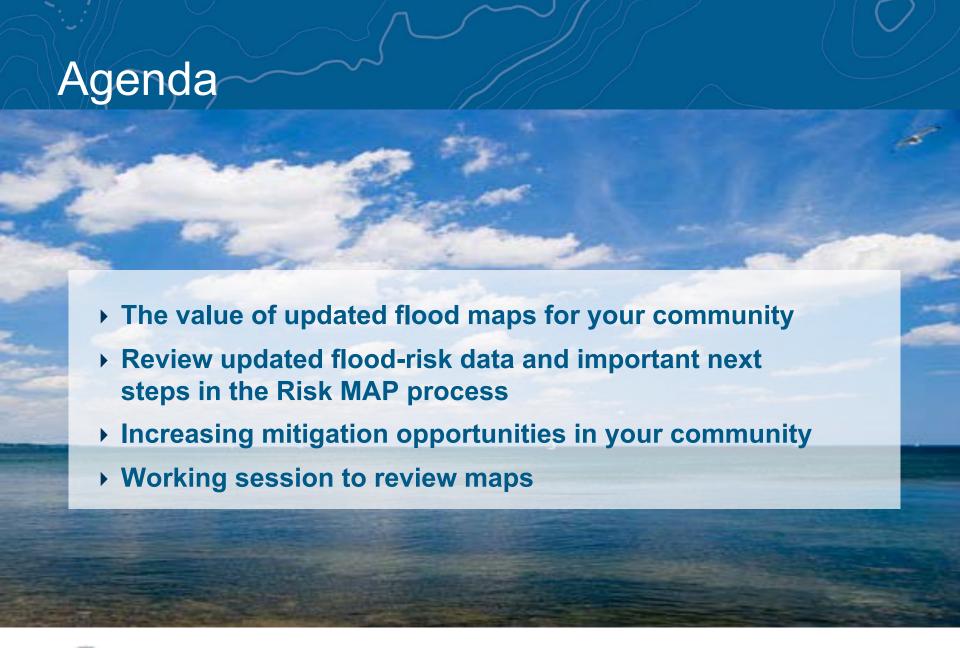


Seneca Nation Flood Risk Review (FRR) Meeting

December 6, 2017

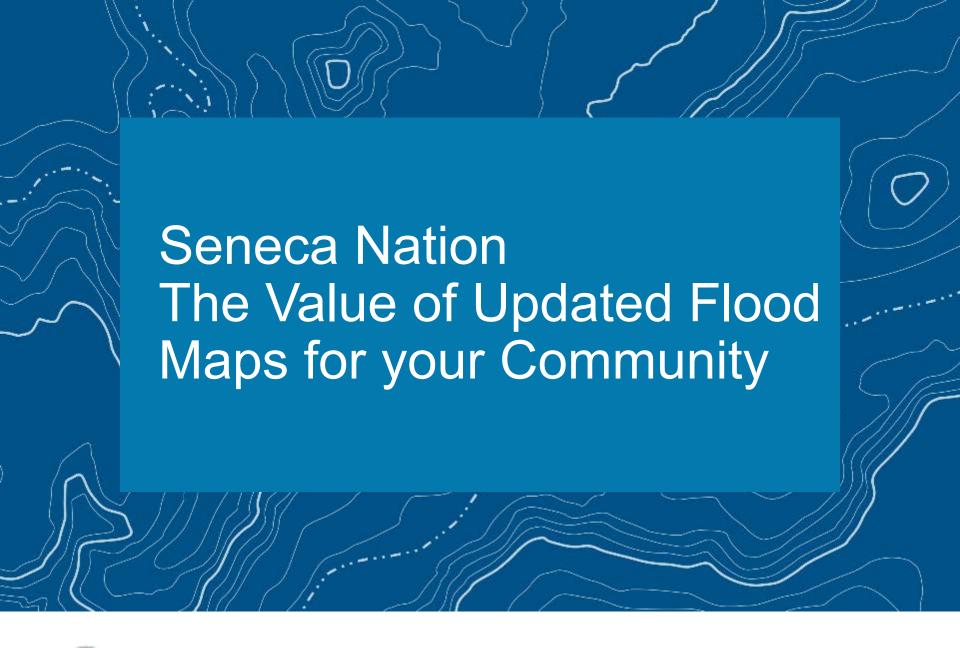
















Why Are We Here?

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



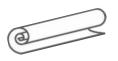
To Equip Emergency Managers





Your Role

Tribal 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

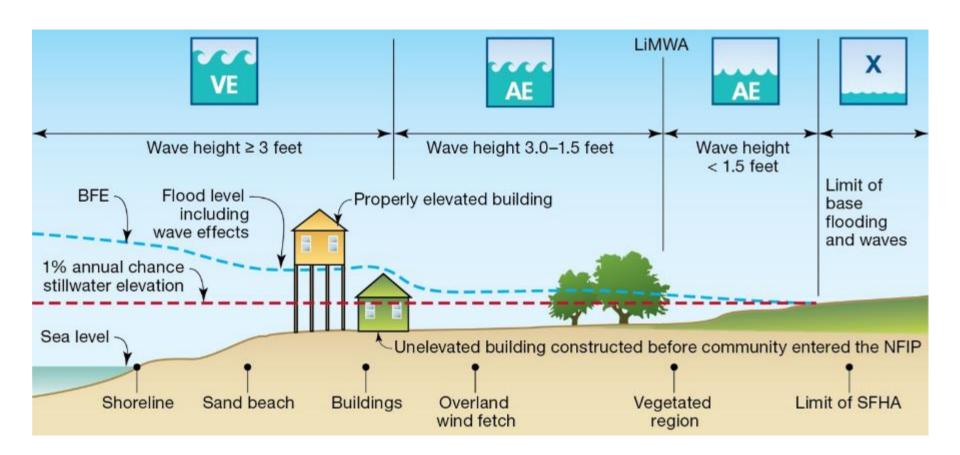


Update local plans, codes, and ordinances





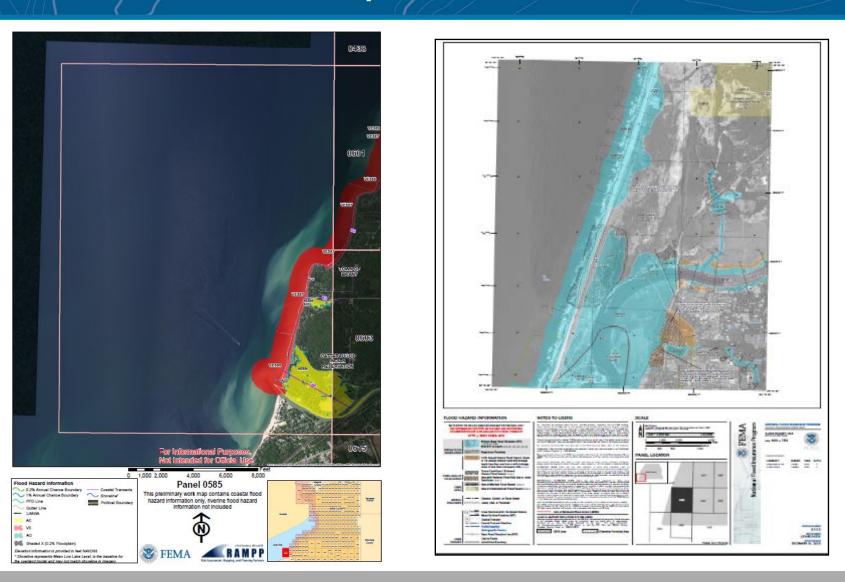
Detailed Coastal Mapping

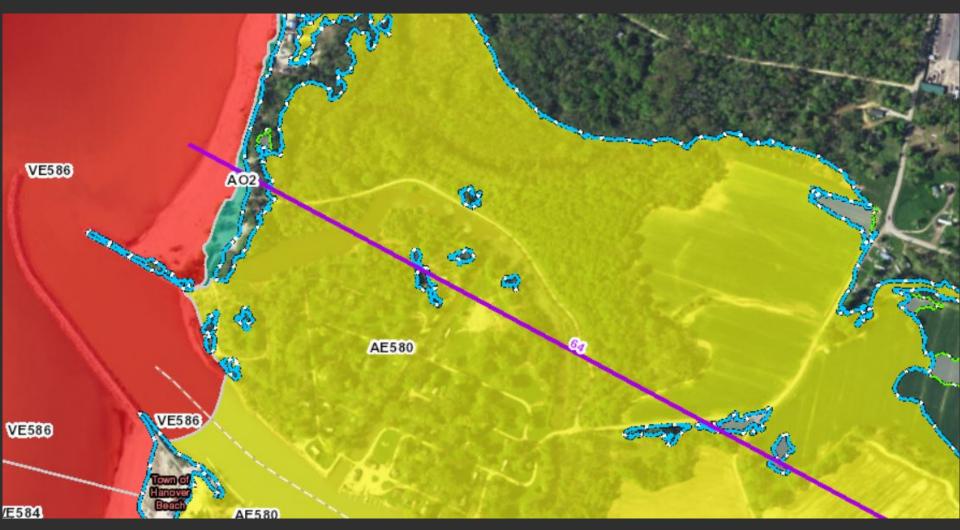






Coastal Work Map vs. FIS/FIRM

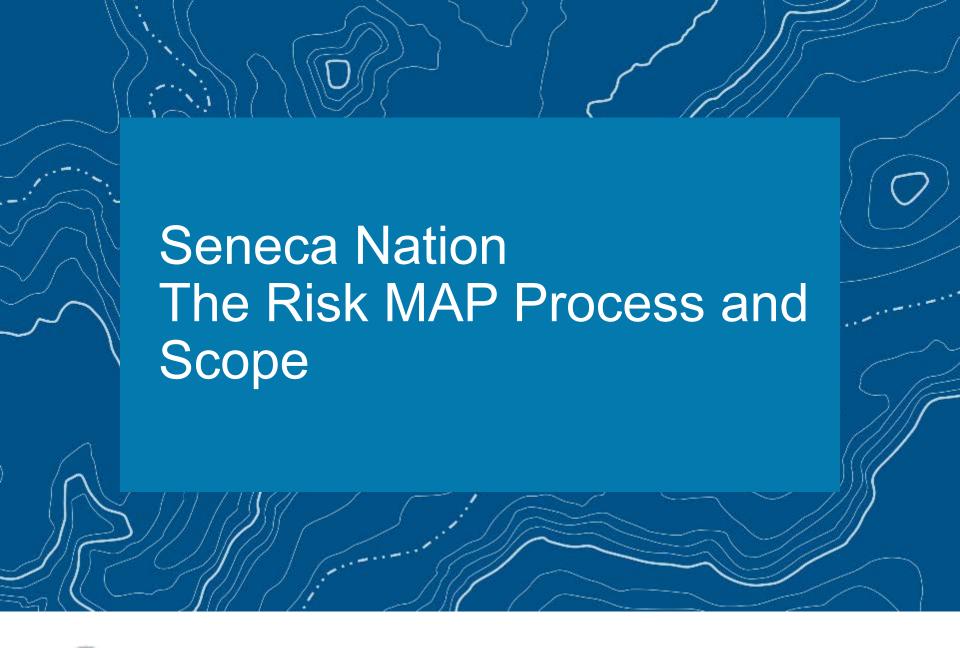




Modeling the Special Flood Hazard Area (SFHA)

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

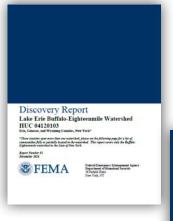
- Insurance is required if you have a federally backed mortgage or received federal disaster assistance
- Informs building code standards







Discovery Report 2016

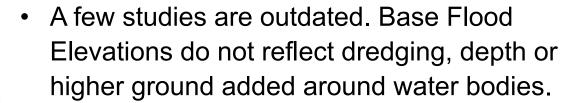


Discovery Report

Lake Erie Chautauqua-Conneaut Watershed,

HUC 04120101





- Flooding and erosion of Lake Erie are major concerns, affected by changes in precipitation and inflow from other Lakes.
- The Lake Erie shoreline is a major area of flooding, due to wave action and high winds.
- The lake causes another flooding problem along its shores as the water level rises, it causes streams to back up.



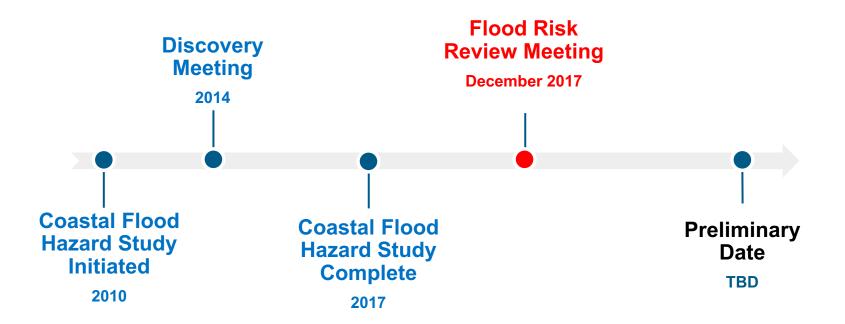








Project Timeline and Schedule







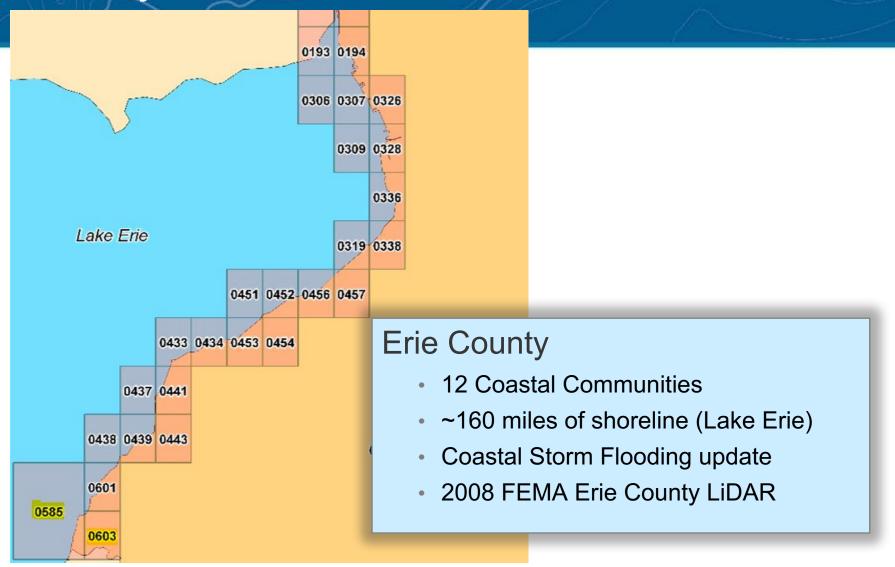
Seneca Nation Study Area







Study Area







Effective vs New Coastal Study

Coastal Study Component	Effective Erie County (2008)	New Study (2017)
Topographic Data	5 -20 ft. Interval Contours (dating back to 1963)	FEMA Erie County LiDAR (2012)
Stillwater Elevation (SWEL)	Gage Frequency Analysis (USACE 1975 and 1988)	Lake Erie Storm Surge Study (2012)
Modeled Transects	0	64
Wave Setup	No	Yes
Wave Runup	No	Yes
Limit of Moderate Wave Action (LiMWA)	No	Yes

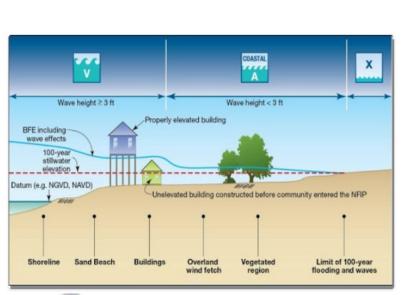


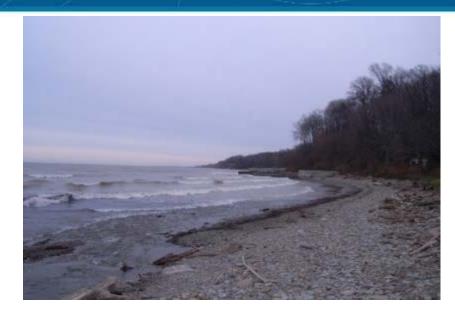


Study Approach

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

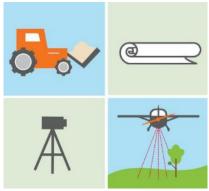
- Mapping level tasks performed at county level
- Nearshore wave transformations
- Wave runup
- Overland wave propagation





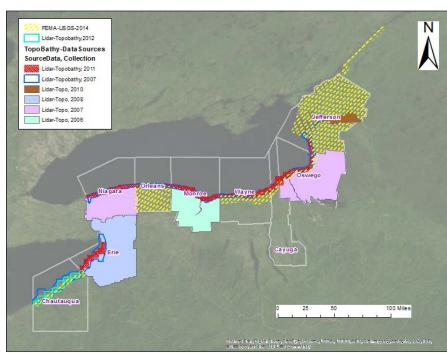
Light Detection and Ranging (LiDAR)





Terrain Dataset

Used for modeling & mapping



LiDAR Data Sources

2008 FEMA Erie County LiDAR
2007 and 2012 USACE/JALBTCX Great Lakes
Topo/Bathy LiDAR
1999 USGS NED 1/3 arc-second ArcGrid
1940 and 1980 NOAA Hydrographic Survey Data

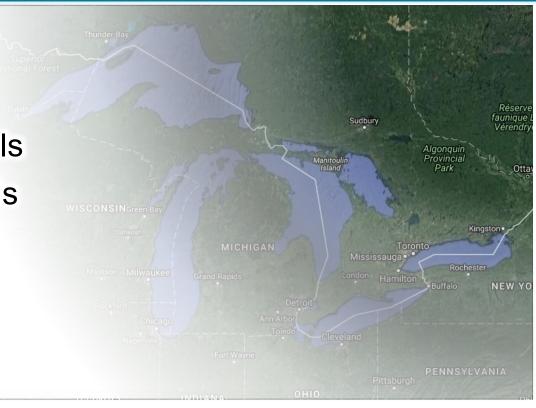




Storm Surge Study Technical Support

Five Report sections

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



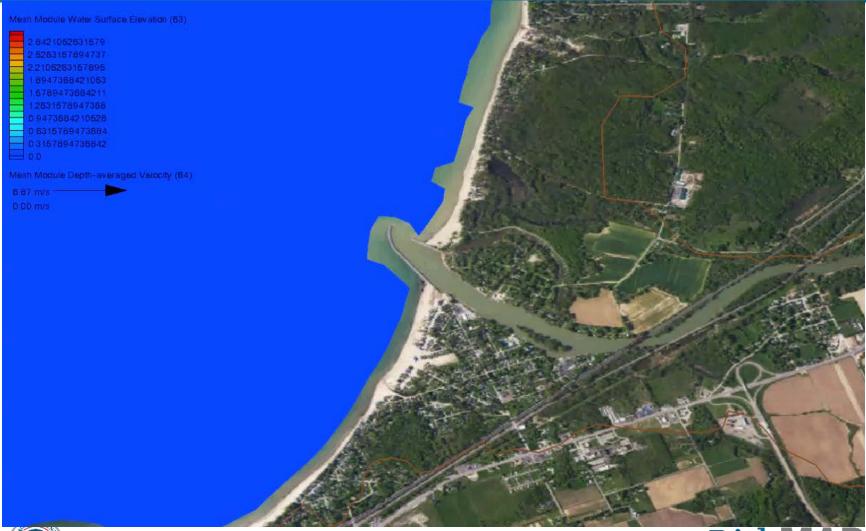




Storm Surge From 3-10-2002

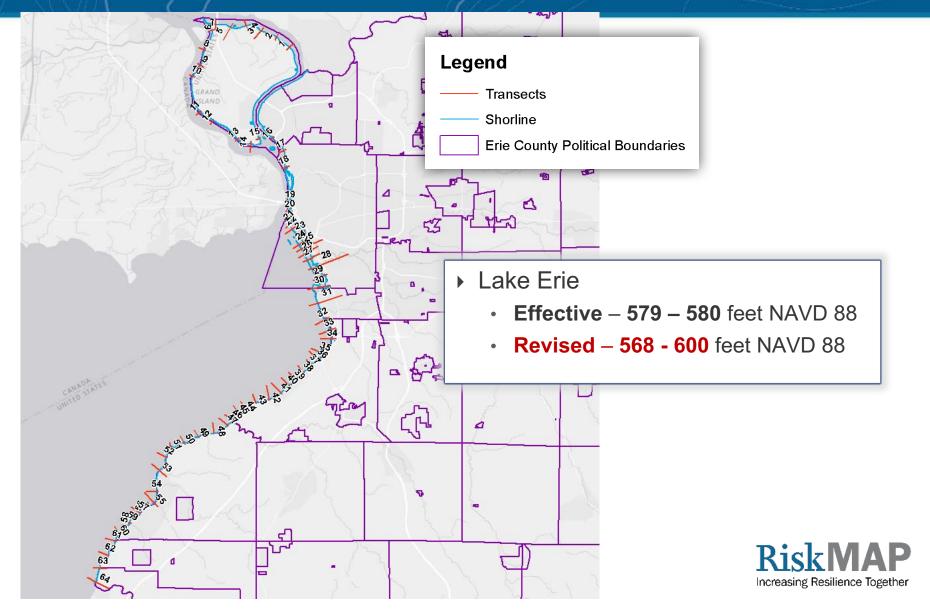


Storm Surge From 3-10-2002





Erie County Transects



Field Reconnaissance

Erie County NY		
Transect: TR07 Review Location: 07_1 Team: Jeff Sample & Yi Zheng Date: 7/23/2014 Time: 5:12:05 PM		
Location Description	By I 190. No direct acces to shoreline. Photos are taken in surrounding area.	
Water Body	Niagara River	
Latitude, Longitude	N43.06 W78.9901	
Fetch Description	Limited Fetch	
Coast Description	None	
PFD	None	
Structure Description	None	
Vertical Structure	None	
Building Description	None	
Vegetation Description	trees, at back of transect, Diameter 10inch, Height 60ft, Spacing 15ft	
Marsh Description	Phragmites Australis, at back of transect, Height 6ft, Number of Plants 64, Base Stem Diameter 0.2inch, Top Stem Diameter 0.2inch	
General Comments	marsh and trees at back of transect	

Photographs and Description



Photo ID:: 20140723171218.jpeg
Description: marsh



Photo ID:: 20140723171236.jpeg Description: trees



Photo ID:: 20140723171205.jpeg Description: marsh

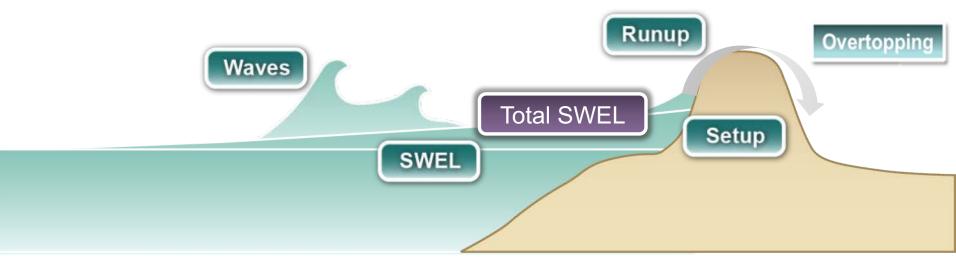








Coastal Base Flood Elevation



SWEL = Stillwater Elevation (storm surge level)
Total SWEL = Stillwater Elevation, inclusive of wave setup



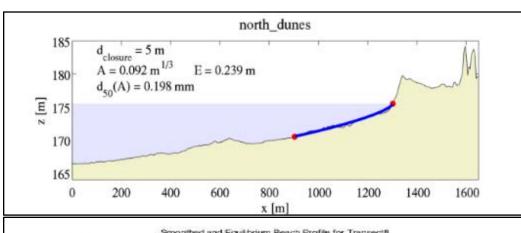


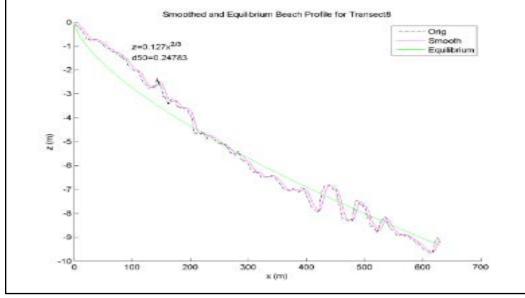
Erosion in the Great Lakes

USACE CSHORE model

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







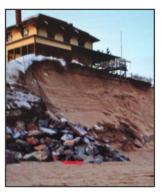




Coastal Erosion and Scour







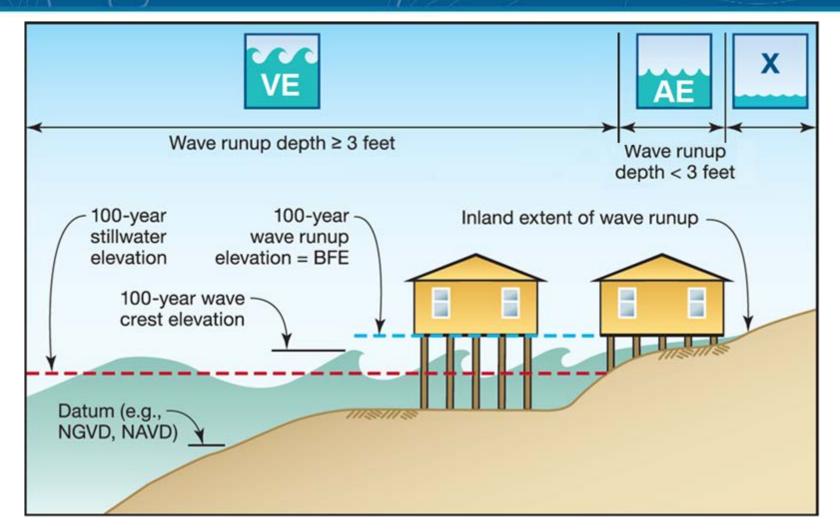
The two most damaging aspects of coastal flooding for coastal buildings are erosion and scour.

- 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

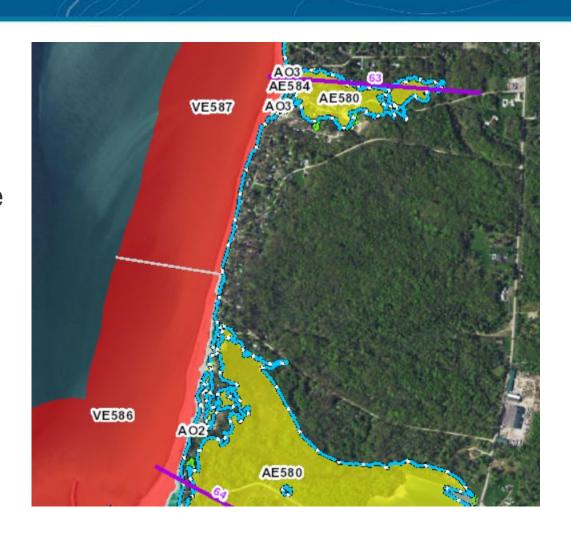






Wave Runup

- 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







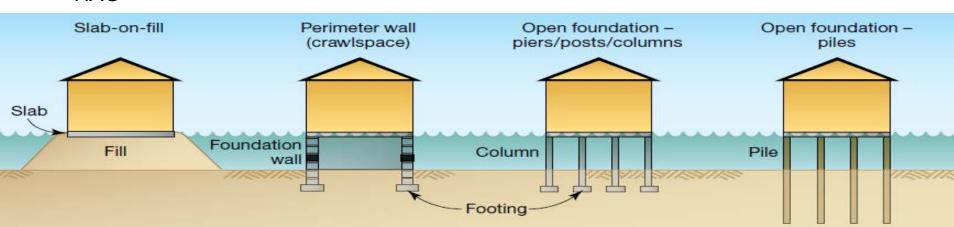
Development Requirements

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

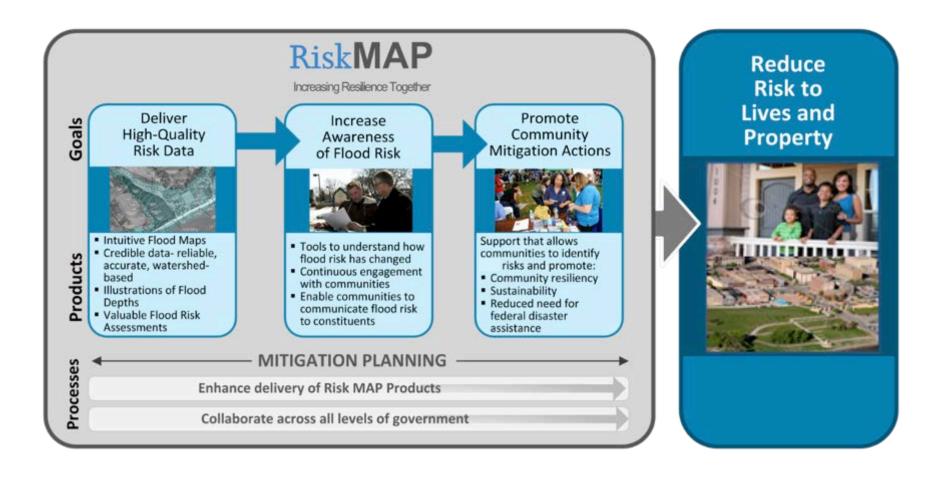








Goal: Stronger and Safer Communities



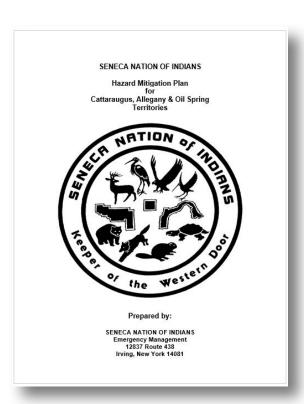




Proposed Mitigation Actions

From the Hazard Mitigation Plan

- Identify and document repetitively-flooded properties.
 Explore mitigation opportunities for repetitively flooded properties and if necessary carry out acquisition, relocation, elevation and flood-proofing measures to protect these properties
- Evaluate flood mitigation options for sports complex currently under construction on Cattaraugus Territory
- Implement local ordinances, codes and/or regulations to assist in meeting the objectives of this plan
- Survey all floodplain areas adjacent to creeks and streams to develop an accurate and current list of flood-prone areas







Grants Overview





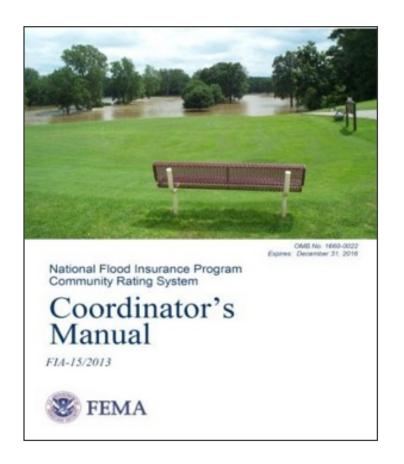


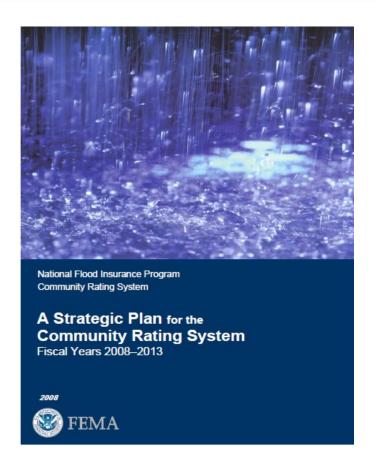
- Grants available AFTER a disaster
 - Hazard Mitigation Grant Program (HMGP)
- Grants available BEFORE a disaster
 - Pre-Disaster Mitigation (PDM) Program
 - Flood Mitigation Assistance (FMA) Program
- FEMA awards grants to States, tribes, and territories
 - Tribal Nations can work directly with the FEMA Regional Office if interested in applying for Hazard Mitigation Assistance grants





NFIP Community Rating System Program Basics & Benefits





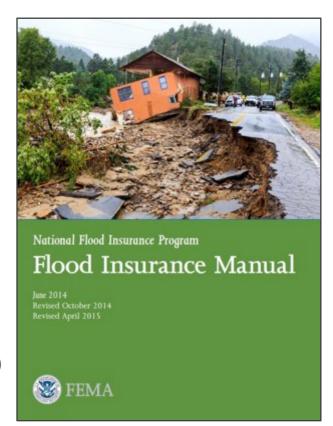
www.CRSResources.org





CRS Community Requirements

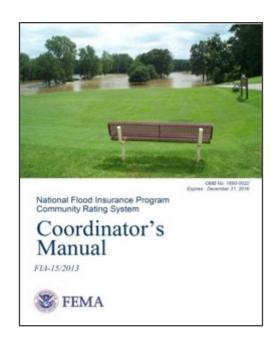
- Be in full compliance with the NFIP
- Implement activities
- Maintain Elevation Certificates
- Verification visit every 3 to 5 years
- Recertify each year
- Must meet Class prerequisites
 - Repetitive loss (Class 9)
 - BCEGS 5/5 or better (Class 6)
 - BCEGS 4/4 or better; 1 foot of freeboard and more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







CRS Coordinator's Manual – <u>Series</u> Organization



100 – Program Overview

200 - Procedures

300 - Public Information Activities

400 - Mapping and Regulations

500 - Flood Damage Reduction Activities

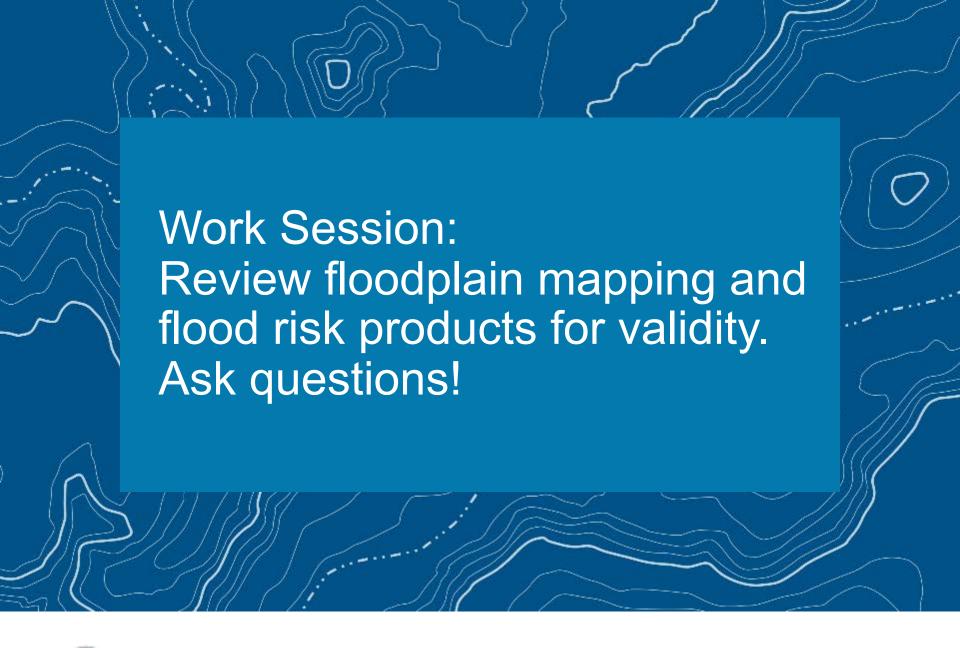
600 - Warning and Response

700 – County Growth Adjustment

Elements of a comprehensive community floodplain management program



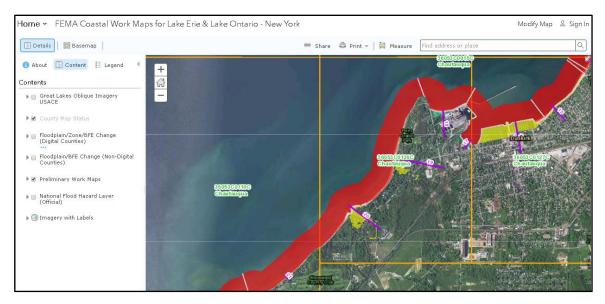








Workmap Data Viewer



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







Questions about Maps?



Great Lakes Coastal Analysis & Mapping

Additional Resources



Great Lakes Coastal Analysis & Mapping

Wind Surge Study

Welcome to the **Great Lakes Coastal Flood Study** website at **greatlakescoast.org**. This is the official public website for FEMA's comprehensive storm and wind study of the Great Lakes basin for the purpose of updating the coastal flood hazard information and Flood Insurance Rate Maps (FIRM) for Great Lakes coastal communities. This is the main page of the website and contains the most recent content posted to the site. Use the menu at the left to visit pages with additional content pertaining to the **Great Lakes Coastal Flood Study**.



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



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