

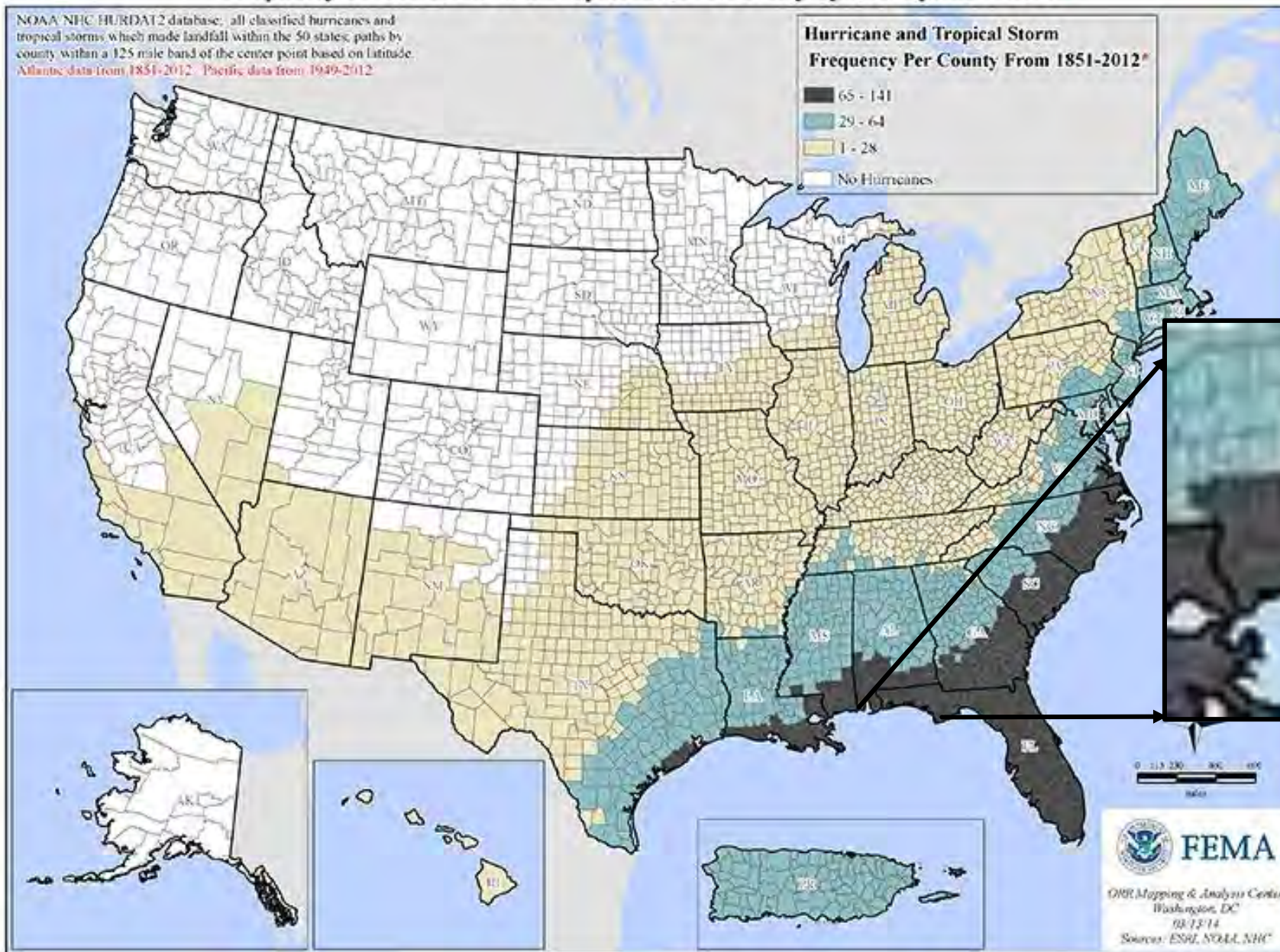
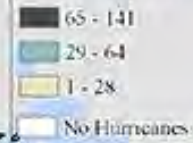
# Climate Mitigation in Escambia County

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# Frequency of Hurricane and Tropical Storm Activity by County: 1851-2012\*

NOAA/NHC HURDAT2 database: all classified hurricanes and tropical storms which made landfall within the 50 states; paths by county within a 125 mile band of the center point based on latitude.  
Atlantic data from 1851-2012. Pacific data from 1949-2012.

## Hurricane and Tropical Storm Frequency Per County From 1851-2012\*











# Coastal Vulnerability Assessment Escambia County (July 2016)

- ▶ Part of a pilot study conducted by Department of Economic Opportunity, funded by NOAA
- ▶ Wide ranging study lays a solid groundwork from which to build
  - ▶ Sea level rise/wave hazard zone scenarios and mapping
  - ▶ Asset exposure: roadways, schools, emergency and medical facilities
  - ▶ Precipitation models
  - ▶ Stormwater infrastructure



- ▶ 9 inches of sea level rise at Pensacola Bay since 1923 (NOAA water level station)
- ▶ Annual heavy rainfall frequencies have increased 27% across southeast since 1958
  - ▶ Stormwater Advisory Team (SWAT) found Pensacola averaged four “100 year” storms in the past 80 years
- ▶ Stormwater infrastructure stressed and designed to outdated standards





Photo credit: Pensacola News Journal



**Table 3. Sources of Flood Elevations in Escambia County, FL.**

Coastal Flood Event Type	Description	Frequency	Water Elevation, ft NAVD88	Data Source
Daily Tidal Flooding, or Mean Higher High Water	The highest daily tide elevation, defining the limit of what land is essentially “inundated” or has very limited use.	~Once daily	0.94 ft	NOAA Pensacola Water Level Station, NOAA VDatum tool
Changes to 1% annual chance flood event	The 1% annual chance floodplain is defined as the area that will be inundated by the flood event having a 1% chance of flooding of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood. This area defines the Special Flood Hazard Area (SFHA) that is delineated on Federal Emergency Management Agency Flood Insurance Rate Maps.	1% chance per year, ~26% chance in 30 years	Between 7 and 11 ft	Preliminary FEMA Flood Insurance Study (FIS) for Escambia County
Changes to 0.2% annual chance flood event	The 0.2% annual chance floodplain is defined as the area that will be inundated by the flood event having a 0.2% chance of flooding of being equaled or exceeded in any given year. The 0.2-percent annual chance flood is also referred to “500-year flood”.	0.2% chance per year, ~6% chance in 30 years	Between 9 and 15 ft	Preliminary FEMA FIS for Escambia County



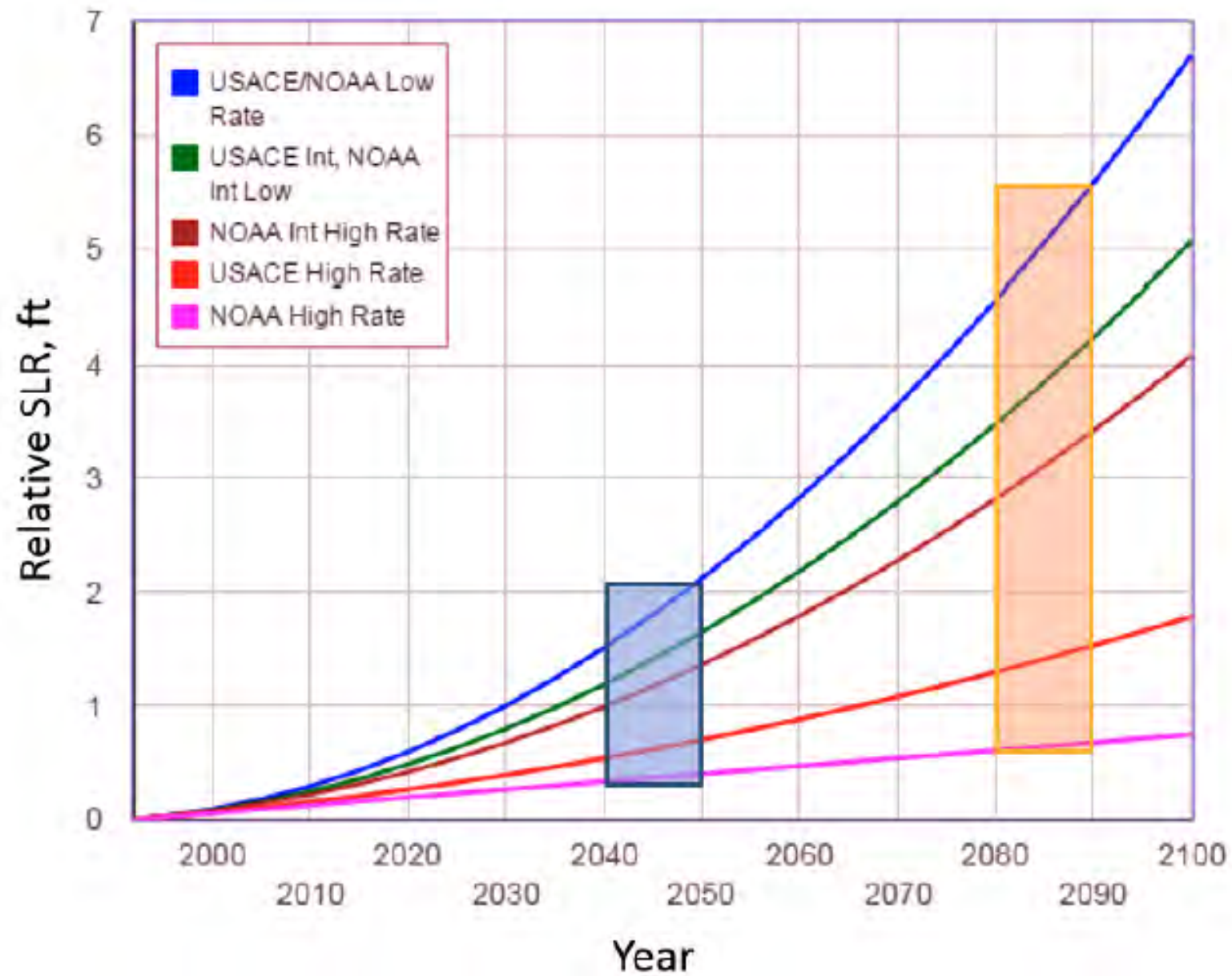


Figure 2. NOAA relative SLR curve for Gauge 8729840, Pensacola, FL (source: USACE Sea-Level Change Curve Calculator).

# County-wide view

- ▶ Downtown Pensacola
- ▶ Southwest of Bayou Grande
- ▶ Perdido Bay, lower Perdido and Escambia Rivers (Molino), bay side of Pensacola Beach

Table 2. SLR projections extracted from the USACE and NOAA SLR curves and rounded to the nearest tenth of foot. Results in the report will reference the relative scenario for each time horizon.

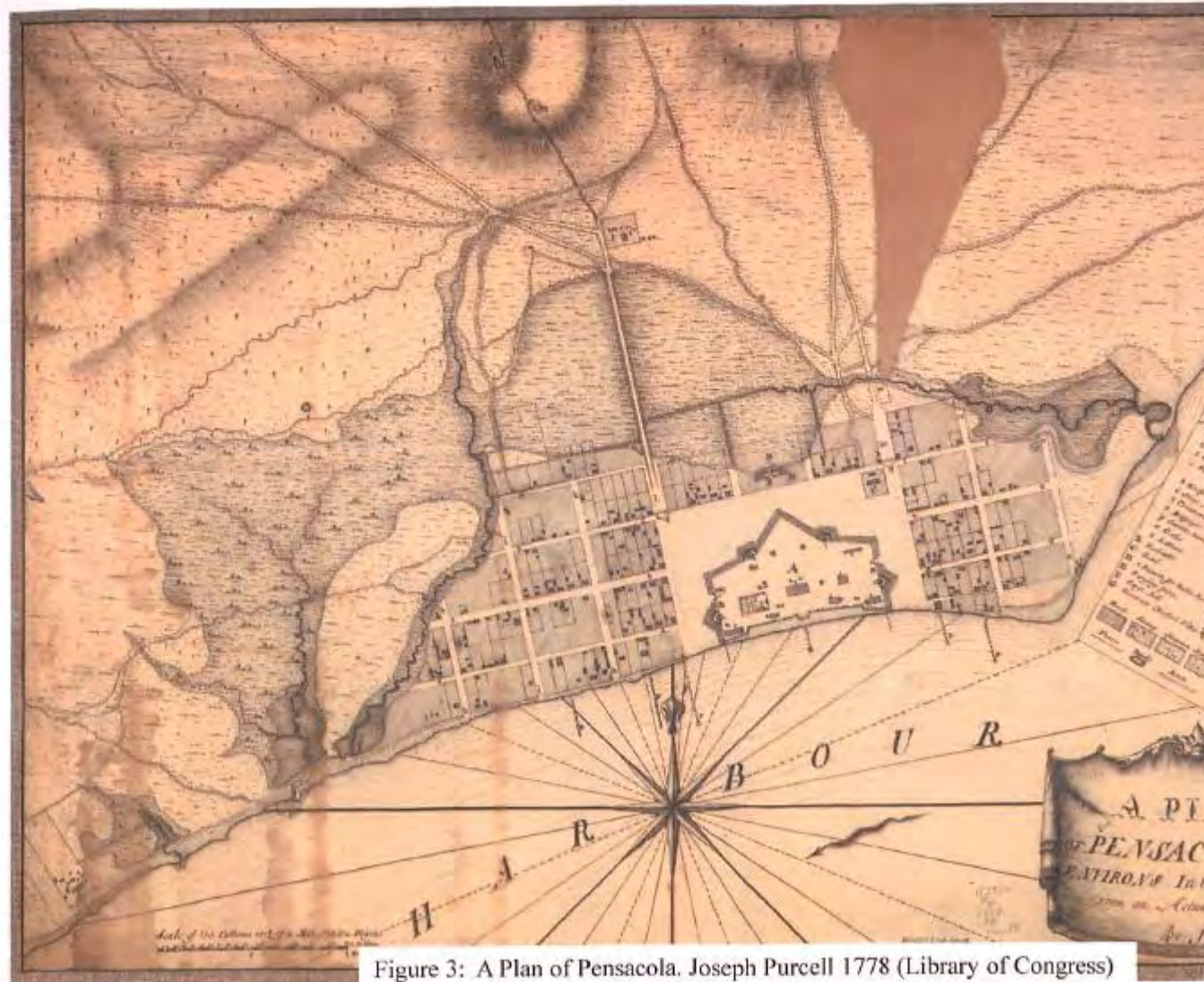
Time Horizon	USACE Low	USACE Intermediate	USACE High	NOAA High
Short-term (2045)	0.4	0.6	1.4	1.8
Long-term (2085)	0.6	1.4	3.9	5.1
<b>Report Reference:</b>	Low	Medium	High	Highest



Figure 7. County-wide view of the 1% annual chance floodplain for the range of SLR scenarios in 2045.



# City of Pensacola





# Southwest Escambia and coastlines

Florida Department of Economic Opportunity, Coastal Vulnerability Assessment: Escambia County, Florida



Figure 19. Barrier islands and southern Escambia, 1% annual chance floodplain for range of SLR scenarios in 2045.



# Coastal Vulnerability Assessment Findings

## No Predicted Changes to Frequency in Precipitation

- ▶ Rainfall peaks in March-April and summer
- ▶ 50% of heavy rainfall from tropical storms
- ▶ SWAT and DEO report suggest switching from 1963 standard of 14" rain = 100 year design to NOAA standard of 16.5"

## Stormwater System Vulnerability

- ▶ Increased impervious cover will stress an already under-designed system (currently at approx. 2/3 capacity)
- ▶ Tailwater conditions may form during storms or higher tides due to SLR
- ▶ Maintenance needed to remove sediment, benthic and vegetative growth from drains

# Asset Exposure—excerpts from report

- ▶ At medium SLR in the next 30 years, *daily tides* may flood the US 90 bridge across Escambia River
- ▶ At medium-high (most likely scenario), 20-40 miles of roadway are more exposed to flooding
- ▶ Hospitals and schools OK for the most part
  - ▶ At 100 year storm today, issues at PBE, St. John, Redeemer and Superintendent's office
- ▶ Fire and police OK except NAS during bigger storms during 1% flood

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# Community Rating System (CRS) basics

- ▶ Voluntary incentive program of the National Flood Insurance Program (NFIP)
- ▶ Recognizes communities for implementing floodplain management practices that exceed the Federal minimum requirements of the NFIP to provide protection from flooding.
- ▶ In exchange for a community's proactive efforts to reduce flood risk, policyholders can receive reduced flood insurance premiums for buildings in the community.
- ▶ Three CRS goals:
  - ▶ Reduce flood damage to insurable property
  - ▶ Strengthen and support the insurance aspects of the NFIP
  - ▶ Encourage a comprehensive approach to floodplain management

# CRS basics

- ▶ Communities earn points to determine class 1-10
- ▶ Class 1 requires the most credit points and provides the largest flood insurance premium reduction (45 percent), while
- ▶ Class 10 means the community does not participate in the CRS or has not earned the minimum required credit points, and residents receive no premium reduction.
- ▶ The CRS Classes are based on completion of 19 creditable activities organized into 4 categories:
  - ▶ Public Information
  - ▶ Mapping and Regulations
  - ▶ Flood Damage Reduction
  - ▶ Warning and Response



**FloodSmart.gov**  
The official site of the NFIP

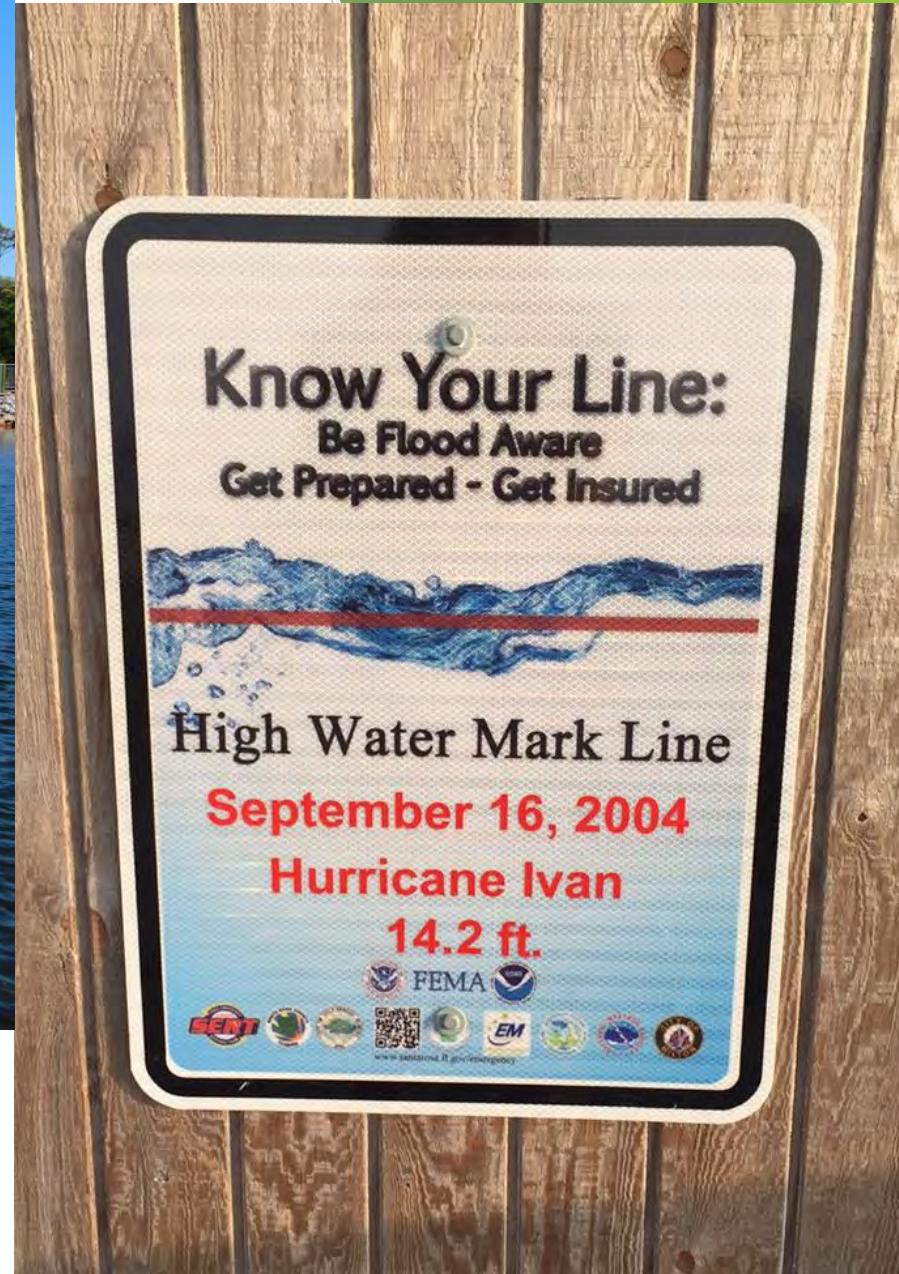


Community Name	County	Current CRS Class	Current CRS Discount
Escambia County	Escambia	6	\$818,661.00
Pensacola	Escambia	7	\$69,861.00
Pensacola Beach	Escambia	5	\$815,654.00
Gulf Breeze	Santa Rosa	7	\$56,914.00
Jay	Santa Rosa	Not participating	--
Milton	Santa Rosa	6	\$16,292.00
Santa Rosa County	Santa Rosa	5	\$1,018,005.00





High Water Mark Project in Santa Rosa County (photos courtesy Chris Verlinde)

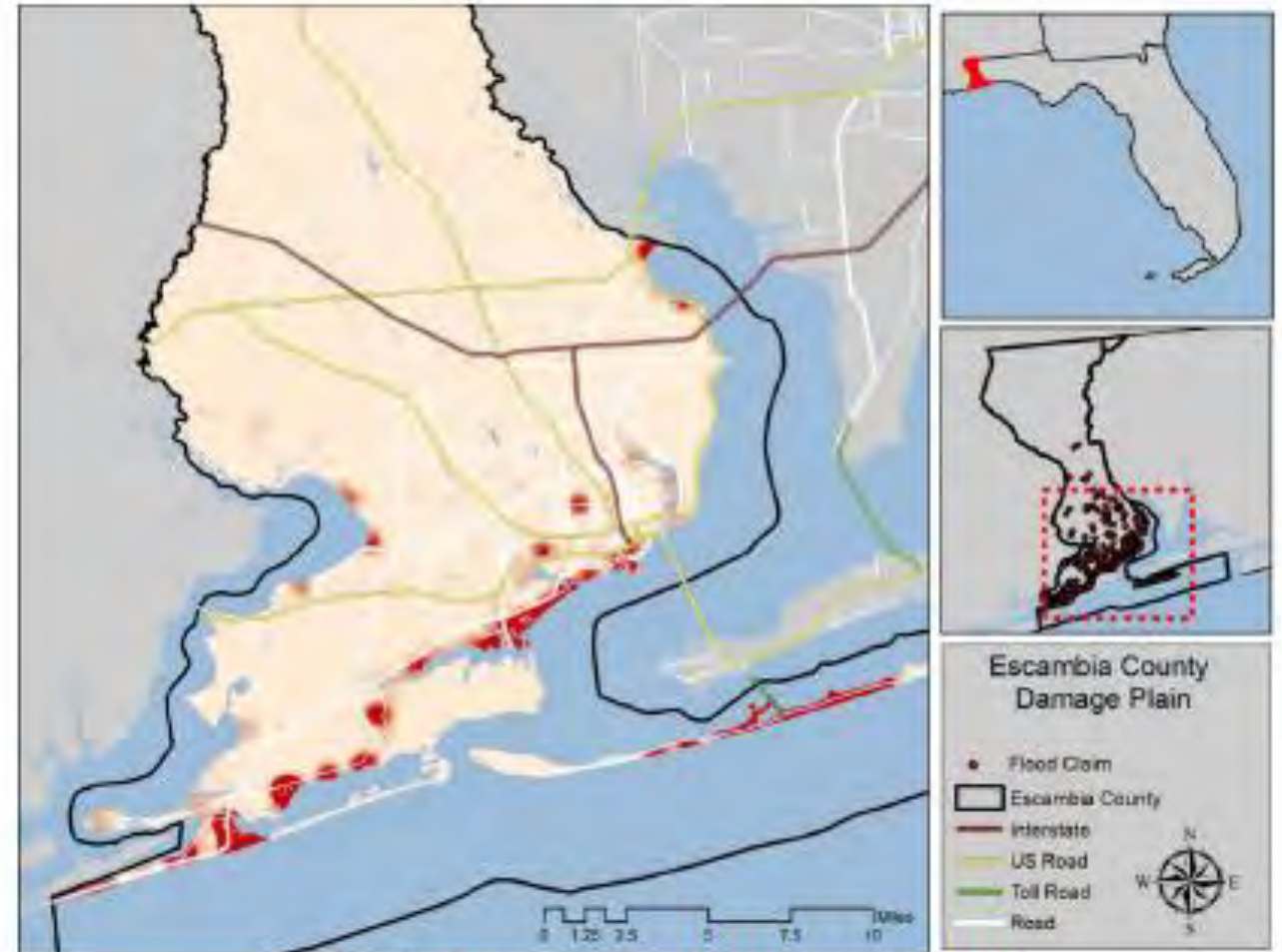
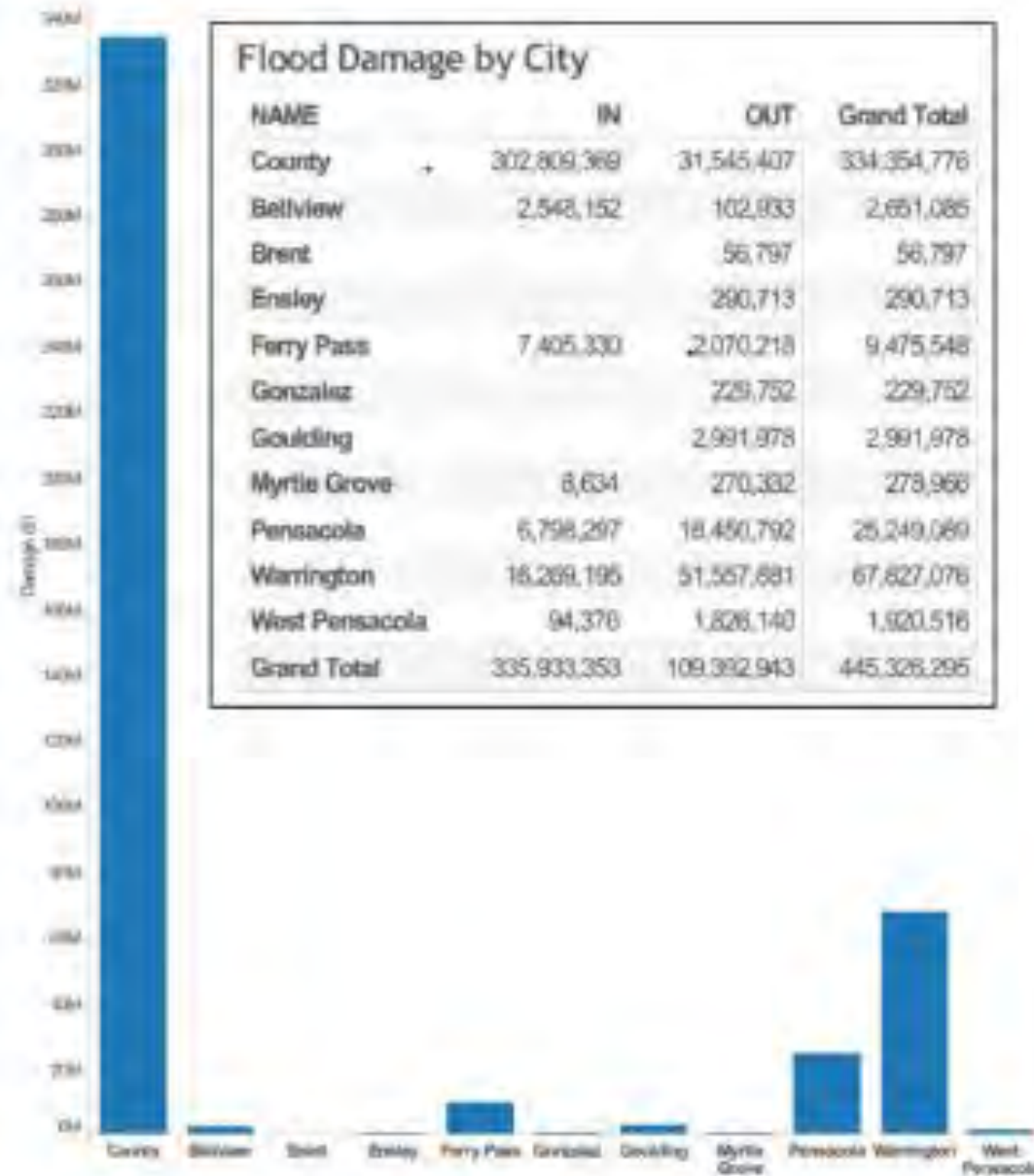




# Flood Loss Reduction

- ▶ Between 1996-2007, Escambia had over \$308 million in insured flood losses, the second-most of every county in the state (Brody et. Al, 2011)
- ▶ Based on national and local analysis, two factors are best preventive actions vs flood losses
  - ▶ Open space protection
  - ▶ Freeboard requirements

Flood Damage by City



In Pensacola and Warrington, 70% of flood claims were outside of the “100-year” floodplain (Brody report)



# UF IFAS Escambia Extension involvement

- ▶ Homeowner and realtor flood insurance workshops
- ▶ CEU courses for floodplain managers
  - ▶ Introduction to CRS and NFIP (2014)
  - ▶ Case studies, online tools and Northwest CRS Users group (2015)
  - ▶ Webinar and in-person meetings later this month
- ▶ Coordinate Northwest Florida (and Alabama) CRS Users Group

## Next steps

- ▶ Climate Change Task Force
- ▶ Nuisance flooding database
- ▶ Community Resilience grant (NOAA/DISL)



# Thank you!

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