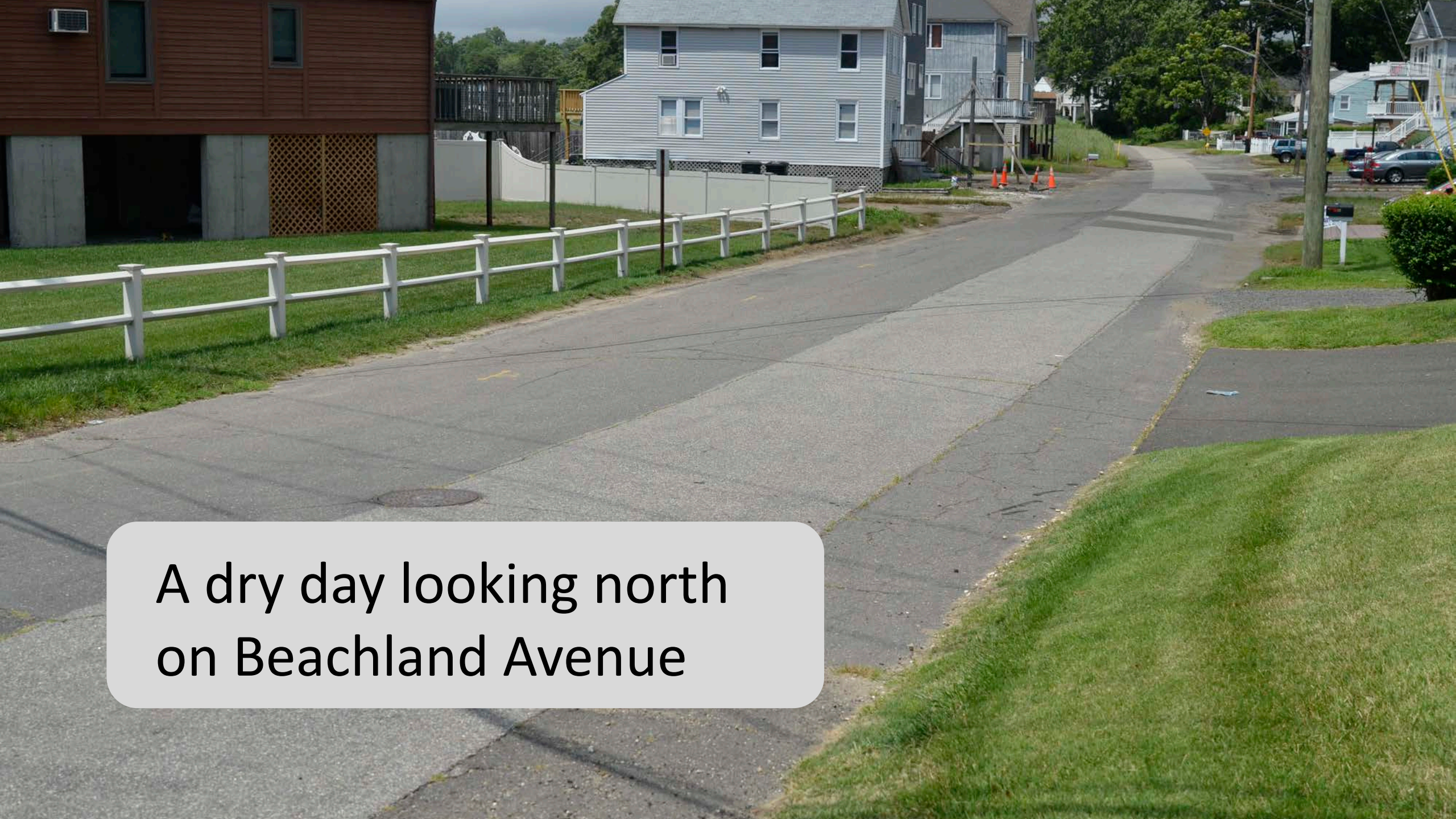
Some properties have not been elevated
- 2018 photo



Existing Conditions -- stormwater catch basins contributing to regular road flooding



Existing Conditions – road crown also contributes to trapping water, snow, and ice on the side opposite of the marsh.



A dry day looking north
on Beachland Avenue



A high tide full moon day
looking north on
Beachland Avenue



A high tide full moon day
looking south on
Beachland Avenue

BEACHLAND AVENUE FLOOD MITIGATION PROJECT

BEACHLAND AVENUE · MILFORD · CONNECTICUT
REVISED JUNE 22, 2018

PREPARED FOR
CITY OF MILFORD
70 WEST RIVER STREET
MILFORD, CT. 06460



PREPARED BY
FUSS & O'NEILL
546 HARTFORD ROAD
MANTONVILLE, CONNECTICUT 06040
860-261-2400
www.fuss.com

- ✓ Project Specifications
- ✓ Existing Conditions, CS-101
- ✓ Demolition, Erosion & Sedimentation Control, CS-102
- ✓ Proposed Conditions, CS-103
- ✓ Construction Administration



LOCATION MAP
SCALE: 1" = 200'

5.5 ft.

Beachland Ave. & Melba St. to Calf Pen Meadow Marsh channel is 374' with 2.0' grade change = 0.534%.

Basically flat but performs as designed and constructed.

3.5 ft.

5.5 ft.



VAZ Quality Works, LLC

**VAZ Quality Works, LLC.
HOW CAN YOU MAKE SURE
YOU HAVE THE BEST?**

WE CAN HELP.

MASONRY

Stone work, Retaining Walls, Patios, Veneer,
Walkways, Concrete work, Porches, Belgium
Blocks, Driveways, Pool Decks, Stone edging,
Outdoor fireplaces, Chimney New & Repairs

PAVING

Driveways, Parking lots, Roads, Curbs,
Hauling, Repairs Patch, Gravel and Stone,
Resurfacing, Extensions, Sports Courts

EXCAVATING

Site work, Sewer, Water line, Septic Tanks,
Drainage work, foundation & footing,
Concrete slabs, site clearing

DEMOLITION

Interior & Exterior, Residential, Commercial,
Masonry walls, slabs

SNOW PLOWING

AND MUCH MORE.....

WELCOME

company in its first
headquartered in
ception in 2000, we
e most diversified
Luis Vaz founded
possible service to

Fairfield County for
quality work at competitive prices, as a family-owned and
operated business, taken pride in every job we complete.

Our greatest assets are unity, loyalty, hard work and
expertise of the employees, who take pleasure and pride in
working here as a team. We strive to be family owned
company in which every employee feels valued.

What set VAZ Quality Works apart from the Competition
are their hands on experience of a variety of different
projects, by offering you a highly professional experience,
affordable, and dependable service with your project.

We use only the finest quality materials so your product
will not only exceed your expectations, it will last for many
years to come. Whether you are a large organization,
contractor or a home owner, we offer you a fulfilling
experience.

All work is guaranteed; we ensure that you will be
completely satisfied with our work. That's why our
customers call us back--they trust us to get the job done
right.

179 William Street
Bridgeport, CT06608
Tel: 203-336-5229
Fax: 203-336-5229

WWW.VAZQUALITYWORKS.COM

**WHEN LOOKING FOR THE
BEST IN QUALITY AND
PERFORMANCE, RELY ON US
FOR ALL YOUR PROJECTS**

Experience

Precision

Convinces

Professionalism

Family Owned and Operated

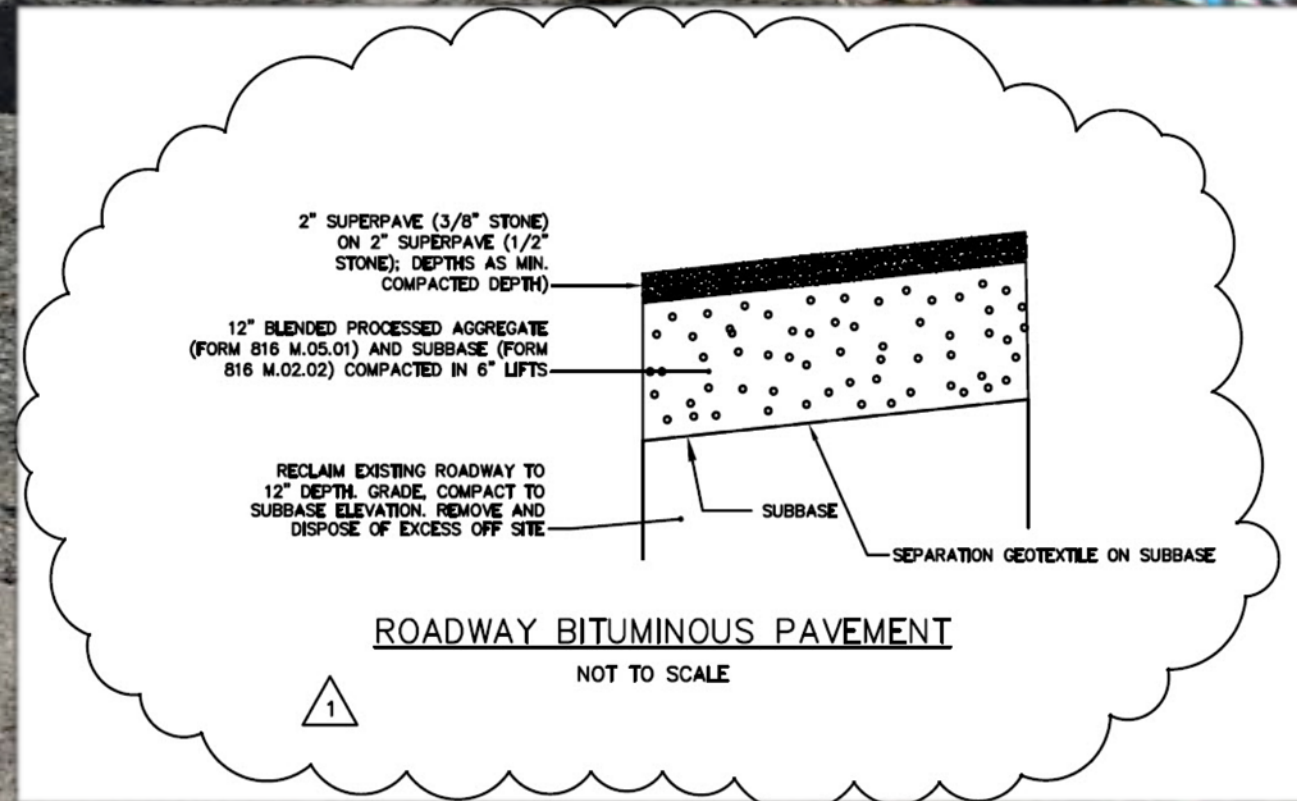


Fully Licensed and Insured

Residential and Commercial



GeoTextile on Subbase
for soil stability.



Two High Tides predicted 7.13 ft. (Milford Harbor)



Thursday
October
25, 2018



Friday
October
26, 2018

Saturday, October 27, 2018 Nor'easter



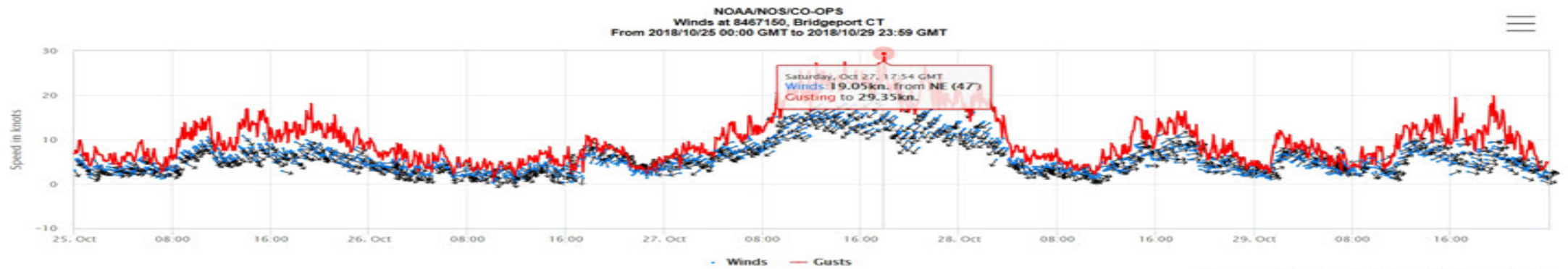
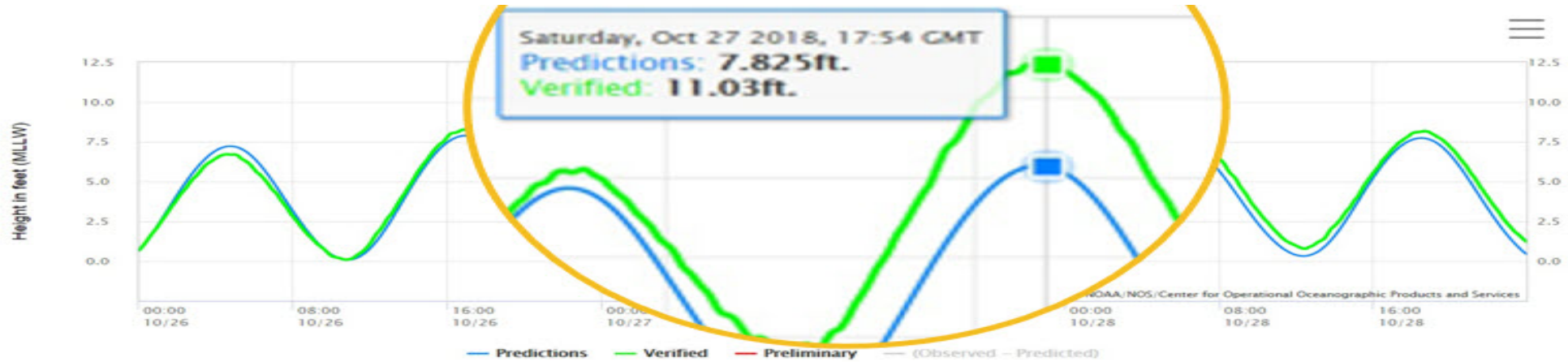
Day 3 High Tided predicted 7.13 ft. (Milford Harbor)

Saturday, October 27, 2018 Nor'easter

29" deep at
pavement edge



October 27, 2018 Nor'easter



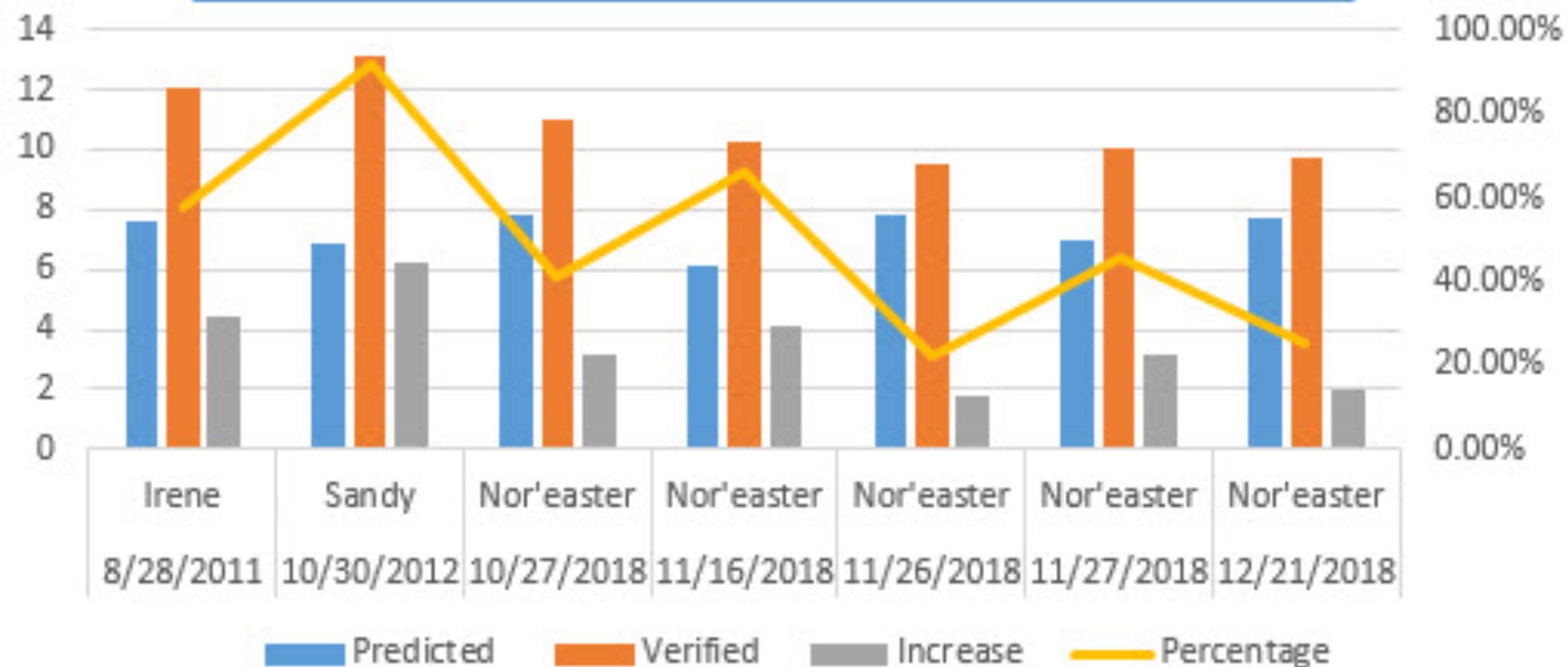
Saturday, October 27, 2018 Nor'easter



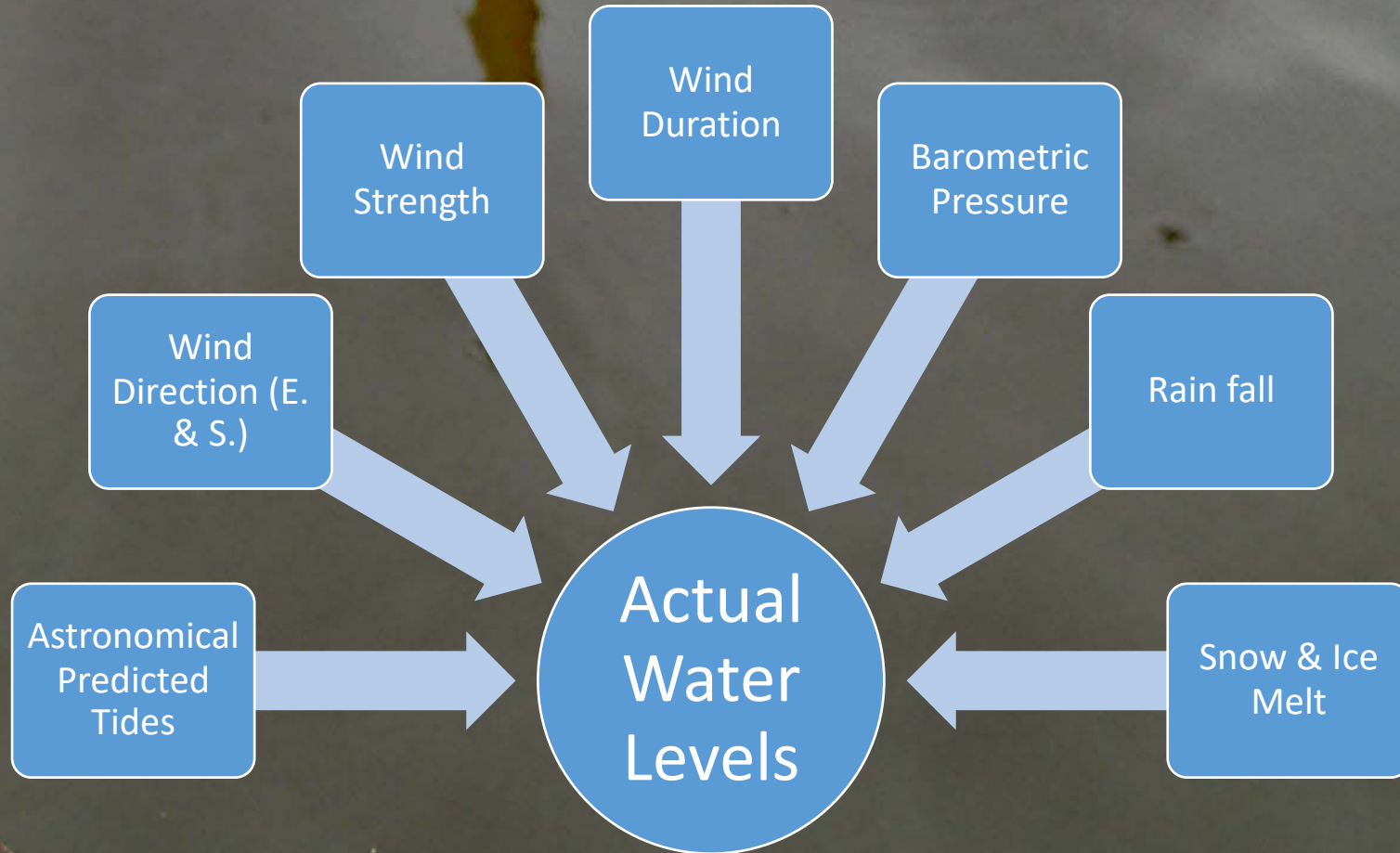
Flood waters drained as
designed – first big test!

4 more tests to come...

NOAA/NOS/CO-OPS - OBSERVED WATER LEVELS, BRIDGEPORT # 8467150, Datum MLLW



Coastal Flooding - today





Beachland Avenue view looking south on
11-16-18, 20" deep



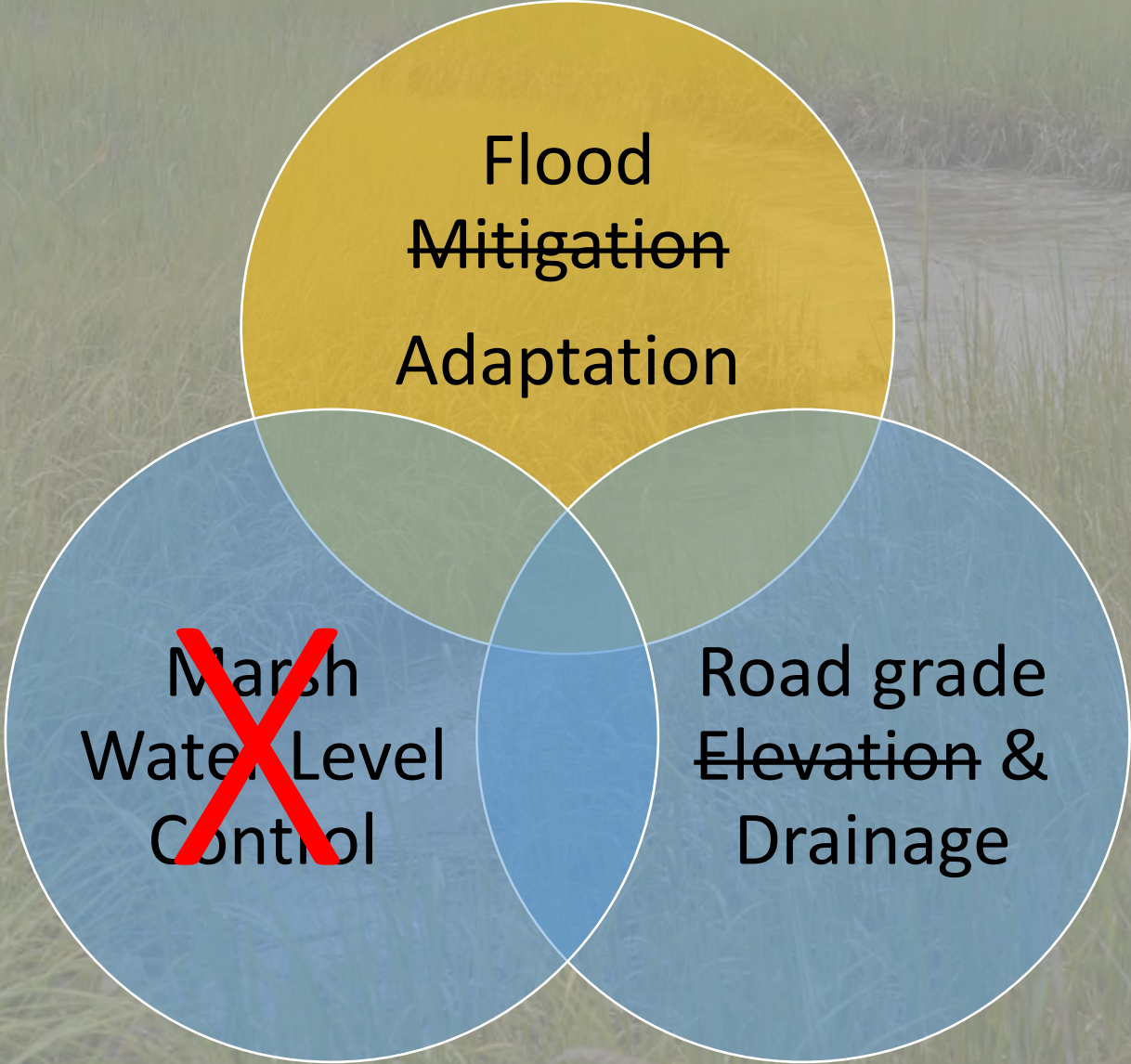
Beachland Ave. view looking south on 11-27-18 before flooding

Beachland Avenue Design

Adaptation:

- ✓ Remove center road crown.
- ✓ Eliminate ineffective catch basins.
- ✓ Grade properties shedding water to the road.
- ✓ Grade road improving drainage back to the marsh channel infiltrating at a high performance turf reinforced mat and vegetated swale.

2014 Calf Pen Meadow Marsh Goals



Flood
Mitigation
Adaptation

~~Marsh
Water Level
Control~~

Road grade
Elevation &
Drainage

Lessons Learned

- ✓ Communication with interested people is vital.
- ✓ People love their home, listen to their concerns.
- ✓ Set realistic expectations how the project is designed to perform.
- ✓ Encourage people to elevate driveways & garages, not just their living space.
- ✓ 20" Sea Level Rise by 2050 is a harsh challenge



BEACHLAND AVE. FLOOD MITIGATION
THE STATE OF CONNECTICUT
AND THE CITY OF MILFORD



Constructed in cooperation with the

STATE OF CONNECTICUT
DANNEL P. MALLOY, GOVERNOR

Department of Housing
Community Development Block Grant - Disaster Recovery
Evonne M. Klein, Commissioner

and the
City of Milford

• The Honorable Benjamin G. Blake, Mayor

Engineer:
Fuss & O'Neil, Inc.
Manchester, CT

General Contractor:
VAZ Quality Works, LLC
Bridgeport, CT



Calf Pen Meadow Marsh Flood Mitigation & Adaptation

Steve Johnson

City of Milford

Open Space & Natural Resource Agent and Acting Assistant Public Works Director

stevenjohnson@ci.milford.ct.us

203.878.7812