Thames River Basin Partnership Floating Workshop XIII

June 21, 2013

Connecticut's Changing Shoreline

New London, CT

TRBP FLOATING WORKSHOP XIII

Thank you to our sponsors and supporters!

Floating Workshop XIII Planning Committee

- Rick Potvin, US Fish and Wildlife Service
- Jean Pillo, ECCD
- Anne Roberts Pierson, Avalonia Land Conservancy and ECCD Board Member
- Eric Thomas, CT DEEP

Who are the Thames River Basin Partners?

Thames River Basin Partnership

The Thames River Basin Partnership is a voluntary, cooperative effort to share organizational resources and to develop a regional approach to natural resource protection. The partnership grew out of locally led workshops held by the region's Soil and Water Conservation Districts.

Our Mission

- Protect the region's agricultural and natural areas being threatened by land use changes.
- Protect ground and surface water quantity and quality being threatened and degraded by contamination.
- Protect the region's biodiversity.
- Improve the coastal zone resource conditions

US Coast Guard Academy
New London, CT

View of Thames River from CGA

View of CGA from the Thames River

The Coast Guard Museum was open for tours

Joel Stocker

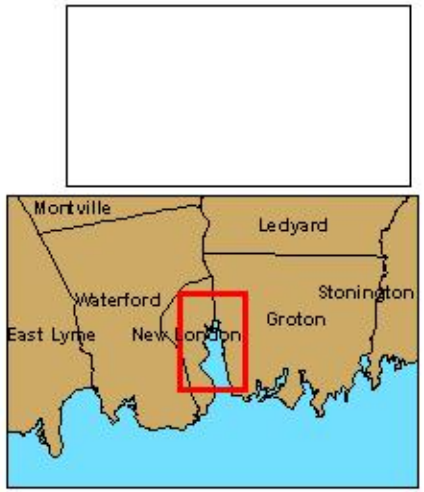
- Assistant Educator, UConn Cooperative Extension
- NEMO
- CLEAR

Analysis of Shoreline Change in Connecticut

Thames River Shoreline Change

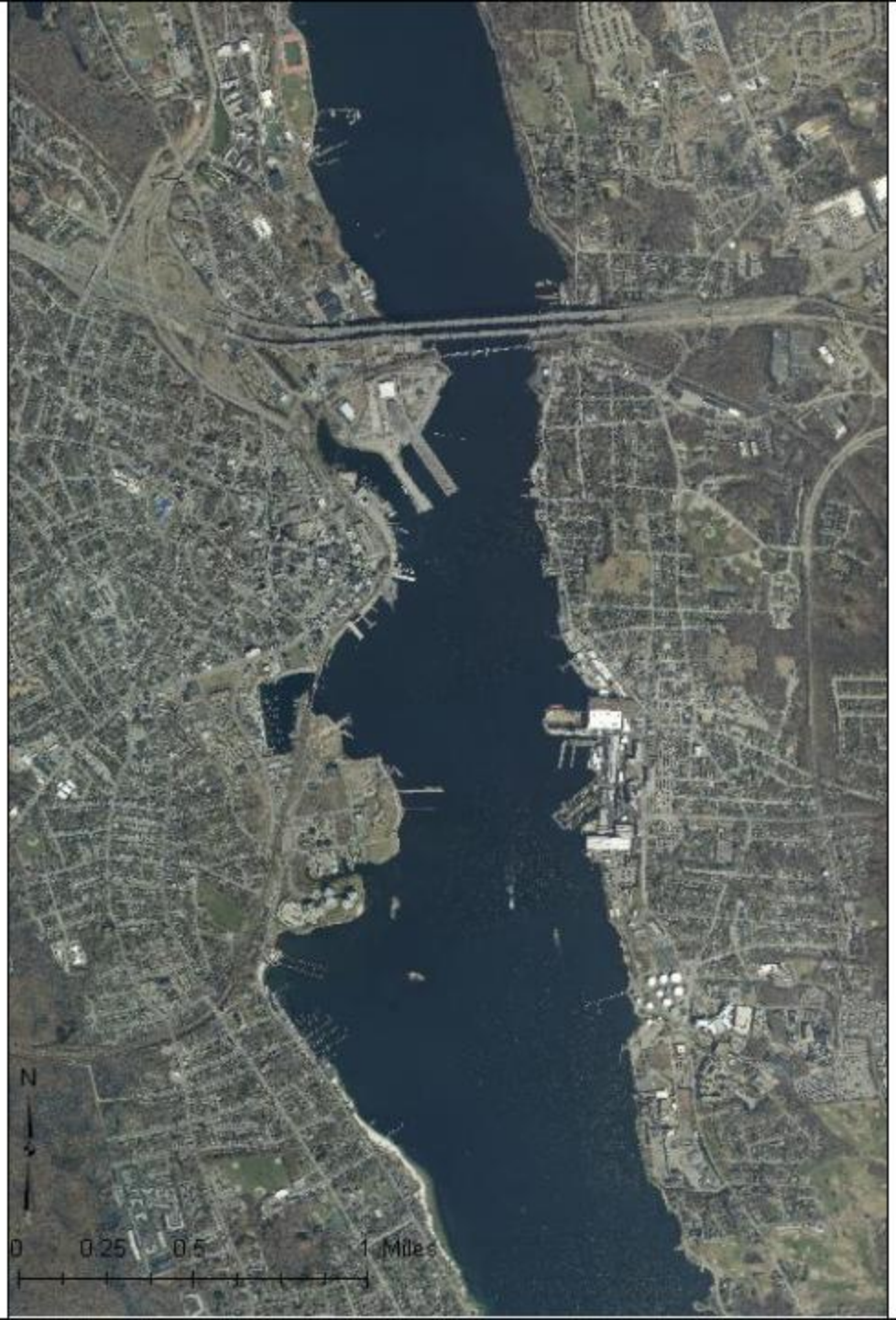
Change Estimates 1880 to 2006 Thames River New London/Groton

T-Sheet 1882



Alignments and area deliniations are approximate

UConn CES J. Stocker 7/14/2013



Thames River Shoreline Change

Change Estimates 1880 to 2006 Thames River New London/Groton

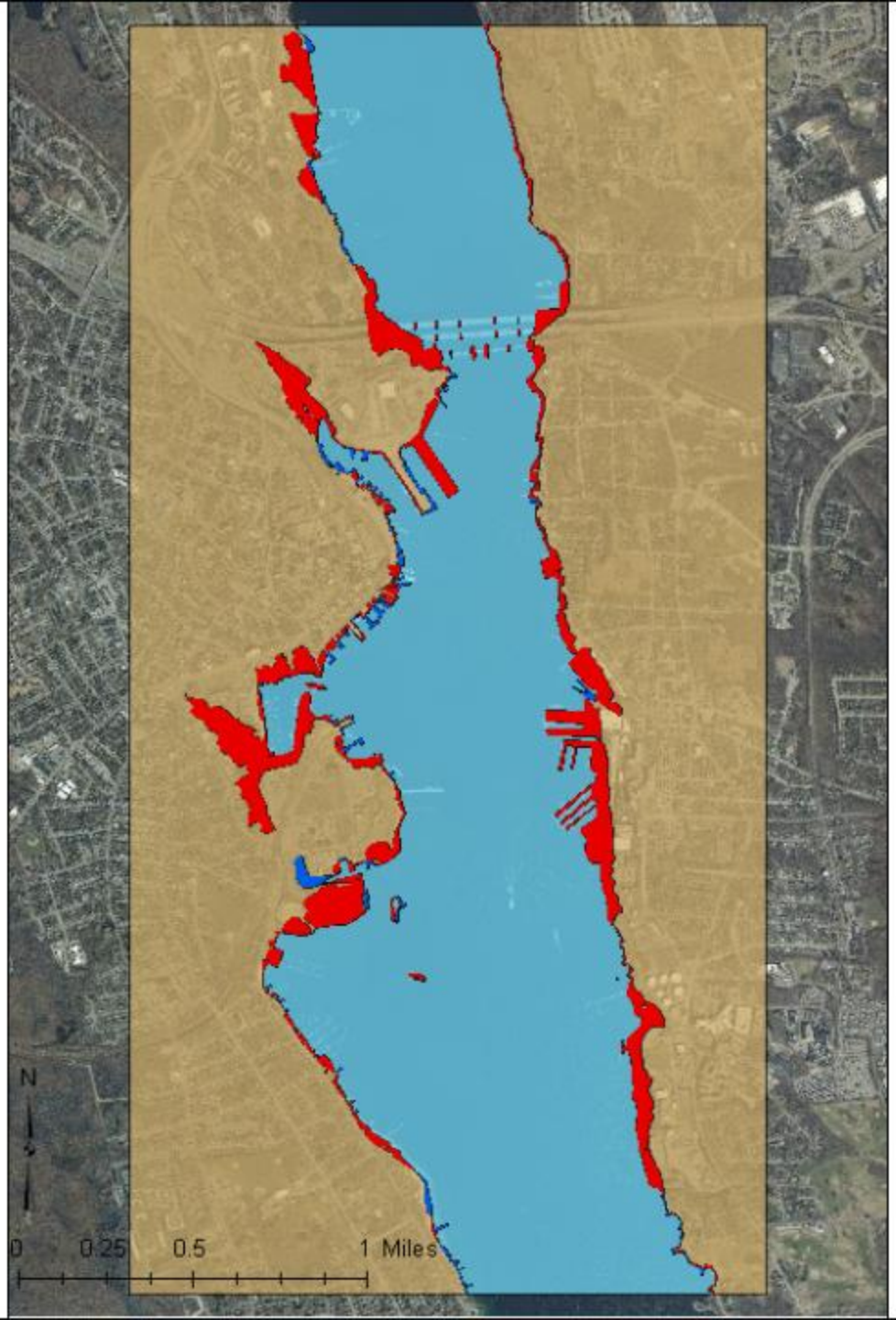
Image March 2012

Alignments and area deliniations are approximate

UConn CES J. Stocker 7/14/2013

Thames River
Shoreline Change

Change Estimates 1880 to 2006 Thames River New London/Groton



Change 1880 to 2006

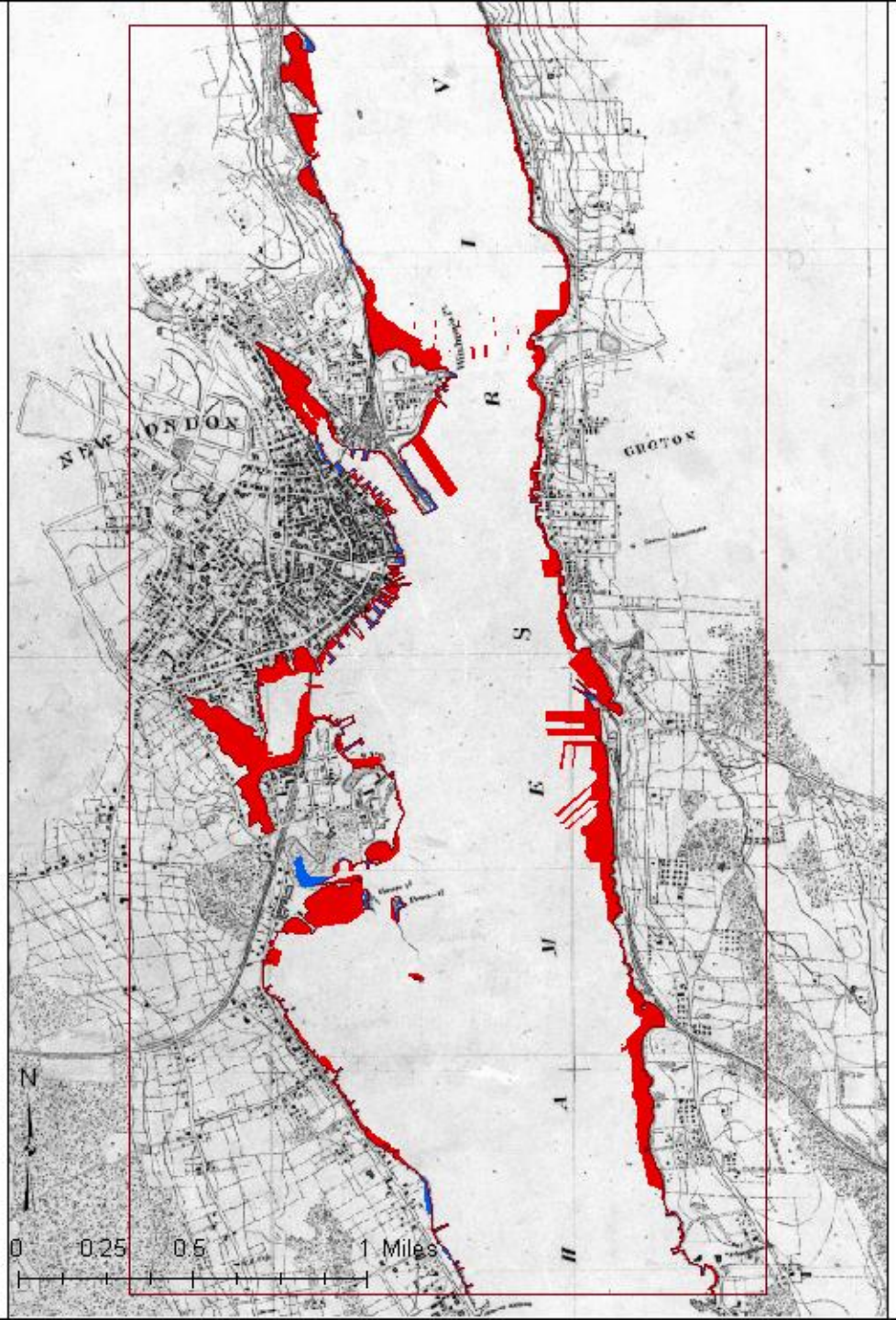
- Land to Water
- Water to Land
- No Change - Land
- No Change - Water

Alignments and area deliniations are approximate

UConn CES J. Stocker 7/14/2013

Thames River
Shoreline Change

Change Estimates 1880 to 2006 Thames River New London/Groton



T-Sheet 1882

Change 1880 to 2006

- Land to Water
- Water to Land

Alignments and area deliniations are approximate

UConn CES J. Stocker 7/14/2013


Groton
Change Estimates
1880 to 2006
Bluff Point, Groton
(DRAFT)
Shoreline Year
1880
2006
Net Movement 1880 to 2006
Loss
Gain
New London
Waterford
Groton
Stonington
0 250 500 1,000 1,500 2,000 Feet
0 50 100 200 300 400 Meters
J. Stocker 6/19/2013 UCONN CES
Coast_YearSequence_V4_Template.mxd

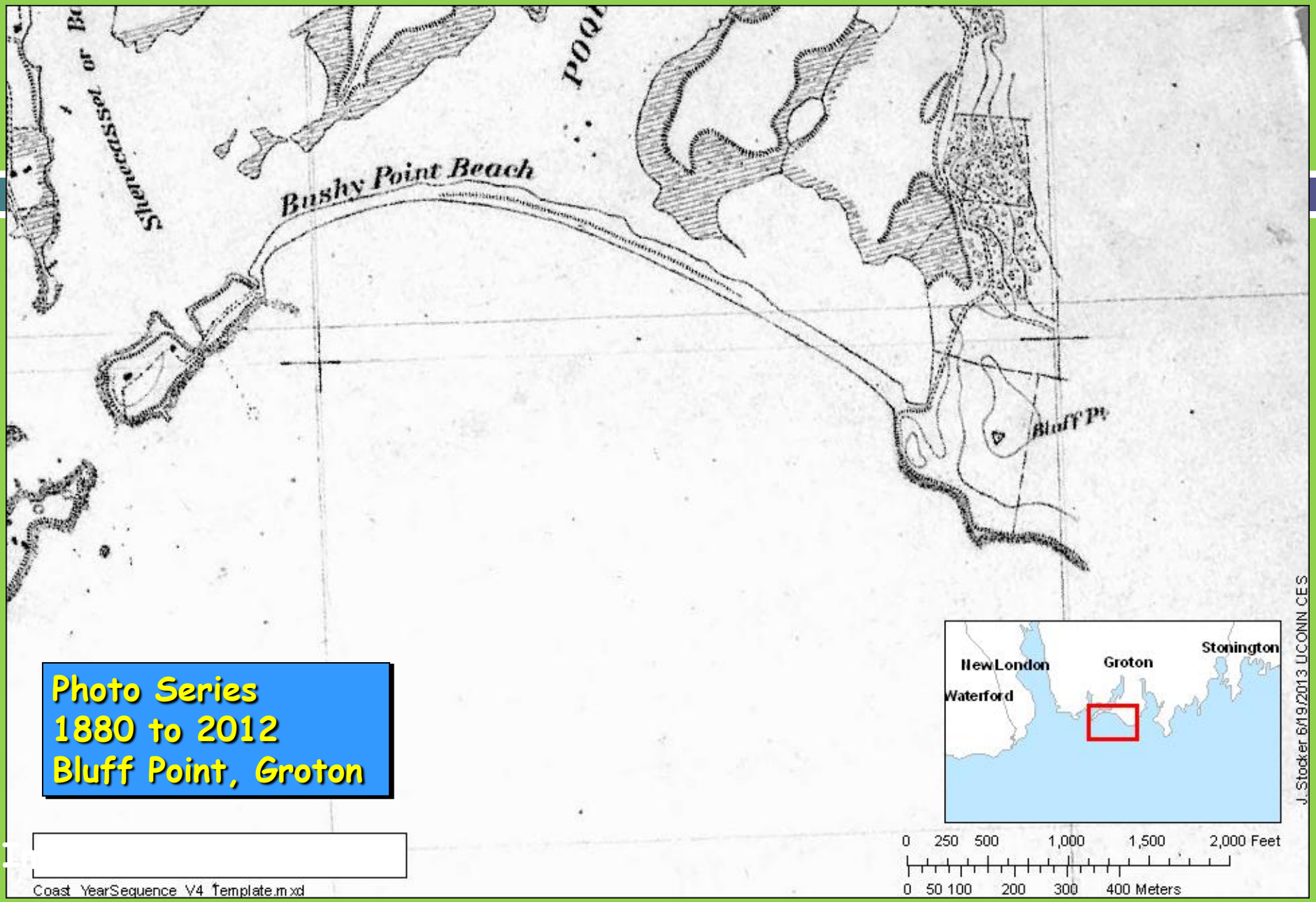


Photo Series
1880 to 2012
Bluff Point, Groton

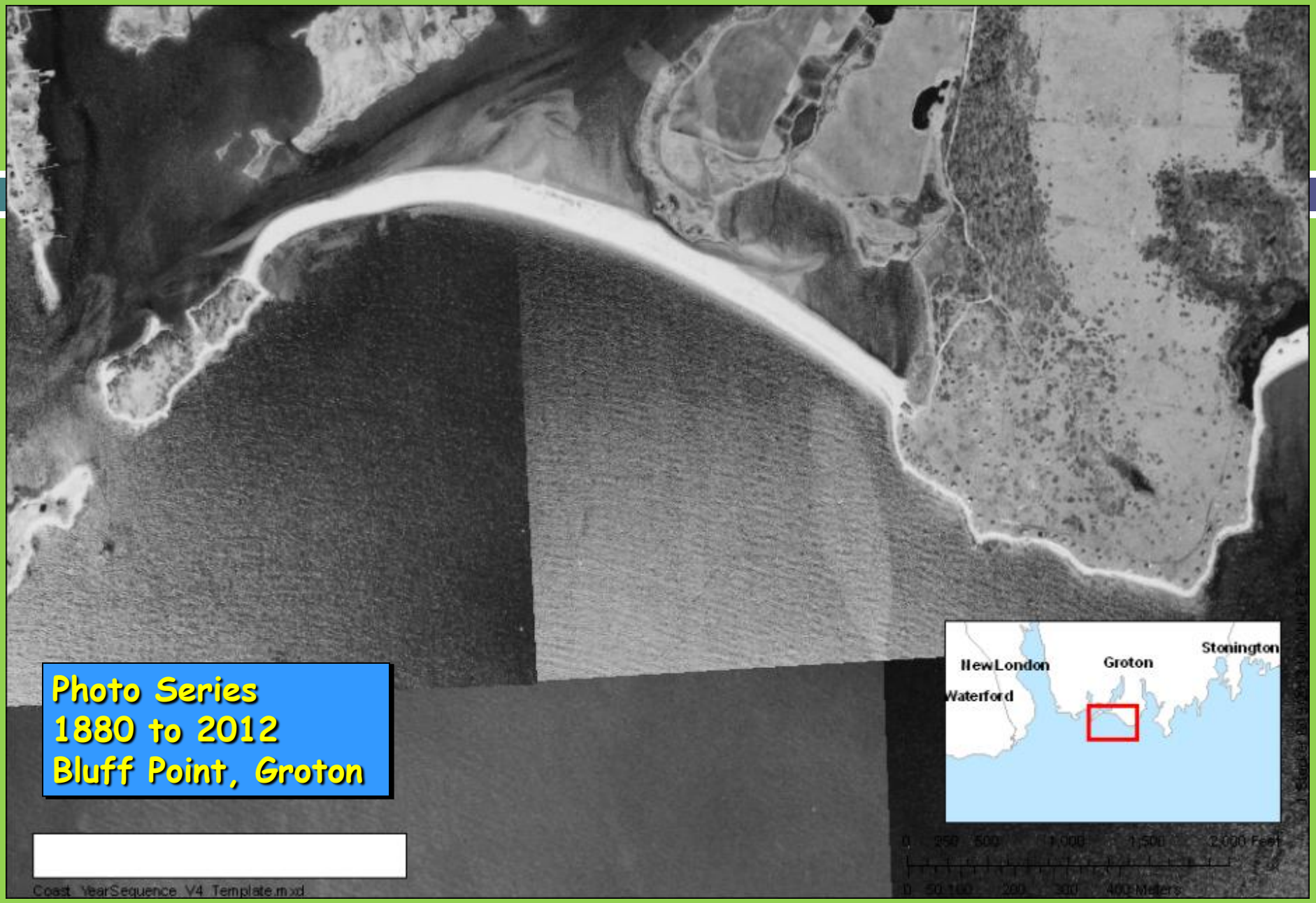


Photo Series
1880 to 2012
Bluff Point, Groton
New London
Groton
Stonington
Waterford
0 250 500 1,000 1,500 2,000 Feet
0 50 100 200 300 400 Meters
Coast_YearSequence_V4_Template.mxd


Photo Series
1880 to 2012
Bluff Point, Groton
New London
Waterford
Groton
Stonington
0 250 500 1,000 1,500 2,000 Feet
0 50 100 200 300 400 Meters
J. Stocker 6/19/2013 UCONN CES
Coast_YearSequence_V4_Template.mxd

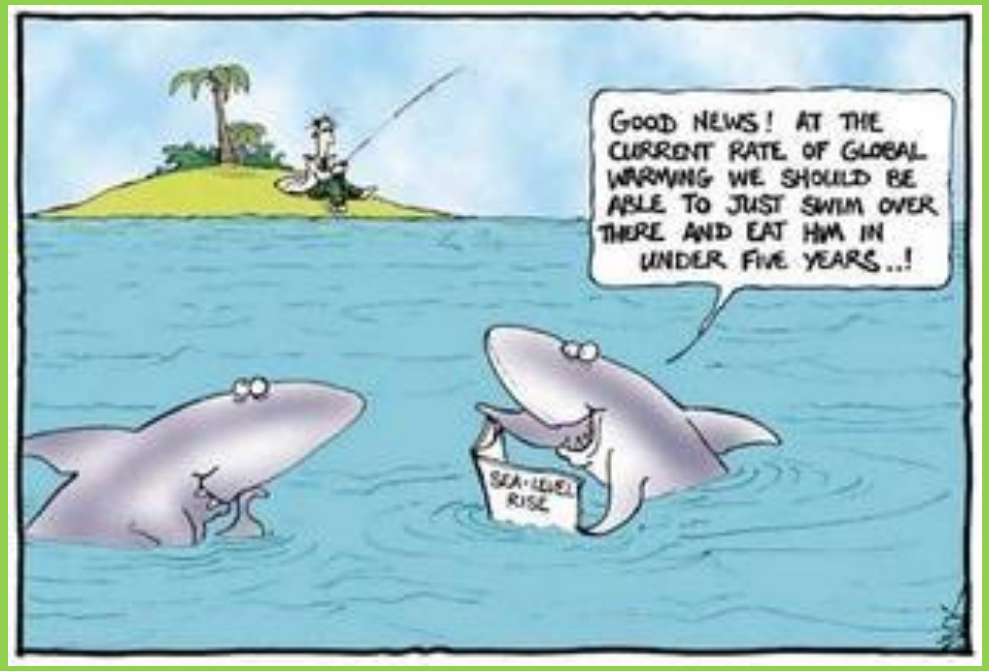
1938 Damage Survey

(0 561-8800-118)(9-24-38-4PX(12-1000)

BLUFF PT. GROTON, CONN.

Source: CT State Libr

How ready are our coastal towns for climate change and sea level rise?



Fun factoid – King Tide

- A king tide is the highest water level within a year that is produced by the orbits and alignments of the Earth, Moon and Sun.
- The highest hide tides for the New London area in 2013 will be June 22 at 20:19 and June 23 at 21:02
- *Sea level rise will make today's king tides become the future's everyday tides.*

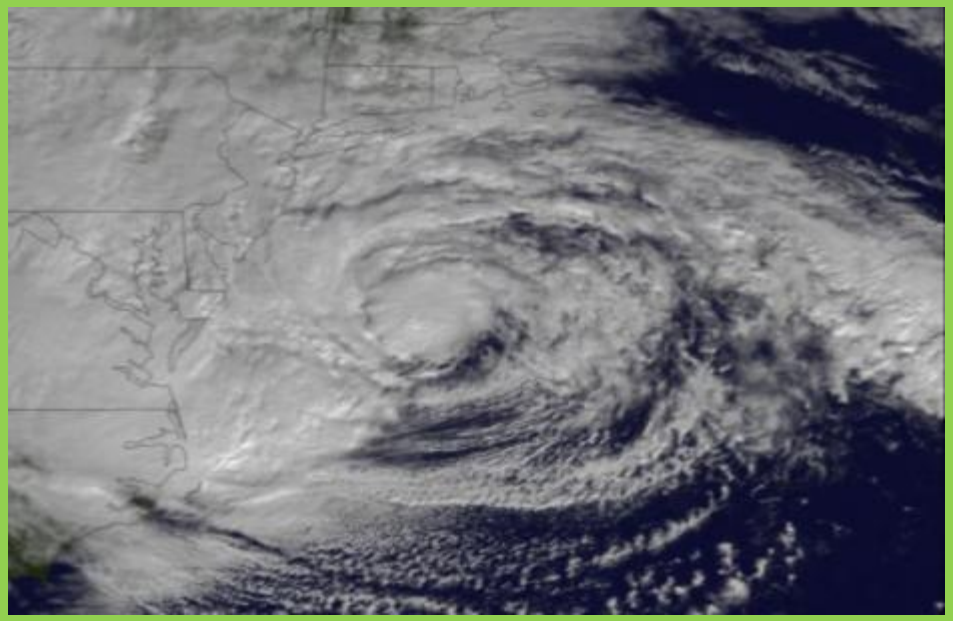
- source http://www.macges.org

Tropical Storm Irene

- August 28, 2011
- Sustained easterly winds
- Raised the water level in Long Island Sound as much as 4.5 feet
- Very heavy rainfall totals

After Tropical Storm Irene

Super Storm Sandy



- October 29, 2012
- AKA "Frankenstorm"
- Sustained winds >74 mph extended out over 175 miles from the center
- Full moon tides
- Lowest barometric reading ever for a storm north of Cape Hatteras

Hurricane Sandy Storm Tide mapper

USGS
Science for a changing world

Legend

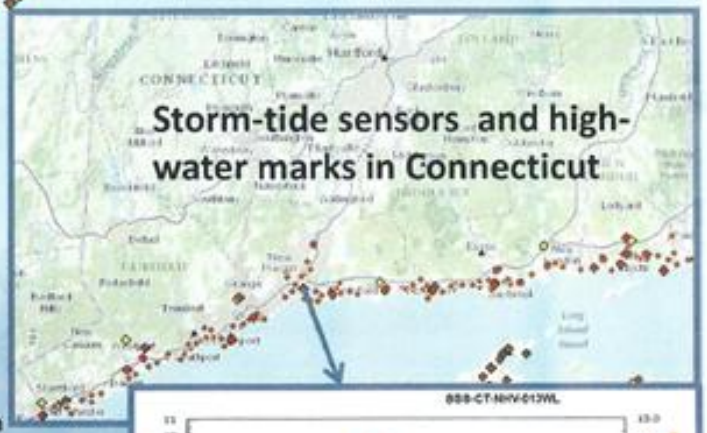
Storm Tide
- Approved
- Corrected
- Lost
- No record

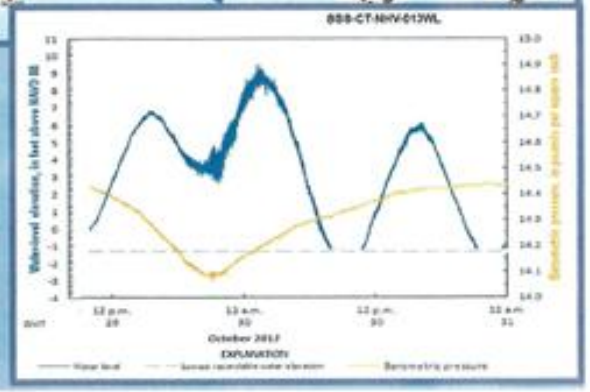
Rapid-Deployment Streamgage
- Rapid deployment streamgage

Barometric Pressure
- Approved data
- Corrected data

High-Water Mark
- Approved data
- Corrected data
- Pending data

Affected Real-Time Gages





Prior to the arrival of Hurricane Sandy, the USGS Storm Tide Team deployed numerous storm tide sensors, barometric pressure sensors, wave height sensors, and Rapid Deployment Gages along the east coast of the United States from Virginia to New Hampshire. After the storm passed, the USGS flagged many high-water marks along the shore documenting the extent of the storm tide inundation and the depth of water over the land surface.

http://coastal.er.usgs.gov/hazard-events/sandy/

Multiple Mapping Resources for Land Use Planners

Jean Pillo, ECCD Watershed Conservation Coordinator reviewed available mapping resources available for planning purposes.

- SLOSH Maps
- Updated FEMA Flood Insurance Rate Maps
- Hazard Mitigation Plans and Maps
- Coastal Hazard Mapping Tools on the CT Environmental System Online

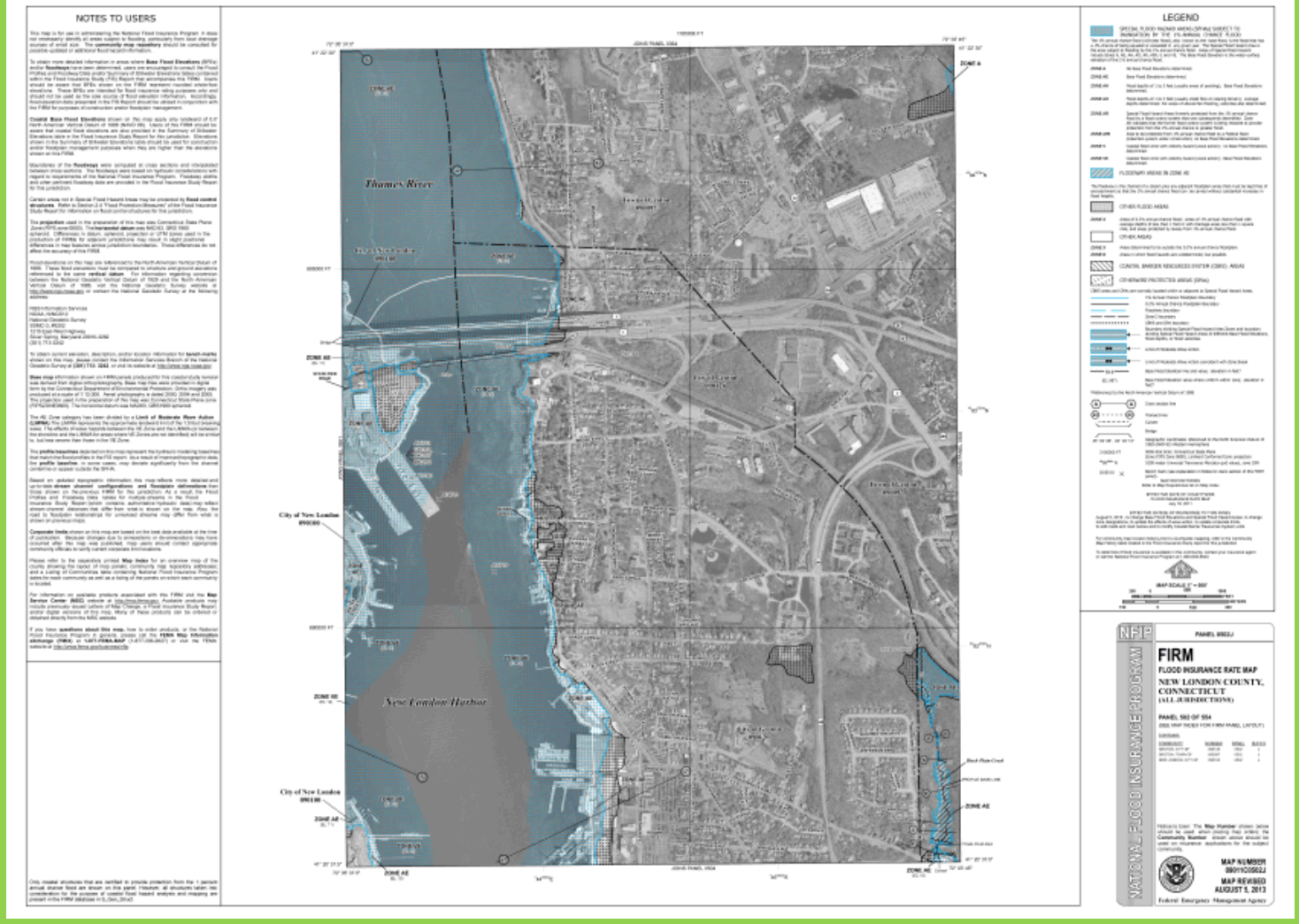
SLOSH Maps

The SLOSH (Sea, Lake and Overland Surge from Hurricane) Map for Connecticut is a project prepared by the US Army Corps of Engineers in cooperation with the Federal Emergency Management Agency (FEMA) and distributed by the Connecticut Department of Environmental Protection.

These maps represent potential flooding from "worst case" combinations of hurricane direction, forward speed, landfall point and high astronomical tides.

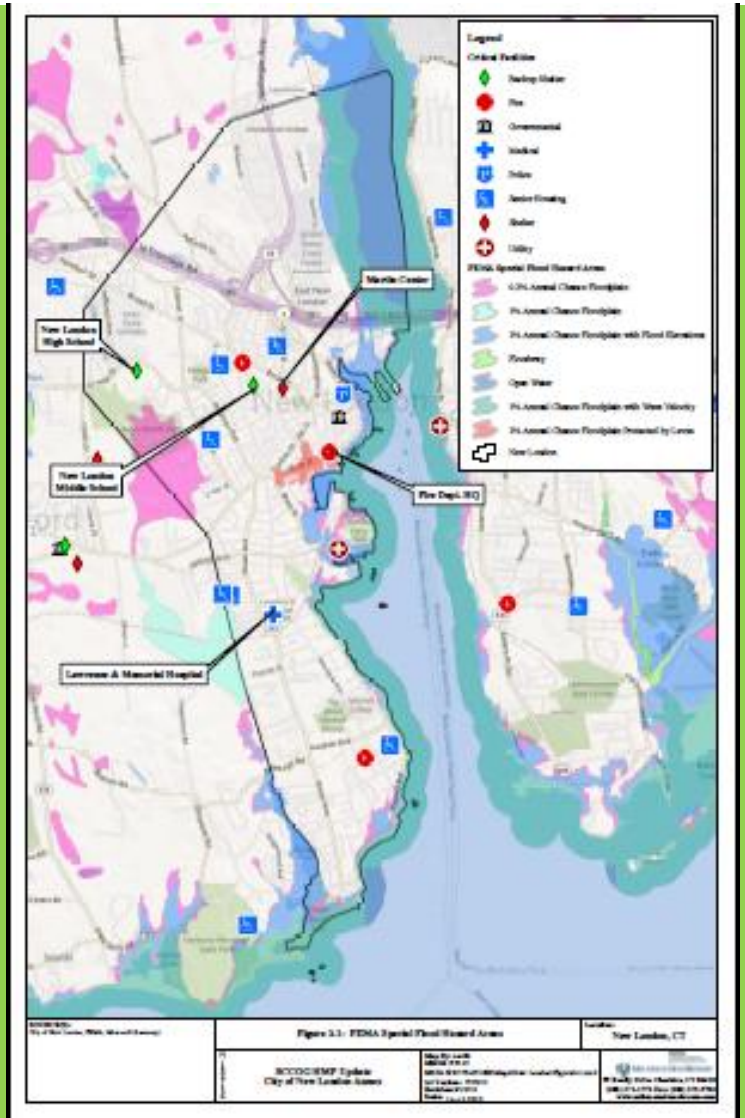

GROTON TOWN PUBLIC SHELTERS
1. FITCH HIGH SCHOOL
2. FITCH MIDDLE SCHOOL
3. GROTON SENIOR CENTER
4. CUTLER MIDDLE SCHOOL
GROTON CITY PUBLIC SHELTERS
1. CITY OF GROTON MUNICIPAL BUILDING
2. WEST SIDE MIDDLE SCHOOL
GROTON TOWN MEDICAL/INSTITUTIONAL FACILITIES
1. FAIRVIEW
2. GROTON REGENCY CENTER
3. MYSTIC MANOR
4. MYSTIC RIVER RESIDENTIAL CARE
GROTON TOWN MOBILE HOMES/TRAILER PARKS
1. CANDLEWOOD MOBILE HOME PARK
2. DAN'S TRAILER PARK
3. DOLPHIN MOBILE HOME PARK
4. THE GARDENS
5. GROTON MOBILE SITES AND SALES
6. HIGH ROCK TRAILER PARK
7. LAUREL HILL MOBILE HOME PARK
8. LONG COVE MOBILE HOME PARK
9. ROGERS MOBILE HOME PARK
10. SOUTH RD MOBILE HOME PARK
11. WHIPPLE MOBILE HOME PARK
12. BRIARCLIFF MOBILE HOME PARK
Groton SLOSH Map
Ledyard
Town of Groton
City of Groton
New London Harbor
Mystic Harbor
Groton New London Airport
Long Island Sound
LEGEND
Hurricane Surge Inundation
Category 1
Category 2
Category 3
Category 4
Transportation
Interstate Highway
US Highways
State/Local Highways
Local Road
Railroad
Airport
Political
Town Boundary
State Boundary
Facility Location Key
Public Shelter
Medical/Institutional Facility
Mobile Home/Trailer Park
Hydrographic Feat
Water
Flats
Rocks
Marsh
Dam
Aqueduct
LOCATION MAP
Fairfield
New Haven
Middlesex
NOTES & SOURCES
TITLE
Connecticut Hurricane Surge
Inundation Mapping
August 2008
Groton
4,000
2,000
0
4,000

Future FEMA Flood Insurance Rate Maps (FIRM) effective 8/5/2013



Southeast Connecticut Hazard Mitigation Plans and Maps

- Recently completed for all SECCOG towns
- http://www.seccog.org/HazardPlans.html



Coastal Hazards Mapping Tools Available On CT DEEP website

Sea Level Rise (in / ft)	Approximate Relation to Scientific Data	Planning Horizon
6 in / 0.5 ft	Average 2004 Environmental Defense Hi/Low emissions	2020
12 in / 1.0 ft	Average 2004 Environmental Defense Hi/Low emissions	2050
18 in / 1.5ft	2004 Environmental Defense High Emissions	2050
24 in / 2.0 ft	2007 IPCC High Emissions	2100
36 in / 3.0 ft	2004 Environmental Defense High Emissions	2080
60 in / 5.0 ft	n/a – gap filler	n/a
79 in / 6.6 ft	Pfeffer et al 2008	2100

http://ctecoapp1.uconn.edu/ctcoastalhazards

Float to Mitchell College Beach

Workshop Participants transported to Mitchell College Beach on a small flotilla of boats provided by TRBP partner organizations.

And storm the beach at Mitchell College

Victoria Brennan
Mitchell College Beach

Sand dunes at Mitchell College were planted with native vegetation to stabilize them. TC Irene and Storm Sandy damaged the dunes. New strategies are being used to rebuild them.

- Snow fencing is used to keep people from walking on dunes.
- Discarded Christmas trees trap sand and help to rebuild dunes.


COLLEGE

For more information or to get involved in future TRBP activities, visit our website www.TRBP.org

or contact

Jean Pillo, Watershed Conservation Coordinator

Eastern Connecticut Conservation District

860-928-4948 x 605

Jean.Pillo@ConserveCT.org