



# Chautauqua County Coastal Work Map Meeting

**December 19, 2017**



**FEMA**



# Agenda

- ▶ **The value of updated flood maps for your community**
- ▶ **Review updated flood-risk data and important next steps in the Risk MAP process**
- ▶ **Increasing mitigation opportunities in your community**
- ▶ **Working session to review maps**



Chautauqua County

# The Value of Updated Flood Maps for your Community



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# Why Are We Here?

A new coastal flood hazard analysis is complete for your community and **Draft Coastal Workmaps** are ready for review.

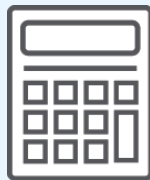




# Flood Maps Impact Important Decisions



**To Identify  
and  
Assess  
the  
Flood Risk**



**To Establish  
Rates for  
Flood  
Insurance**



**To  
Determine  
Local Land  
Use**



**To Inform  
Engineers  
and  
Developers**



**To Equip  
Emergency  
Managers**



# Why Update your Flood Maps?

Community	NFIP Policies	NFIP Claims	FEMA Claims Paid	Community Assistance Visits (CAV)/Community Assistance Contacts (CAC) Dates	Hazard Mitigation Plan
Town of Hanover	179	1322	\$5,524,682	CAV: 01/14/2009 CAC: 05/23/2012	Approvable Pending Adoption
Village of Silver Creek	23	75	\$1,507,451	CAV: 05/20/2008 CAC: 07/23/2015	Approvable Pending Adoption
Town of Sheridan	3	11	\$134,670	CAV: 10/28/1993 CAC: 04/04/2017	Approved
Town of Dunkirk	3	11	\$23,355	CAV: 05/04/2005 CAC: 07/29/2011	Approved
City of Dunkirk	31	54	\$156,682	CAV: 01/15/2010 CAC: N/A	Approvable Pending Adoption
Town of Pomfret	13	8	\$53,030	CAV: 07/22/2014 CAC: 05/04/1995	Approved
Town of Portland	10	14	\$11,916	CAV: 12/08/2009 CAC: 04/27/2000	Approved
Town of Westfield	4	0	\$0	CAV: N/A CAC: 03/20/2017	Approved
Town of Ripley	1	0	\$0	CAV: N/A CAC: N/A	Approvable Pending Adoption



# Your Role

## Local Officials, Floodplain Administrators and Staff



**Provide  
technical  
review of  
preliminary  
data**



**Submit  
questions  
and  
comments  
to FEMA**



**Share new  
flood risk  
info with  
property  
owners and  
stakeholders**



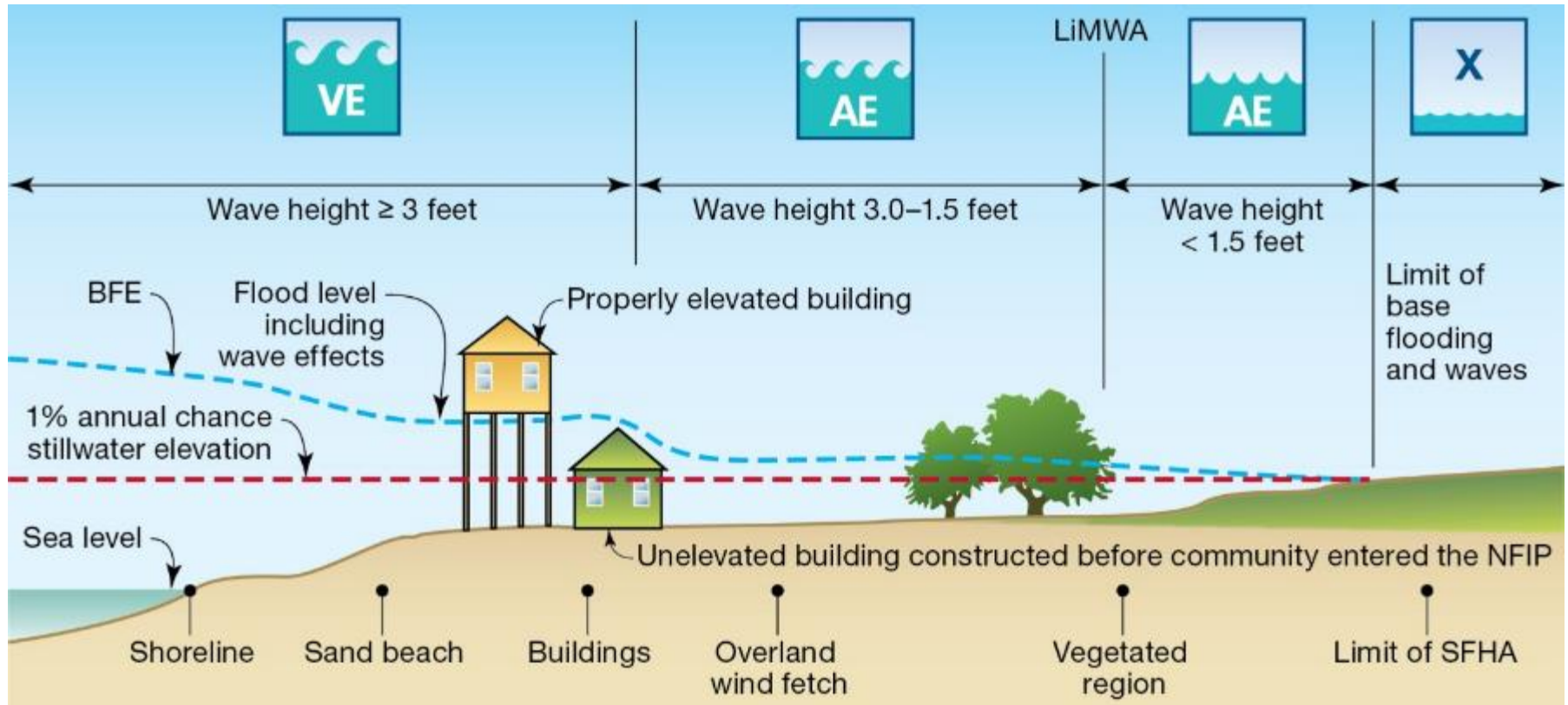
**Identify  
mitigation  
needs and  
priorities**



**Update  
local plans,  
codes, and  
ordinances**

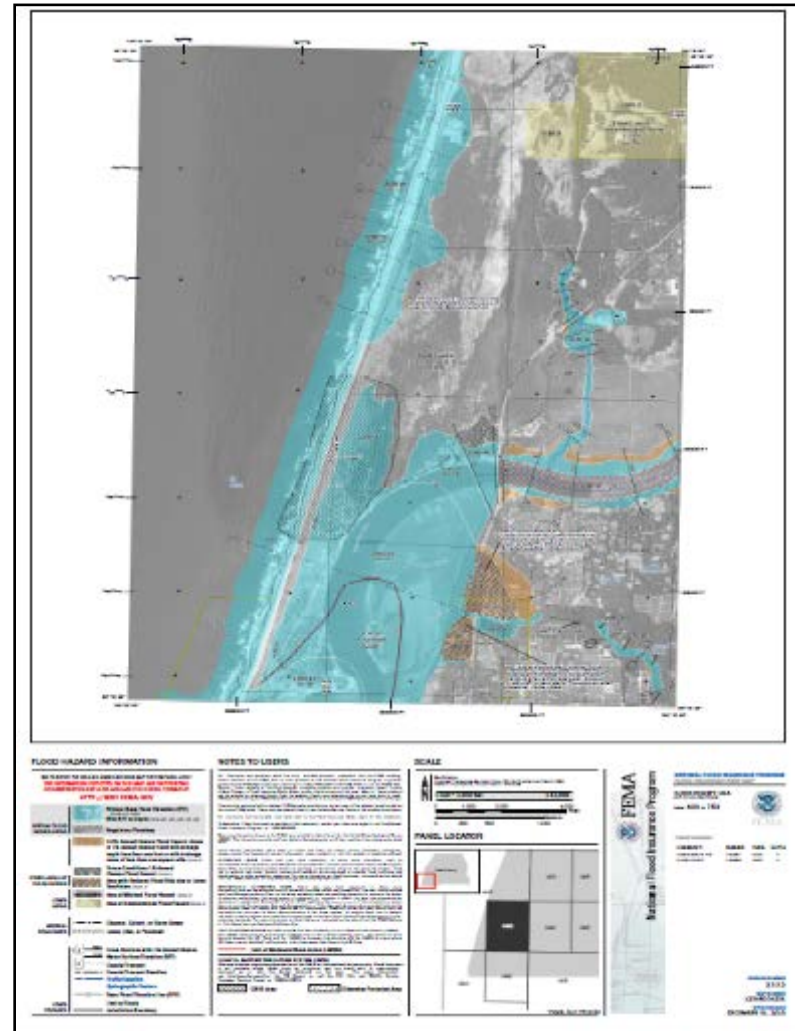


# Detailed Coastal Mapping



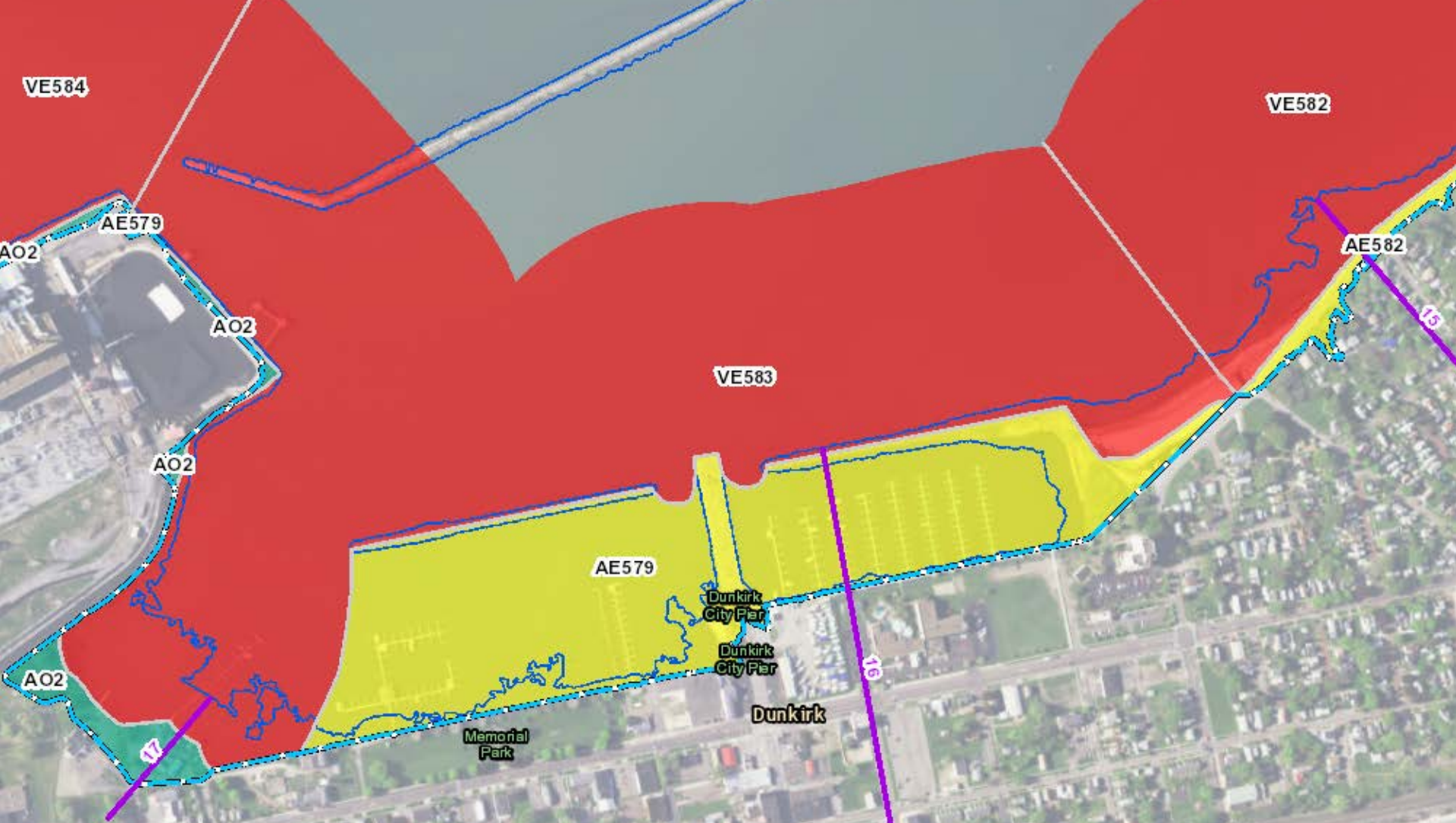


# Coastal Work Map vs. FIS/FIRM



**WORK MAPS WILL NOT AFFECT FLOOD INSURANCE REQUIREMENTS OR COSTS**





## Modeling the Special Flood Hazard Area (SFHA)

**VE, AE, and AO Zones** are “100-year floodplain” with a **1-percent-annual-chance of flood**

- Insurance is **required** if you have a federally backed mortgage or received federal disaster assistance
- Informs building code standards



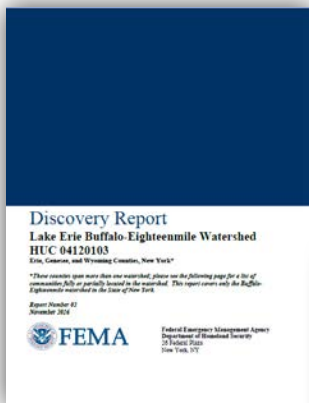
Chautauqua County

# The Risk MAP Process and Scope



# Discovery Report 2016

- A few studies are outdated. Base Flood Elevations do not reflect dredging, depth or higher ground added around water bodies.
- Flooding and erosion of Lake Erie are major concerns, affected by changes in precipitation and inflow from other Lakes.
- Lake flooding has damaged homes along the shore and costs of property damage have run into the millions.



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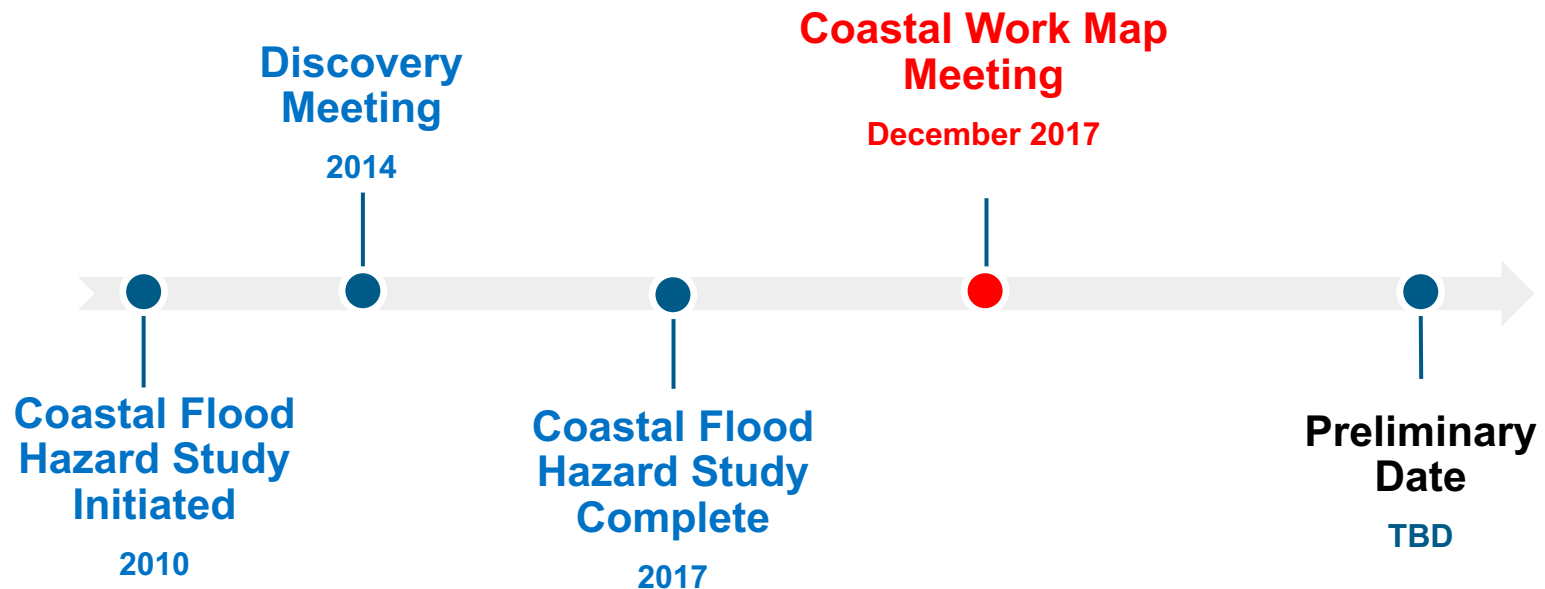
Department of  
Environmental  
Conservation



RiskMAP  
Increasing Resilience Together

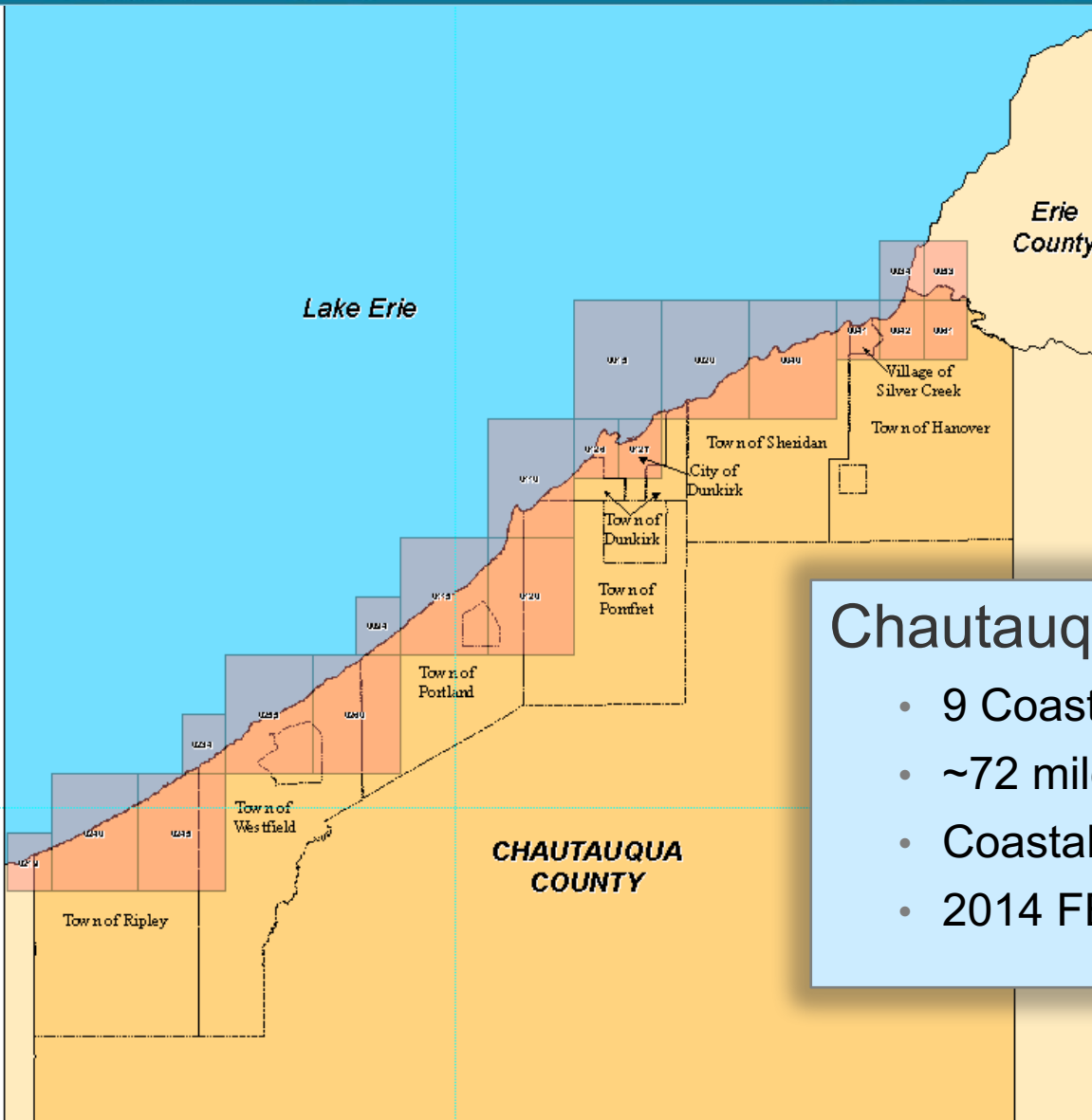


# Project Timeline and Schedule





# Study Area



# Chautauqua County

- 9 Coastal Communities
- ~72 miles of shoreline (Lake Erie)
- Coastal Storm Flooding update
- 2014 FEMA Chautauqua County LiDAR



# Effective vs New Coastal Study

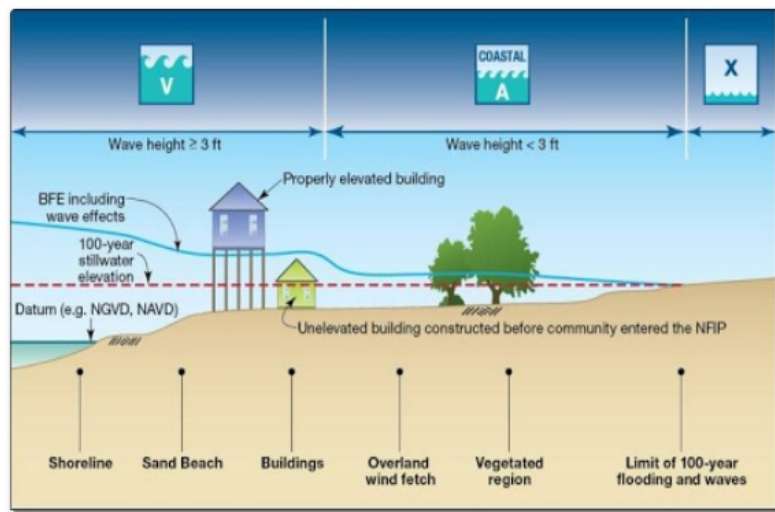
Coastal Study Component	Effective Study (1980's)	New Study (2017)
Topographic Data	10 ft. Interval Contours	FEMA-USGS LiDAR (2014)
Stillwater Elevation (SWEL)	Gage Frequency Analysis (USACE 1975) – Limited areas	Lake Erie Storm Surge Study (2012)
Modeled Transects	0	49
Wave Setup	No	Yes
Wave Runup	No	Yes
Limit of Moderate Wave Action (LiMWA)	No	Yes



# Study Approach

## ► Regional Study Approach

- Water level and wave analysis
- Improvement over community-county
- Reduces number of boundary conditions
- Greater consistency in assumptions

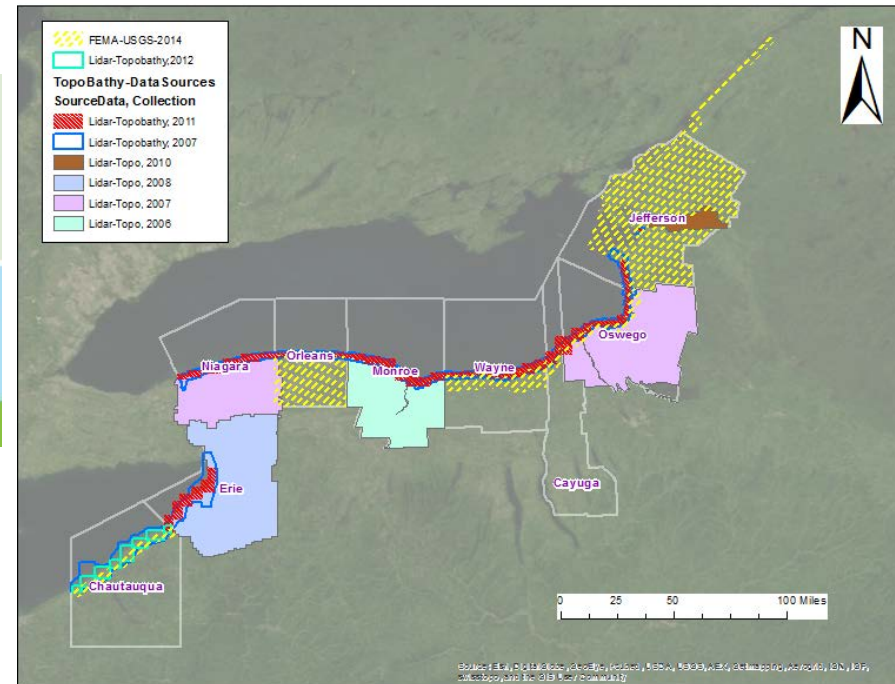
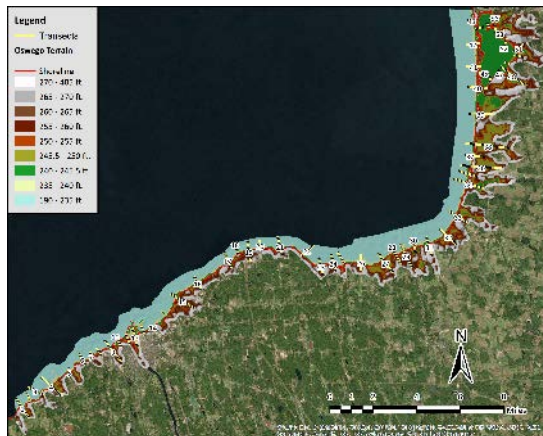


## ► Local/County Level Activities

- Mapping level tasks performed at county level
- Nearshore wave transformations
- Wave runup
- Overland wave propagation



# Light Detection and Ranging (LiDAR)



## Terrain Dataset

Used for modeling & mapping

## LiDAR Data Sources

2014 FEMA-USGS LiDAR

2012 LiDAR-Topobathy

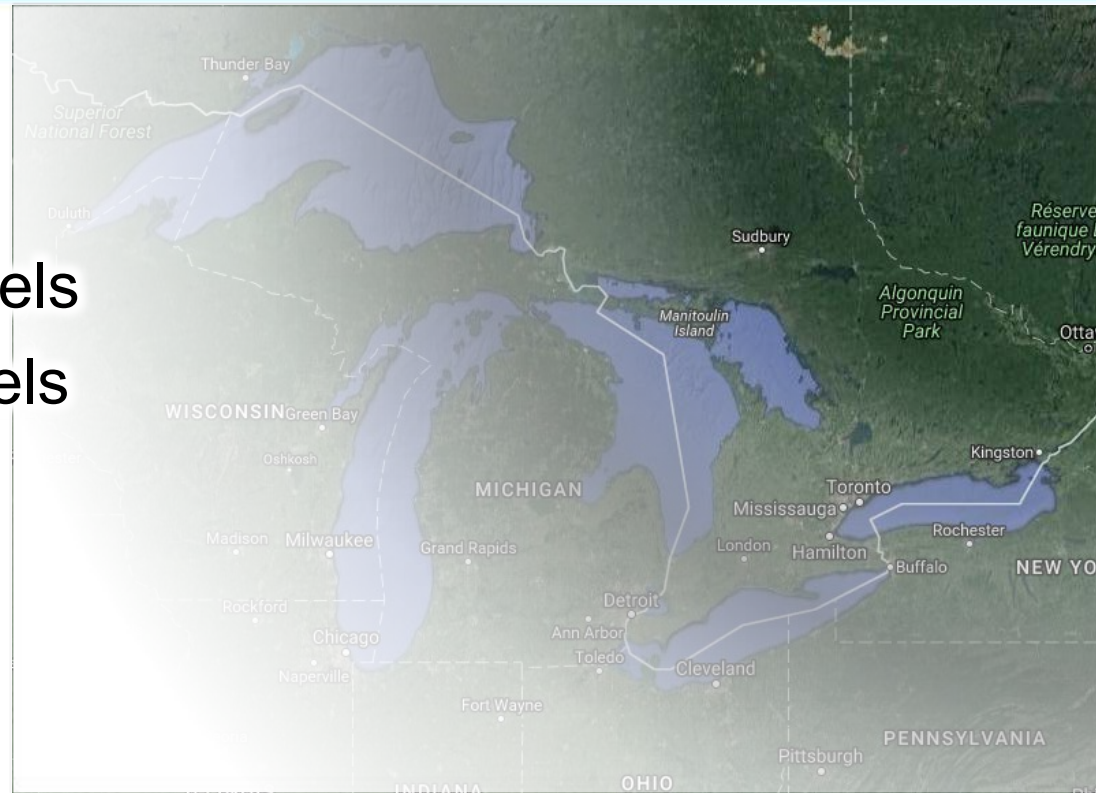
2007 USACE/JALBTCX Great Lakes Topo/Bathy LiDAR



# Storm Surge Study Technical Support

## Five Report sections

- Short-term Water Levels
- Long-term Water Levels
- Statistical Analysis
- Storm Surge model Setup and Validation
- Storm Production



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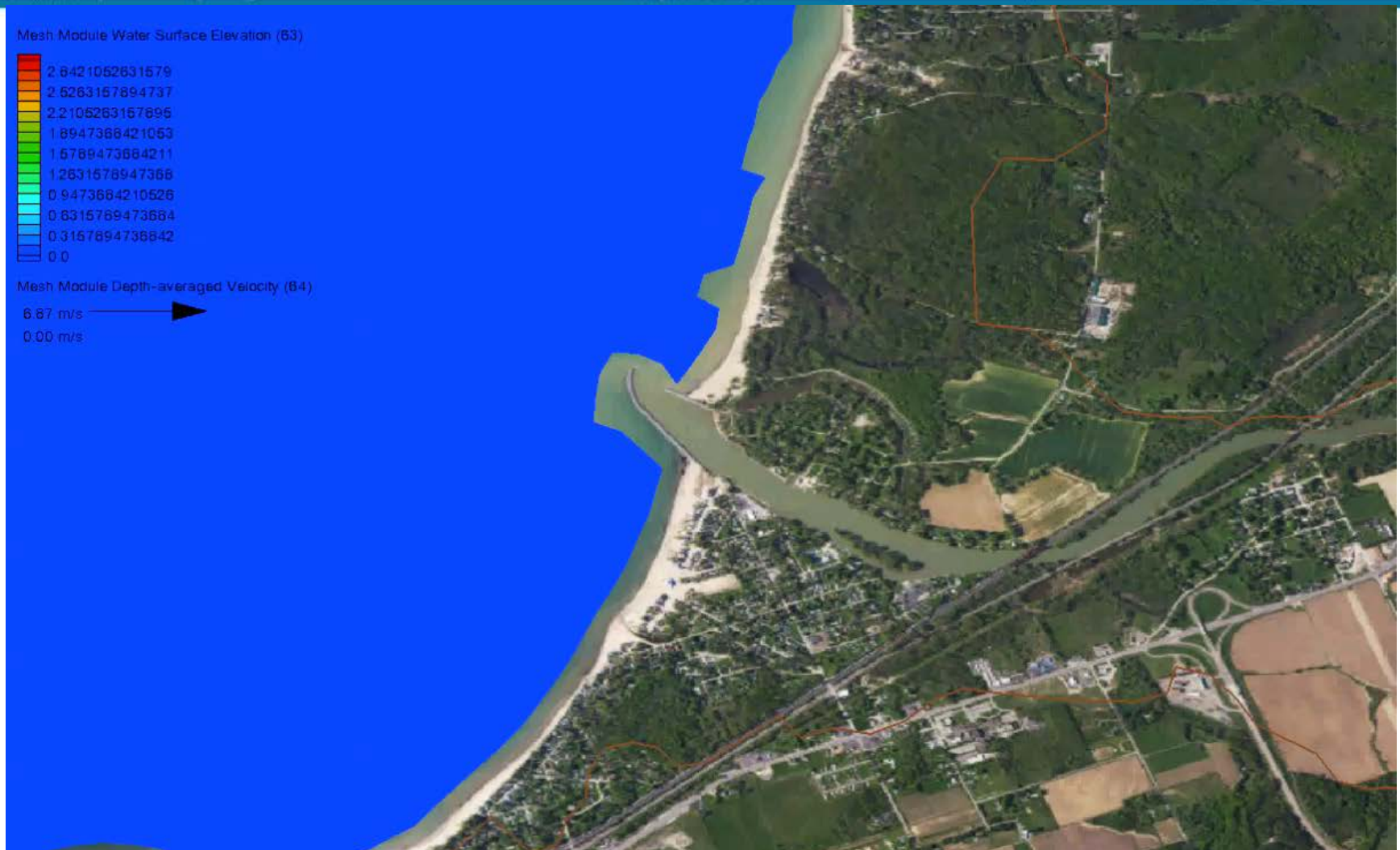
# Storm Surge From 3-10-2002



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# Storm Surge From 3-10-2002



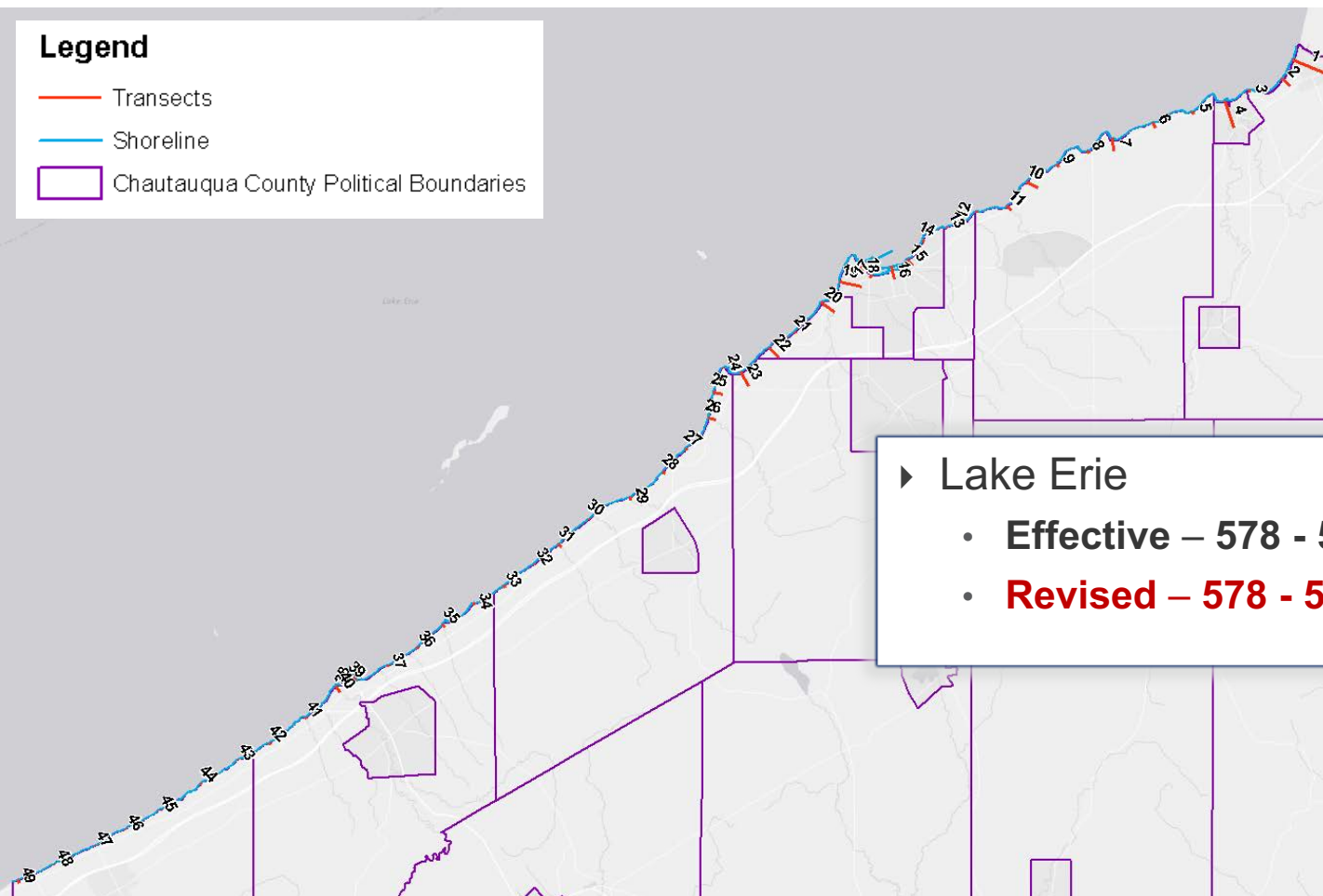
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# Chautauqua County Transects

## Legend

- Transects
- Shoreline
- Chautauqua County Political Boundaries



## ► Lake Erie

- **Effective** – 578 - 579 feet NAVD 88
- **Revised** – 578 - 597 feet NAVD 88



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# Field Reconnaissance

## Chautauqua County NY

*Transect:* TR05 *Review Location:* 05\_1 *Team:* Jeff Sample & Yi Zheng

*Date:* 7/21/2014 *Time:* 4:44:00 PM

Location Description	On Lake Rd. There is no direct access to transect shoreline. Photos are taken approximately 660ft west of transect
Water Body	Lake Erie
Latitude, Longitude	NN42.5449 WW79.1906
Fetch Description	Open Fetch
Coast Description	Rocks of 2-3ft diameter. Shoreline slope of about 60-80 degrees
PFD	None
Structure Description	None
Vertical Structure	None
Building Description	None
Vegetation Description	Trees, By the road, Diameter 8inch, Height 40ft, Spacing 10ft
Marsh Description	None
General Comments	Cliffs are observed to west of transect

### Photographs and Description

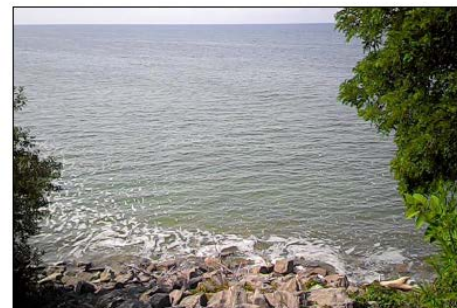


Photo ID:: 20140721164432.jpeg

Description: Shoreline



Photo ID:: 20140721164452.jpeg

Description: Shoreline



Photo ID:: 20140721164516.jpeg

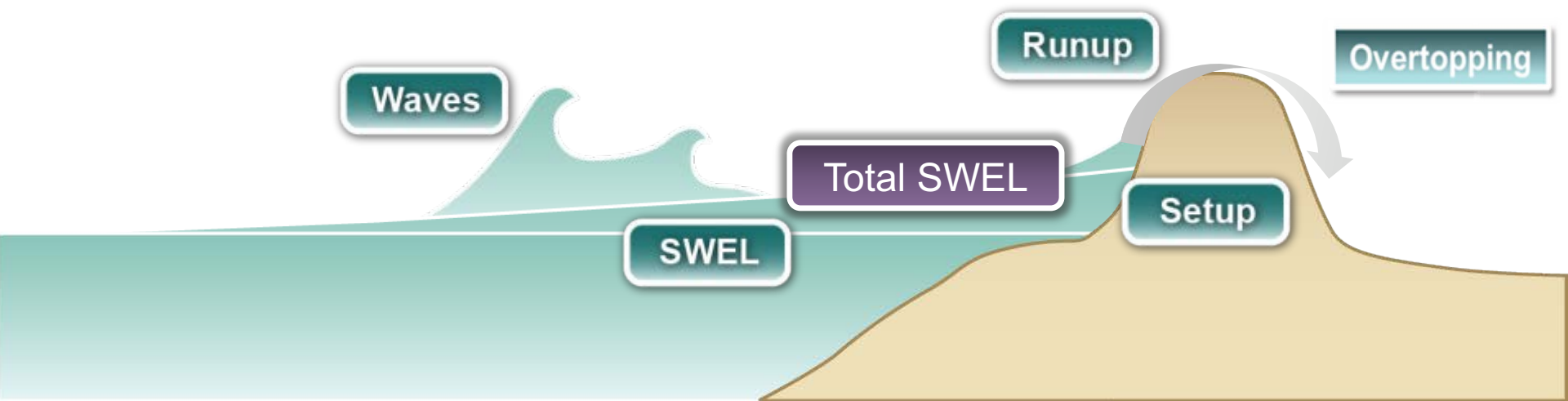
Description: Shoreline



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# Coastal Base Flood Elevation



SWEL = Stillwater Elevation (storm surge level)

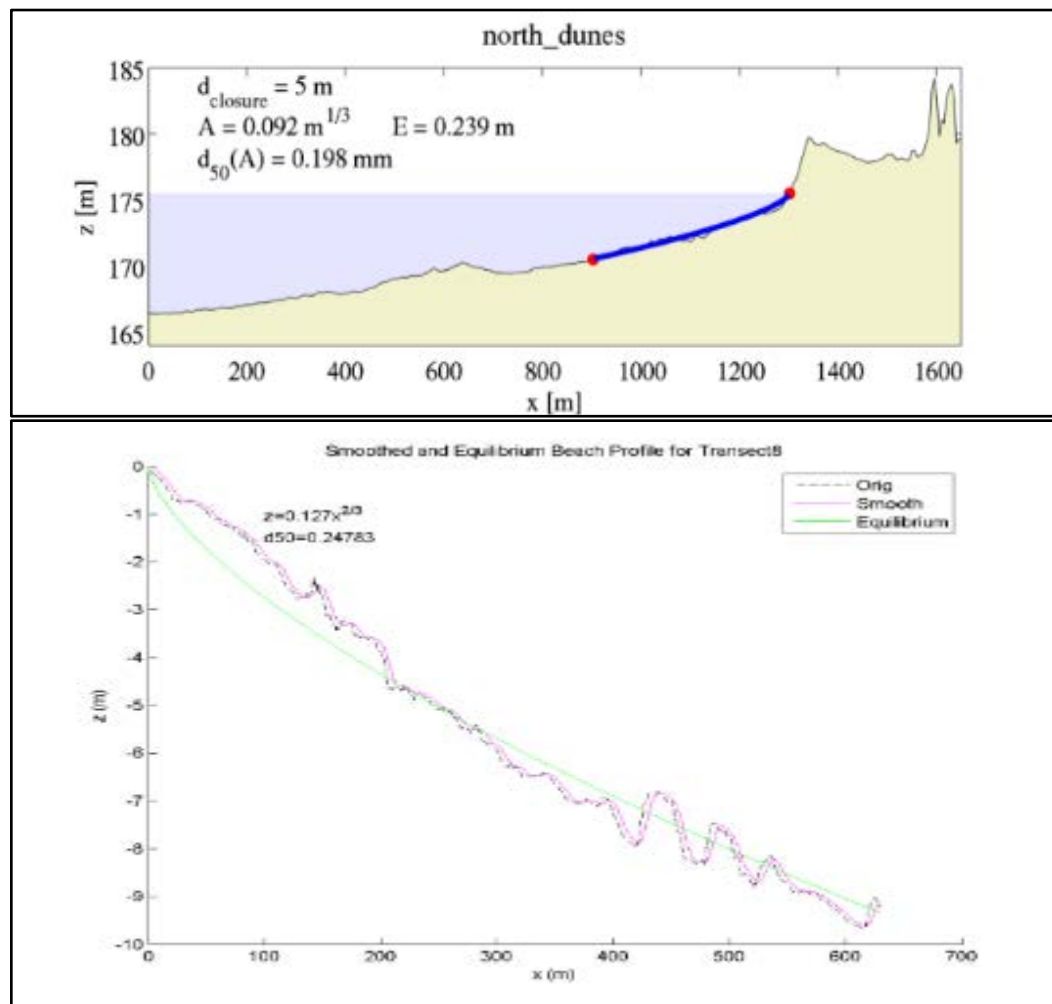
Total SWEL = Stillwater Elevation, inclusive of wave setup



# Erosion in the Great Lakes

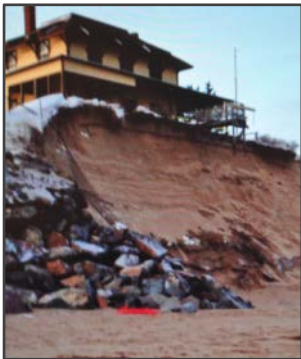
## USACE CSHORE model

- Applies real physics
- Near-shore wave processes
- Cross-shore and along shore sediment transport
- Requires sediment grain size





# Coastal Erosion and Scour

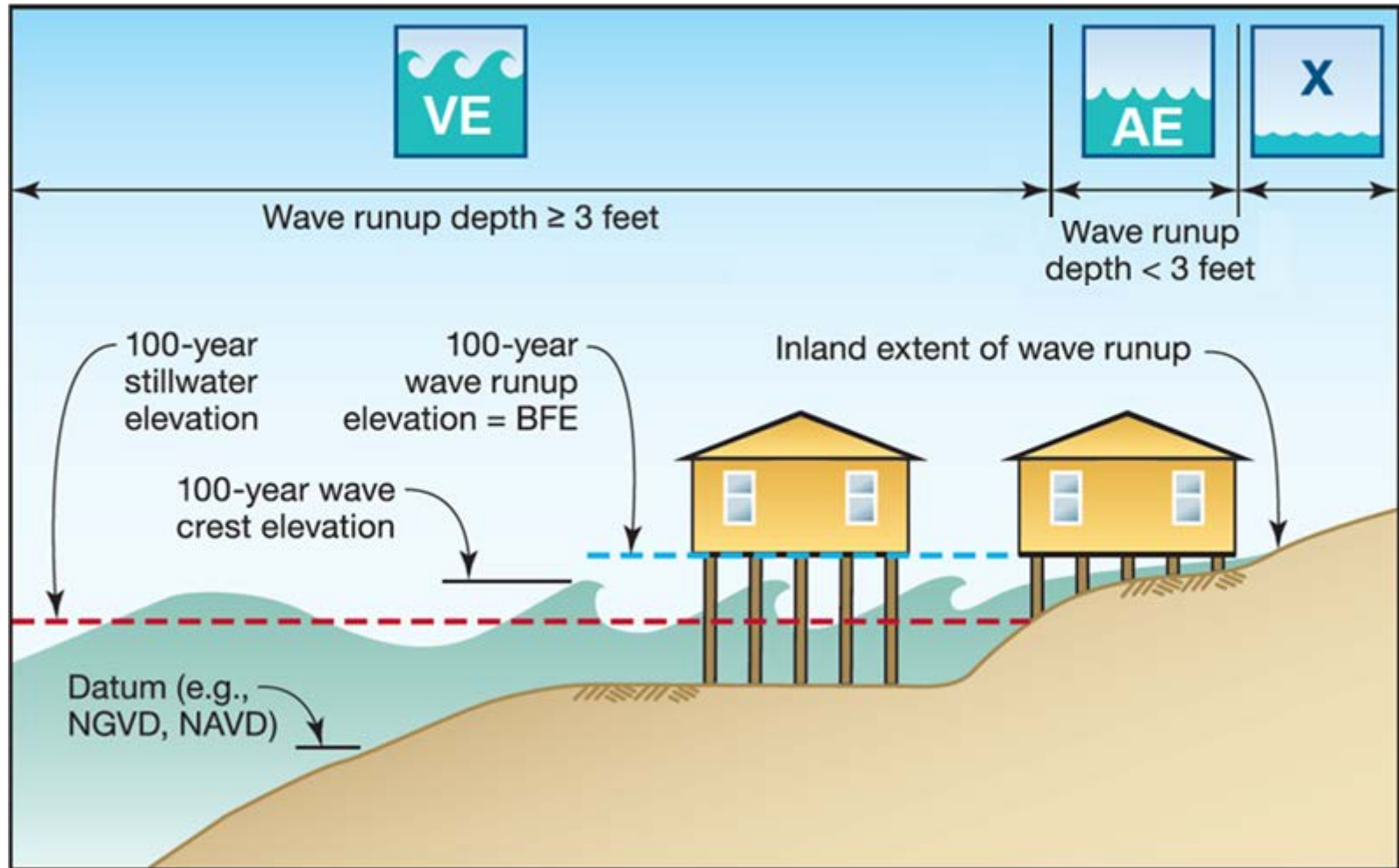


The two most damaging aspects of coastal flooding for coastal buildings are erosion and scour.

- Erosion should be considered in determining foundation depths and heights.
- Nature and extent of soil loss expected around a building is critical.
- A slab is not a substitute for adequate embedment.



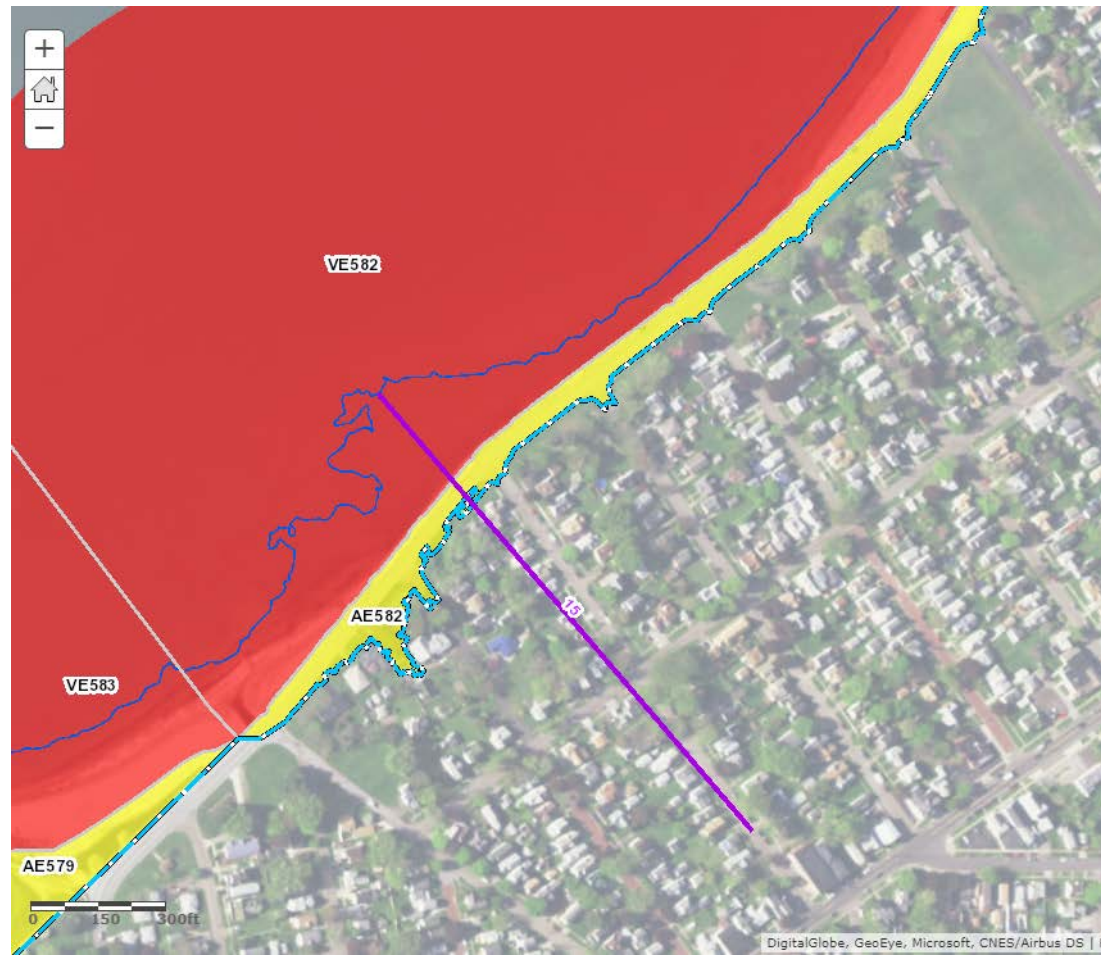
# Detailed Coastal Mapping – Wave Runup





# Wave Runup

- ▶ Rush of water that extends inland when waves come ashore
- ▶ These elevations may be higher than the stillwater elevations developed as part of the storm surge analysis
- ▶ Wave effects have been mapped for the first time for most of this area





# Wave Overtopping – AO Zones

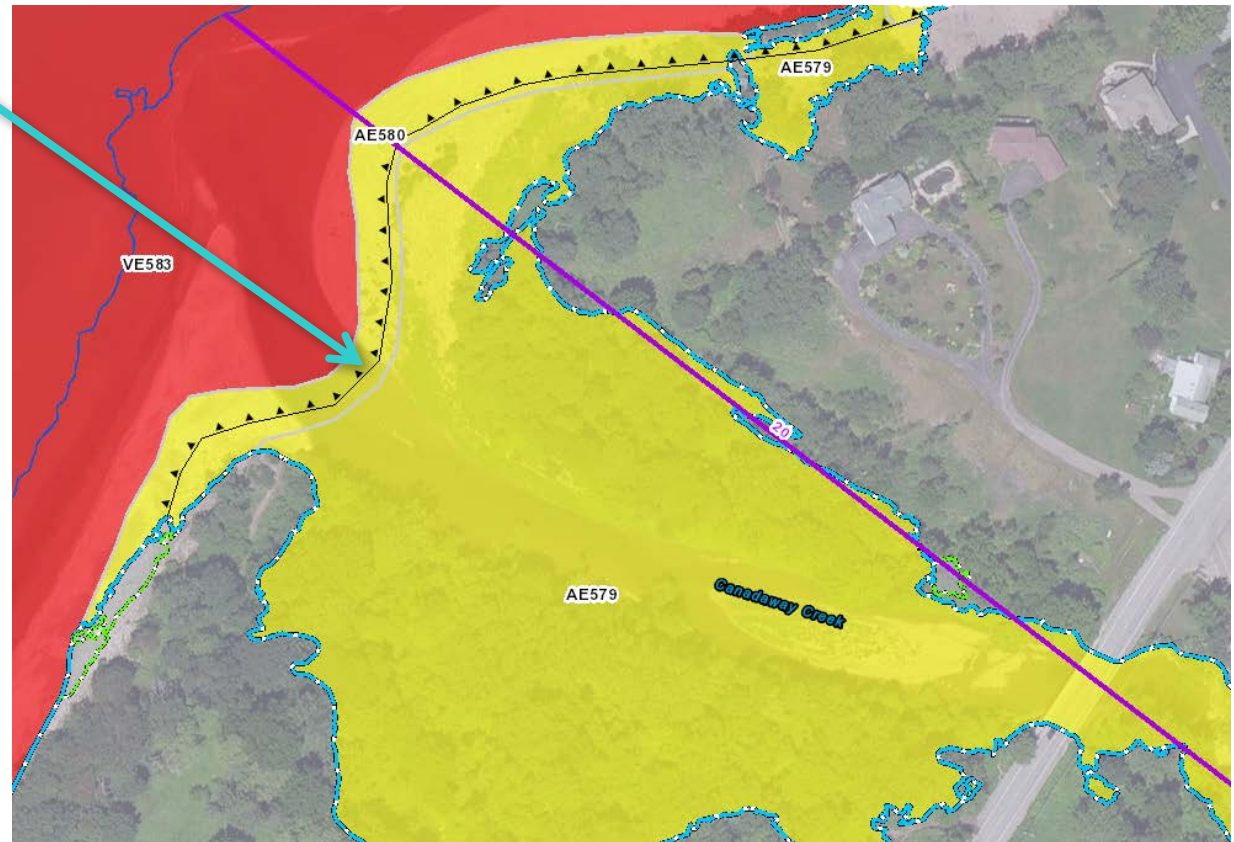
- ▶ Overtopping Rate  
Considerations for Establishing  
Flood Insurance Rate Zones
- ▶ Ponding Considerations
  - Areas where AE not present  
beyond slope break
  - Duration of overtopping
  - Topography
  - Drainage landward of the  
overtopped barrier





# Limit of Moderate Wave Action - LiMWA

- ▶ LiMWA sits inside of a Zone AE
- ▶ Triangles point to higher waves
  - Indicates where wave height exceeds 1.5 ft
- ▶ Also referred to as Coastal A Zone





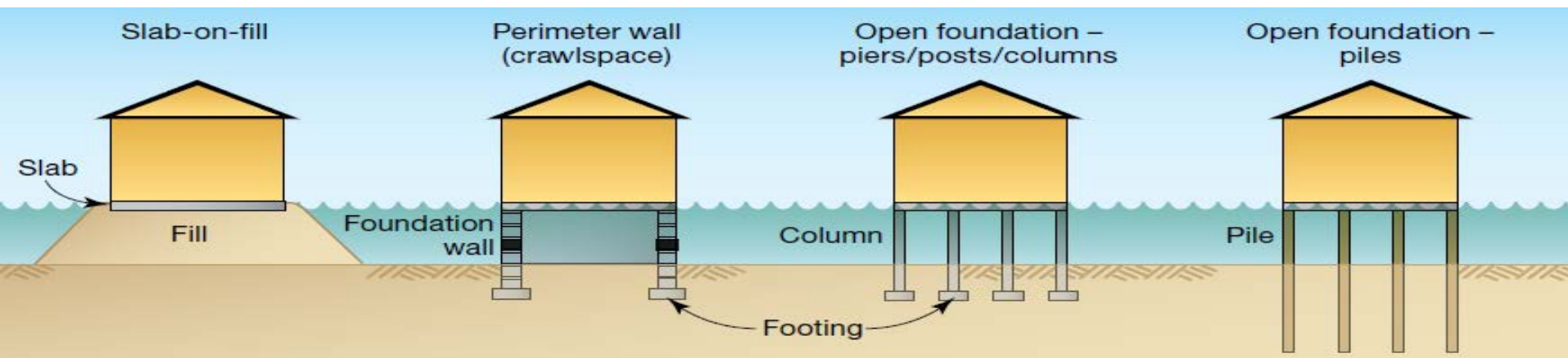
# Development Requirements

## A Zones

- Slab-on-grade / Slab-on-fill
- Fully-enclosed foundation wall (flood openings required)
- Open foundation on piers, posts, piles, or columns
  - Top of lowest floor elevated to or above the BFE
  - AO Zone – elevate to or above flood depth number or 2 feet above HAG

## V Zones

- Open foundation on columns or piles
- Free of obstruction or use of breakaway walls/lattice work
- Parking, access, and storage
- Designed by a registered design professional
- Bottom of lowest horizontal structural member to or above BFE

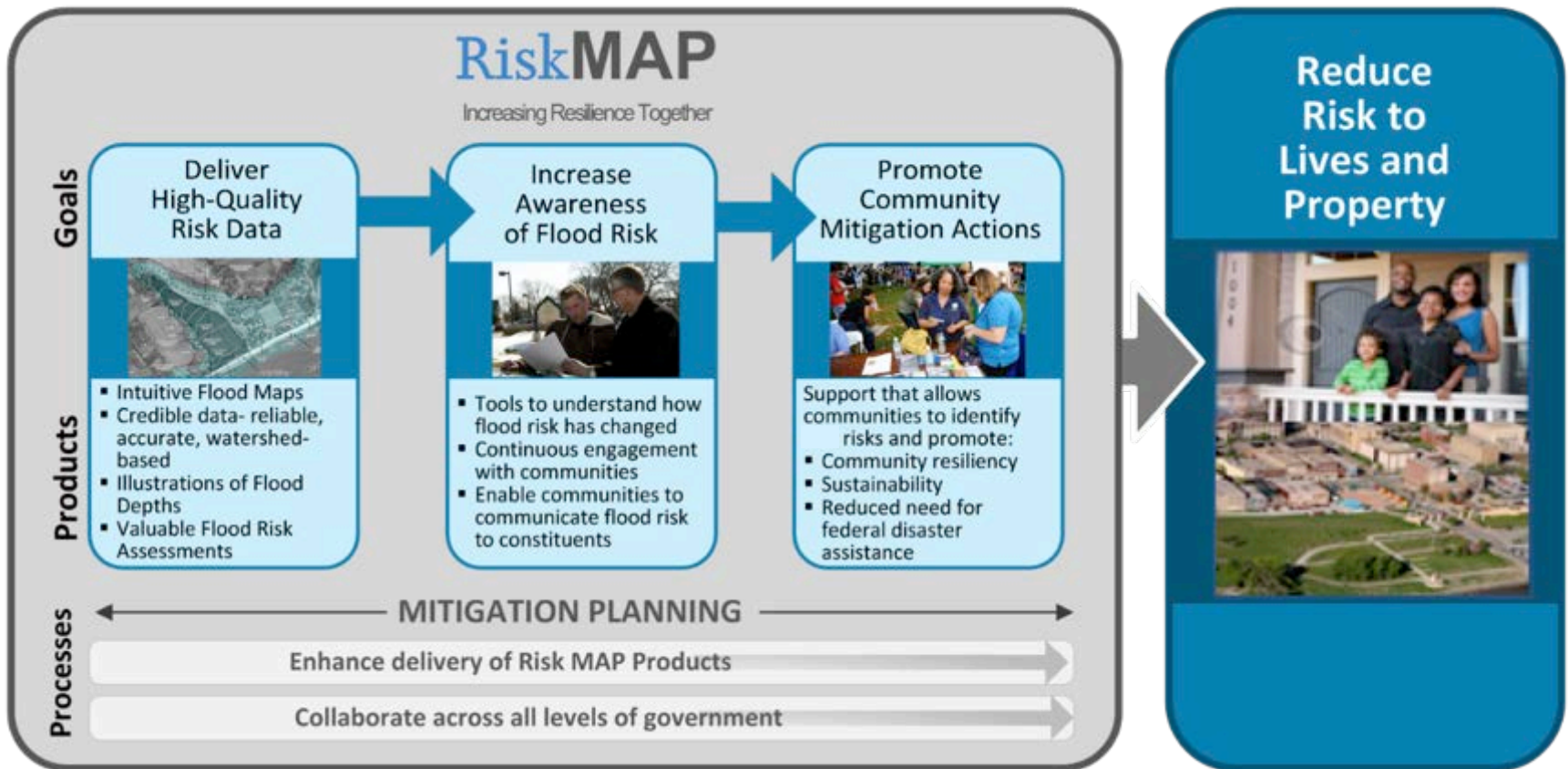




# Increase Mitigation Opportunities



# Goal: Stronger and Safer Communities

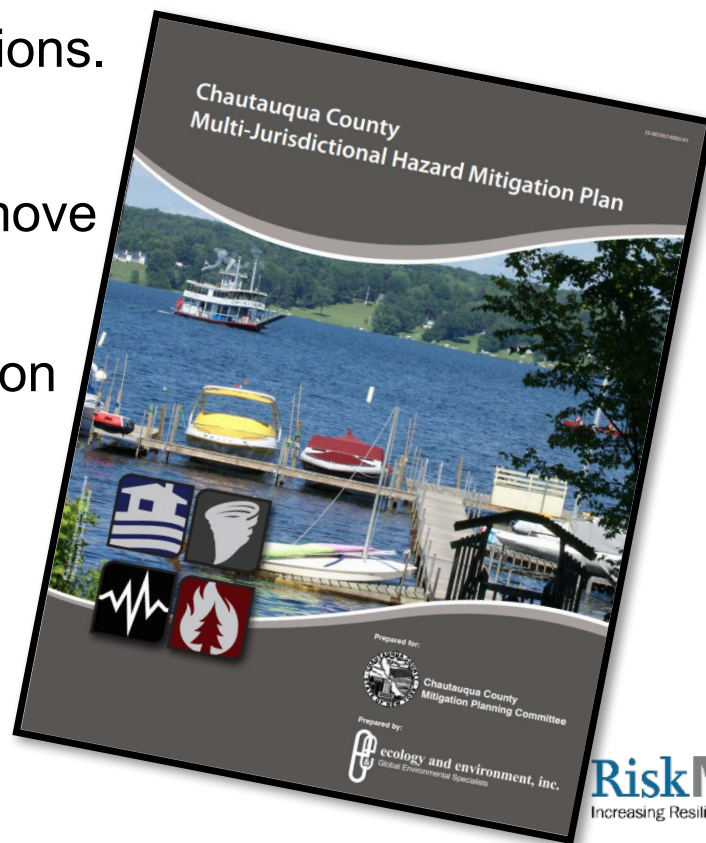




# Proposed Mitigation Actions

## From the Hazard Mitigation Plan

- Building setback will be increased along Lake Erie to reduce potential erosion and its impacts. Multiple municipalities proposed this effort.
- Better enforcement of zoning regulations.
- Implement response protocols to remove ice/debris jams from waterways.
- Conduct outreach and public education pre-/post-hazard event.





# Grants Overview



- **Grants available AFTER a disaster**
  - Hazard Mitigation Grant Program (HMGP)



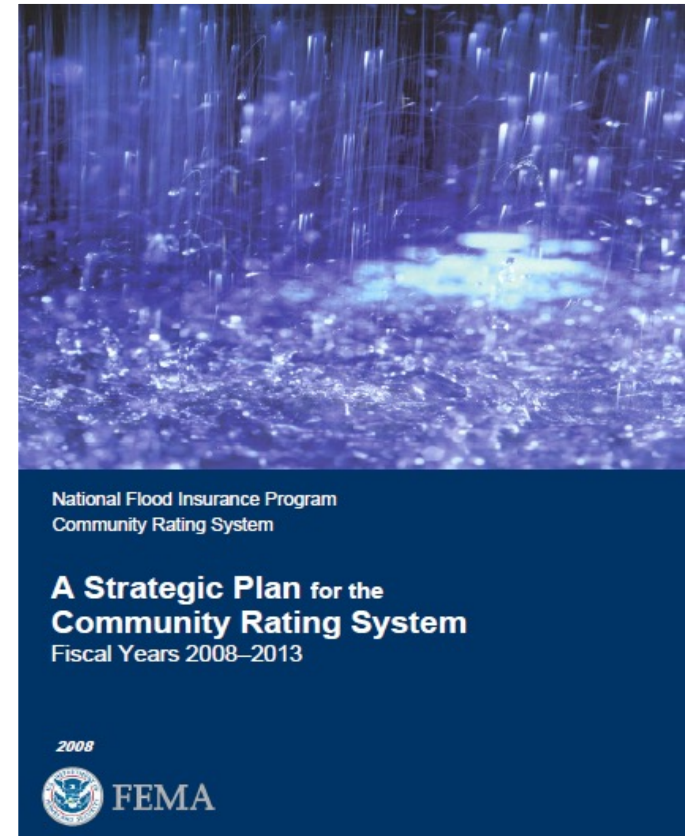
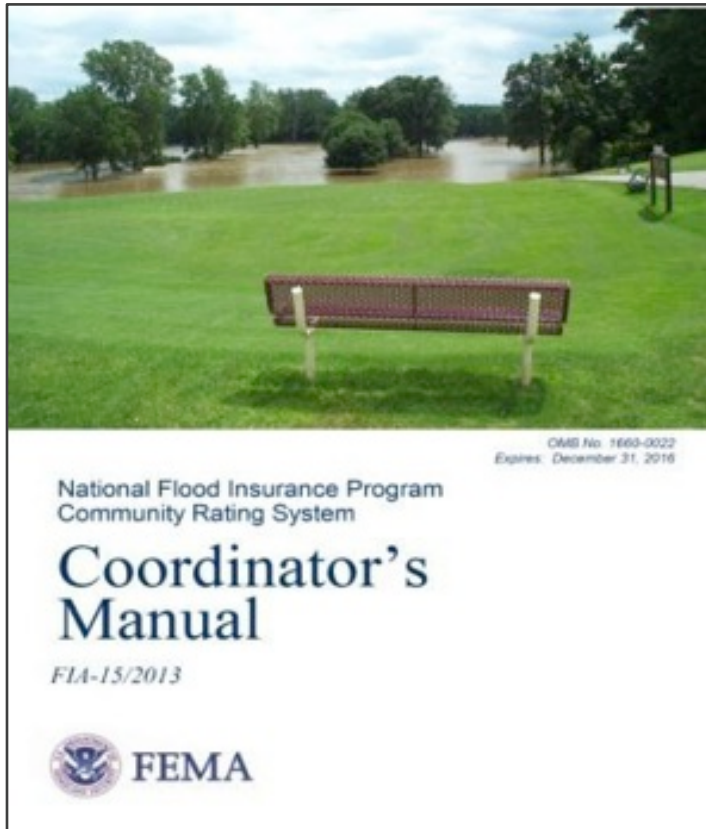
- **Grants available BEFORE a disaster**
  - Pre-Disaster Mitigation (PDM) Program
  - Flood Mitigation Assistance (FMA) Program



- **FEMA awards grants to States, tribes, and territories**
  - Communities contact State Hazard Mitigation Office (SHMO) if interested in applying for HMA



# NFIP Community Rating System Program Basics & Benefits

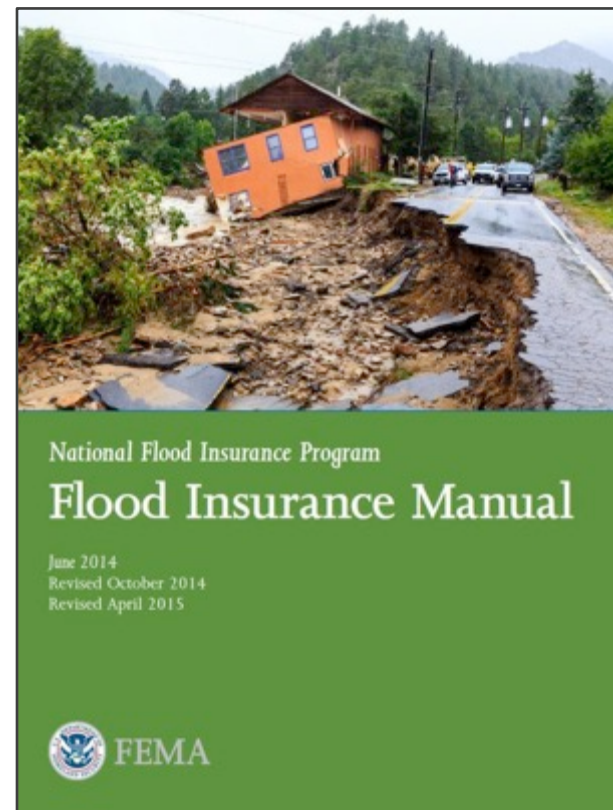


[www.CRSResources.org](http://www.CRSResources.org)



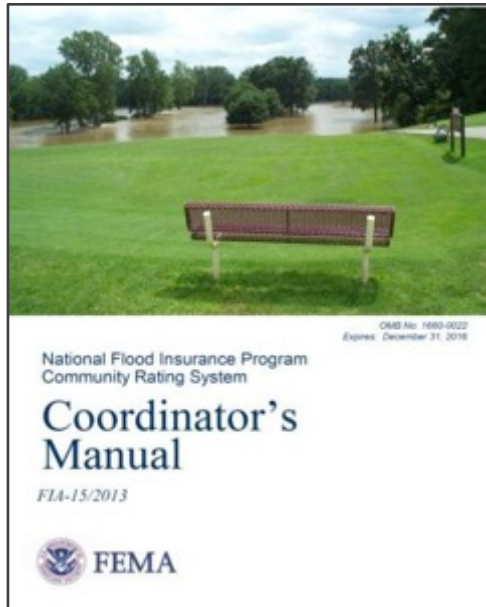
# CRS Community Requirements

- Be in full compliance with the NFIP
- Implement activities
- Maintain Elevation Certificates
- Verification visit every 3 to 5 years
- Recertify each year
- Must meet Class prerequisites
  - Repetitive loss (Class 9)
  - BCEGS 5/5 or better (Class 6)
  - BCEGS 4/4 or better; 1 foot of freeboard and more (Class 4)





# CRS Coordinator's Manual – Series Organization



100 – Program Overview

200 – Procedures

**300 – Public Information Activities**

**400 – Mapping and Regulations**

**500 – Flood Damage Reduction Activities**

**600 – Warning and Response**

700 – County Growth Adjustment

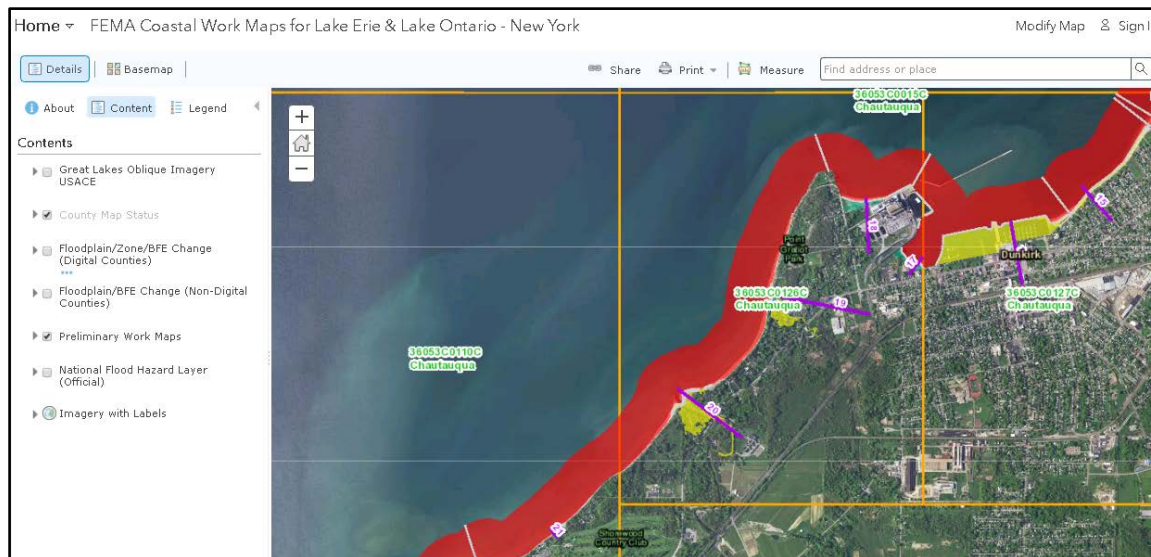
*Elements of a comprehensive community  
floodplain management program*



Work Session:  
Review floodplain mapping and  
flood risk products for validity.  
Ask questions!



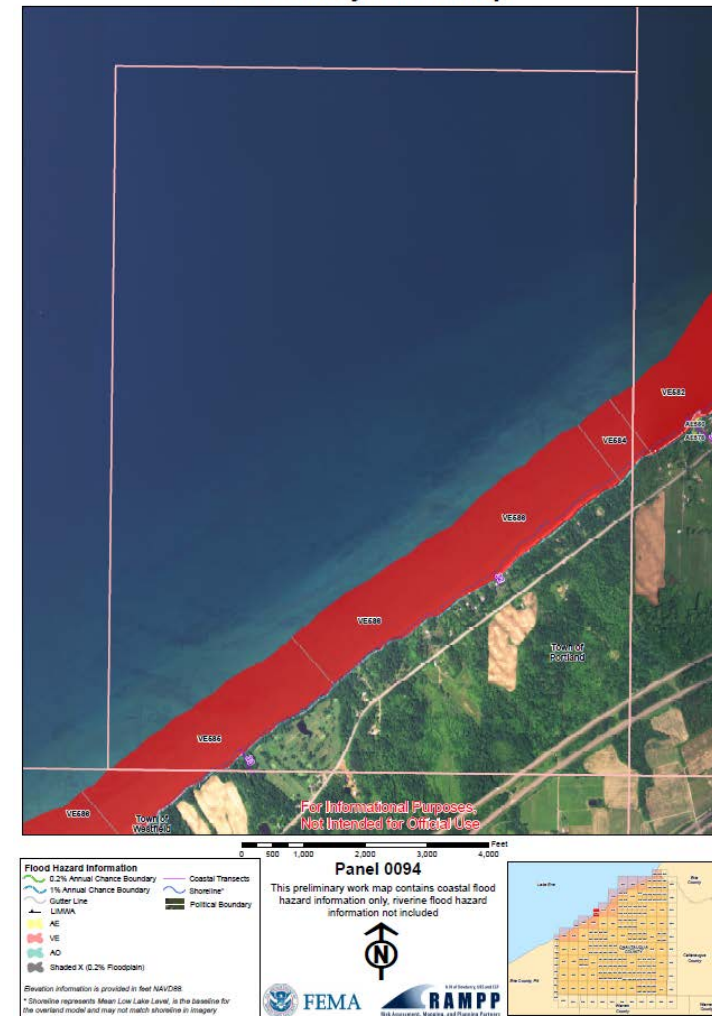
# Workmap Data Viewer



(<http://arcg.is/1W5Ovq>)



## Chautauqua County, NY Preliminary Work Map





# Questions about Maps?



Learn more at: <http://www.greatlakescoast.org/>



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An aerial photograph of a landscape featuring a large, irregularly shaped lake in the center. The lake is surrounded by green, forested land. In the background, there are rolling hills and more water bodies. A semi-transparent white rectangular box is overlaid on the upper left portion of the image, containing the title text.

# **Working Together to Build a Stronger & More Resilient Chautauqua County**



**FEMA**

**RiskMAP**  
Increasing Resilience Together