

FEMA Hurricane Ian MAT NFIP Claims Analysis



Florida Floodplain Managers Association
April 25, 2024 – Insurance Track 10am Breakout Session
John Bud Plisich & Manny Perotin



FEMA

Building Science Branch

Agenda

- Hurricane Ian
 - Wind & Surge
 - MAT
- Observations
- FEMA Hurricane Ian MAT NFIP Claims Analysis
- Representative Flood Related Conclusions & Recommendations



MAT Composition

- 32 field personnel - 13 Contractors, 9 FEMA, 8 FDEM, and 2 partner SMEs
- Predominantly Four “Teams”
 - Coastal
 - Critical Facility
 - Wind
 - Flood (Inland/Non-Coastal)
- Other
 - Communications
 - Survey
 - Remote Support
 - Partner Collaboration

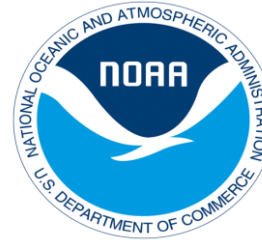


Partners Acknowledgement

- Field Team Partners



- Contributing Partners



US Army Corps
of Engineers®

STRUCTURAL
EXTREME EVENTS
RECONNAISSANCE

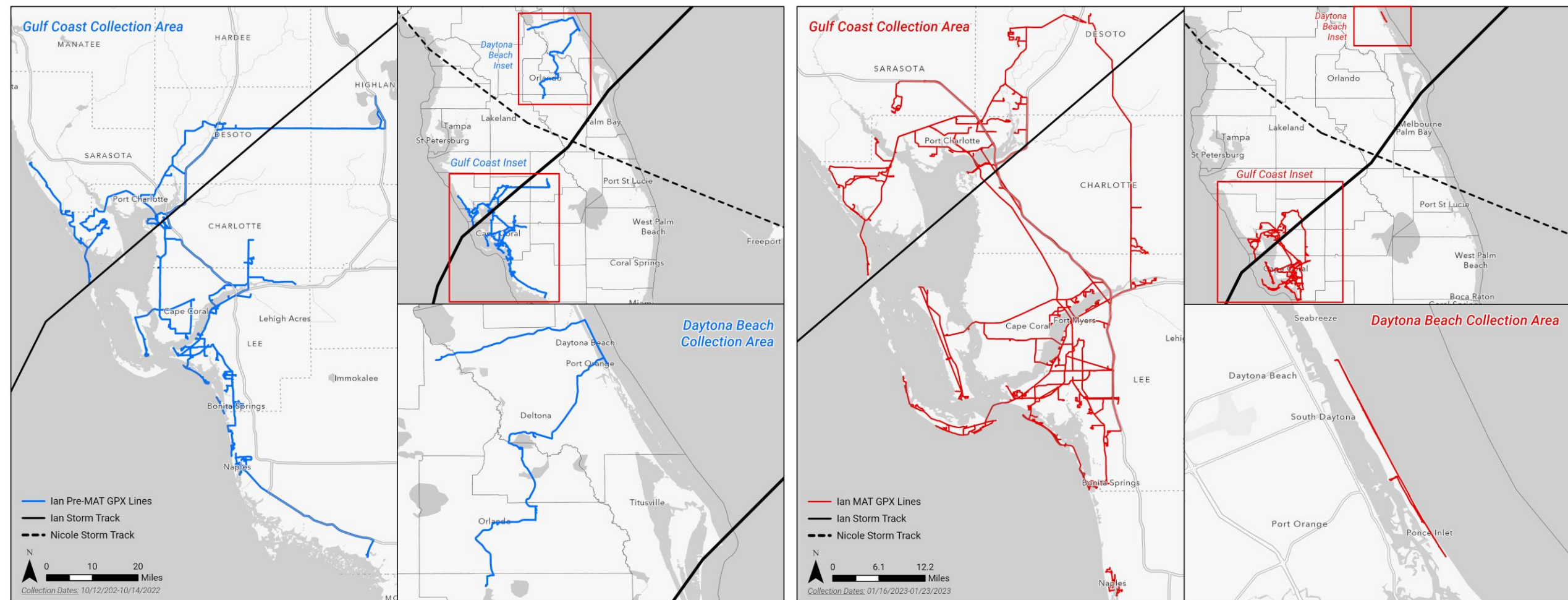


FLASH®
FEDERAL ALLIANCE FOR SAFE HOMES



NIST
National Institute of
Standards and Technology
U.S. Department of Commerce

Field Work – Areas Visited



Pre-MAT October 12-14

MAT January 16-24

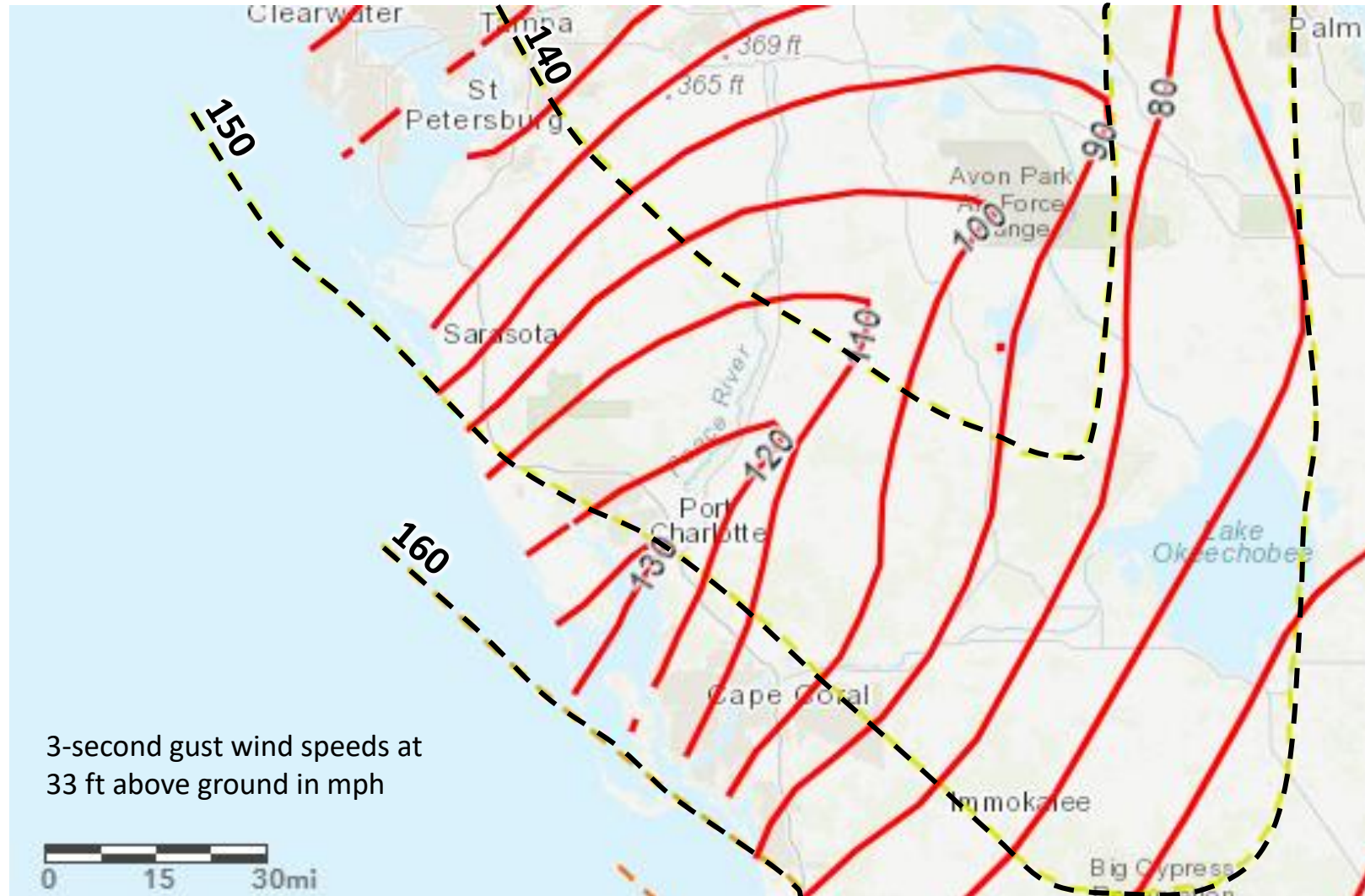
Design Wind Speed vs. Ian

--- ASCE 7-10 &
ASCE 7-16
Risk Category II

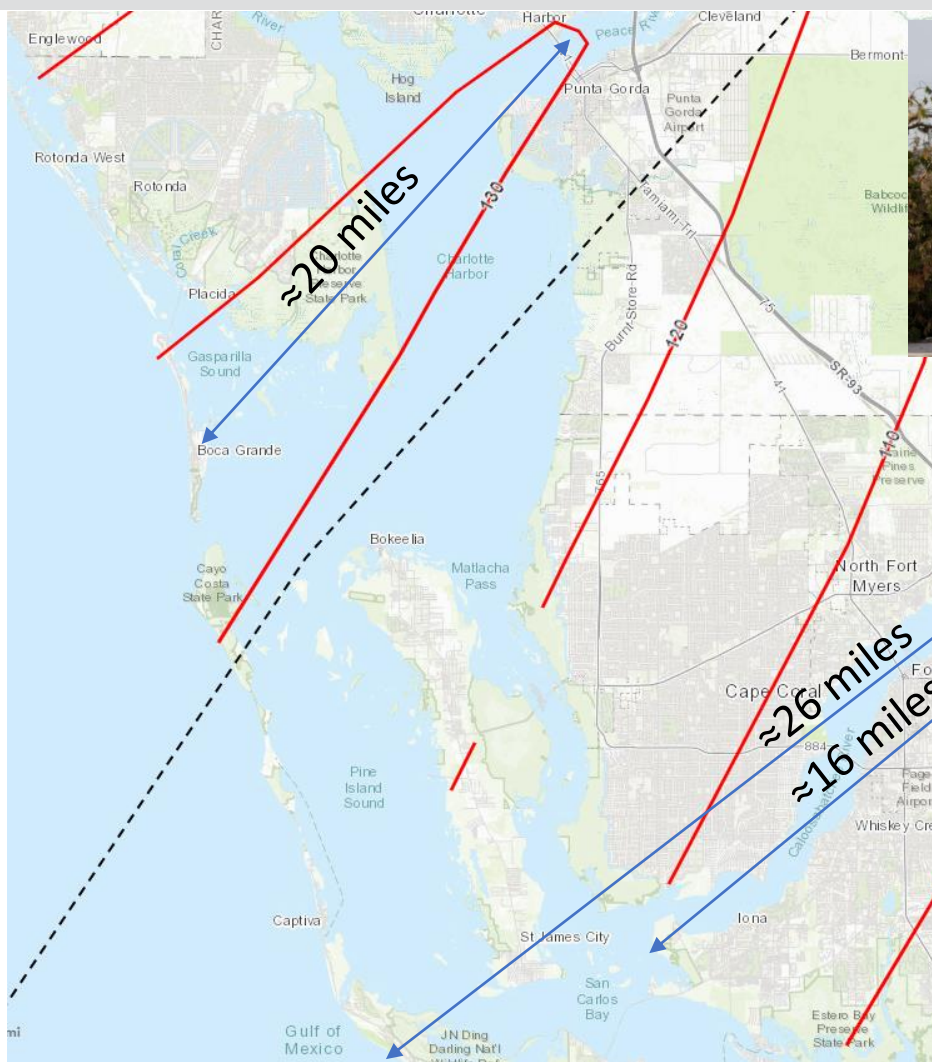
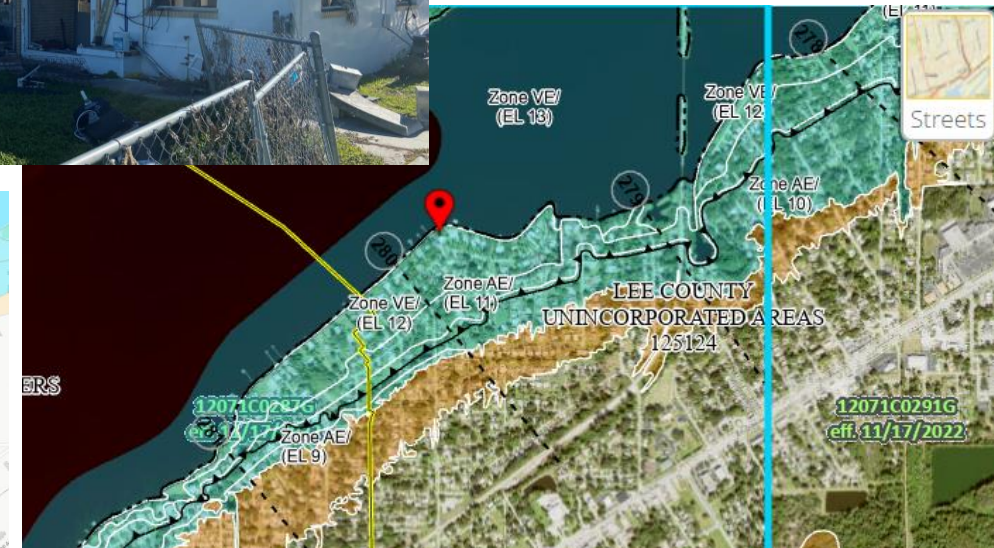
— Hurricane Ian
Observed

Source:

NIST
National Institute of
Standards and Technology
U.S. Department of Commerce

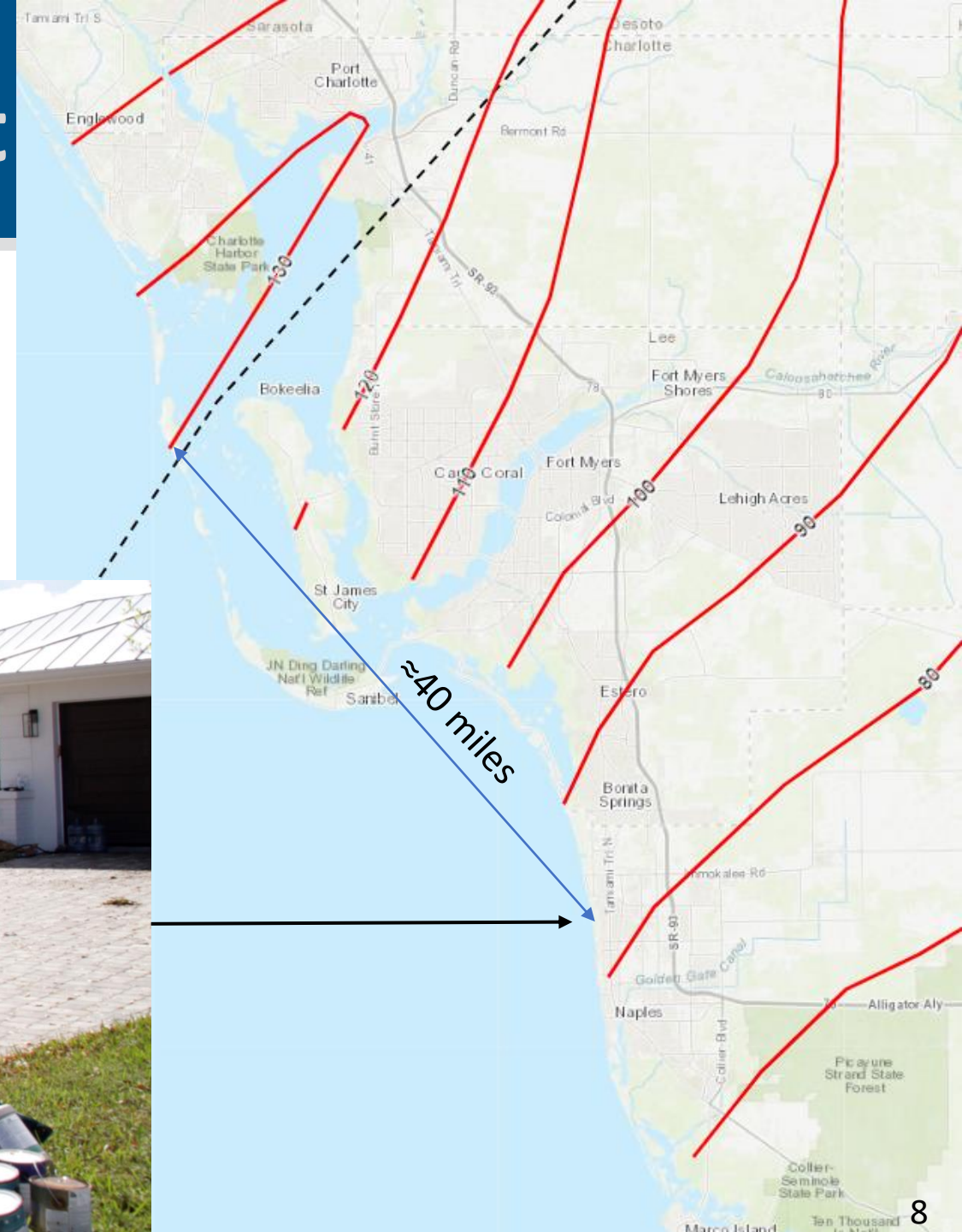


Hurricane Ian - Surge Context



Fort Myers

Hurricane Ian - Surge Context





Hurricane Ian Observations

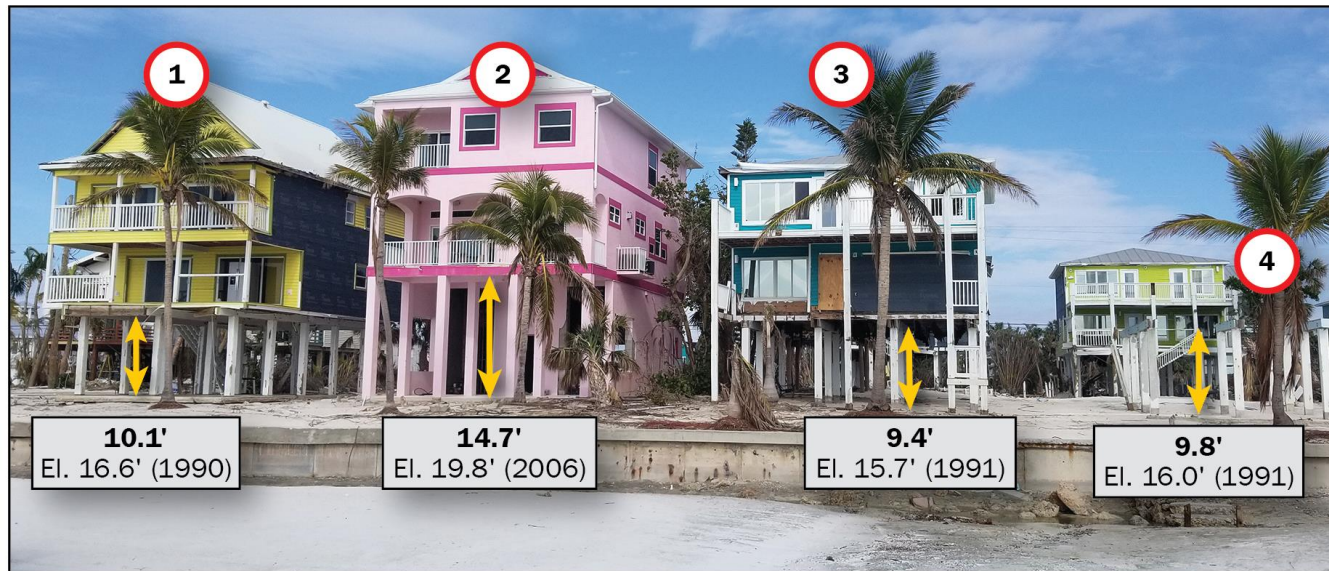
Mitigation Assessment Team (MAT)



FEMA

Coastal Construction

- Fort Myers Beach
 - Zone VE 14 to 16 NAVD 88 (depending on the effective FIRM)
 - CCCL Elevation 19.8' NAVD



Hurricane Ian MAT Recovery Advisory 1

- Designing for Flood Levels Above the Minimum Required Elevation After Hurricane Ian
 - Building Damage When Flood Levels Exceed the Lowest Floor
 - Required Design Considerations
 - How High Above the Minimum Required Elevation a Building Should be Elevated
 - Additional Design Considerations for Mitigating Flood Damage



Designing for Flood Levels Above the Minimum Required Elevation After Hurricane Ian

Recovery Advisory 1

July 2023



FEMA

DR-4673-FL RA 1

FEMA Hurricane Ian MAT NFIP Claims Analysis

Mitigation Assessment Team (MAT)



FEMA

Hurricane Ian MAT - Representative Areas of Interest

- 12 Areas of Interest
 - High percentage of NFIP policies in force
 - Flood source
 - Various depths of flooding
 - Large age-of-construction distribution



Hurricane Ian NFIP Claims Analysis

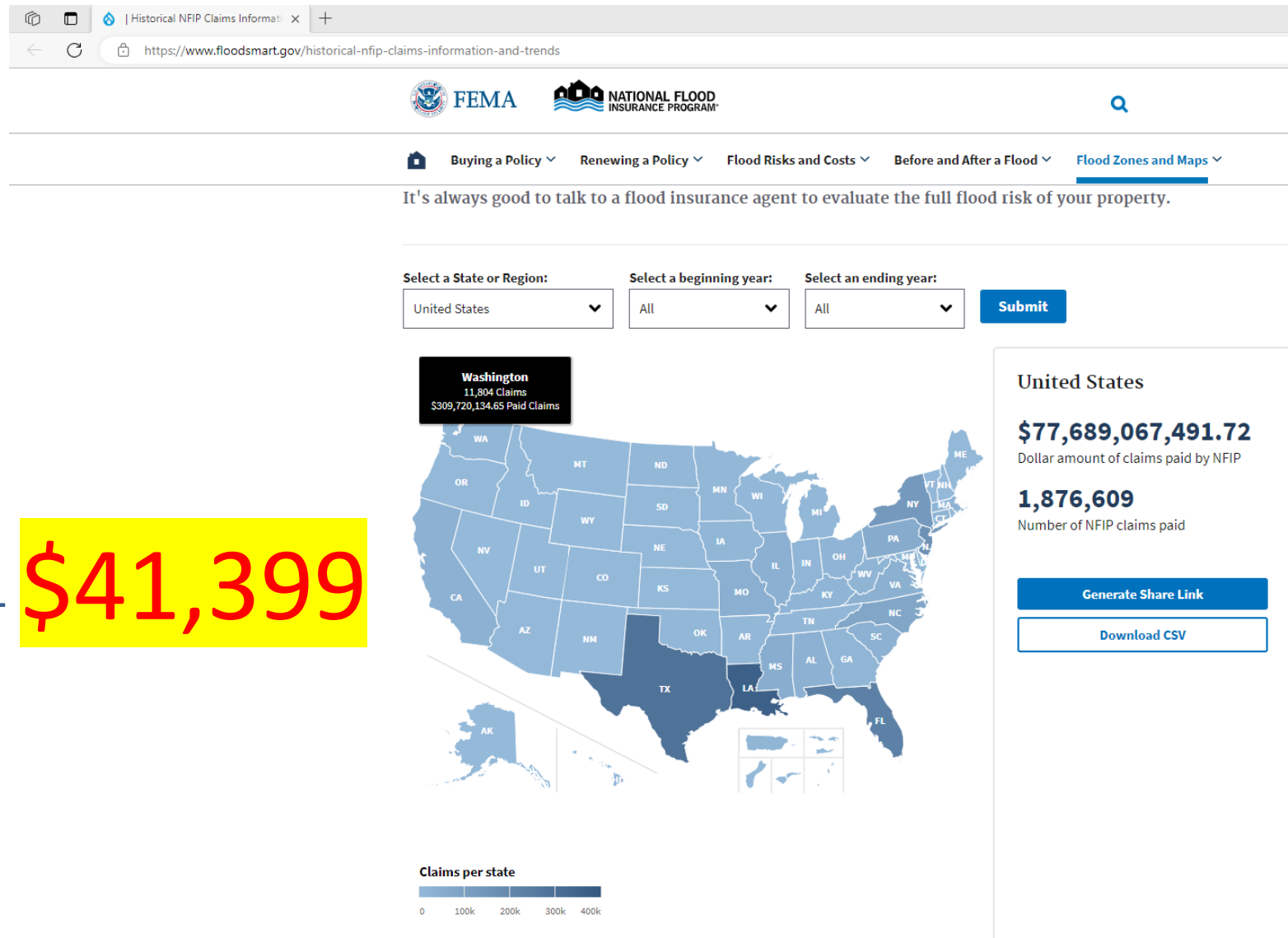
December 2023



FEMA

DR-4673-FL

Historical NFIP Claims Information (US)



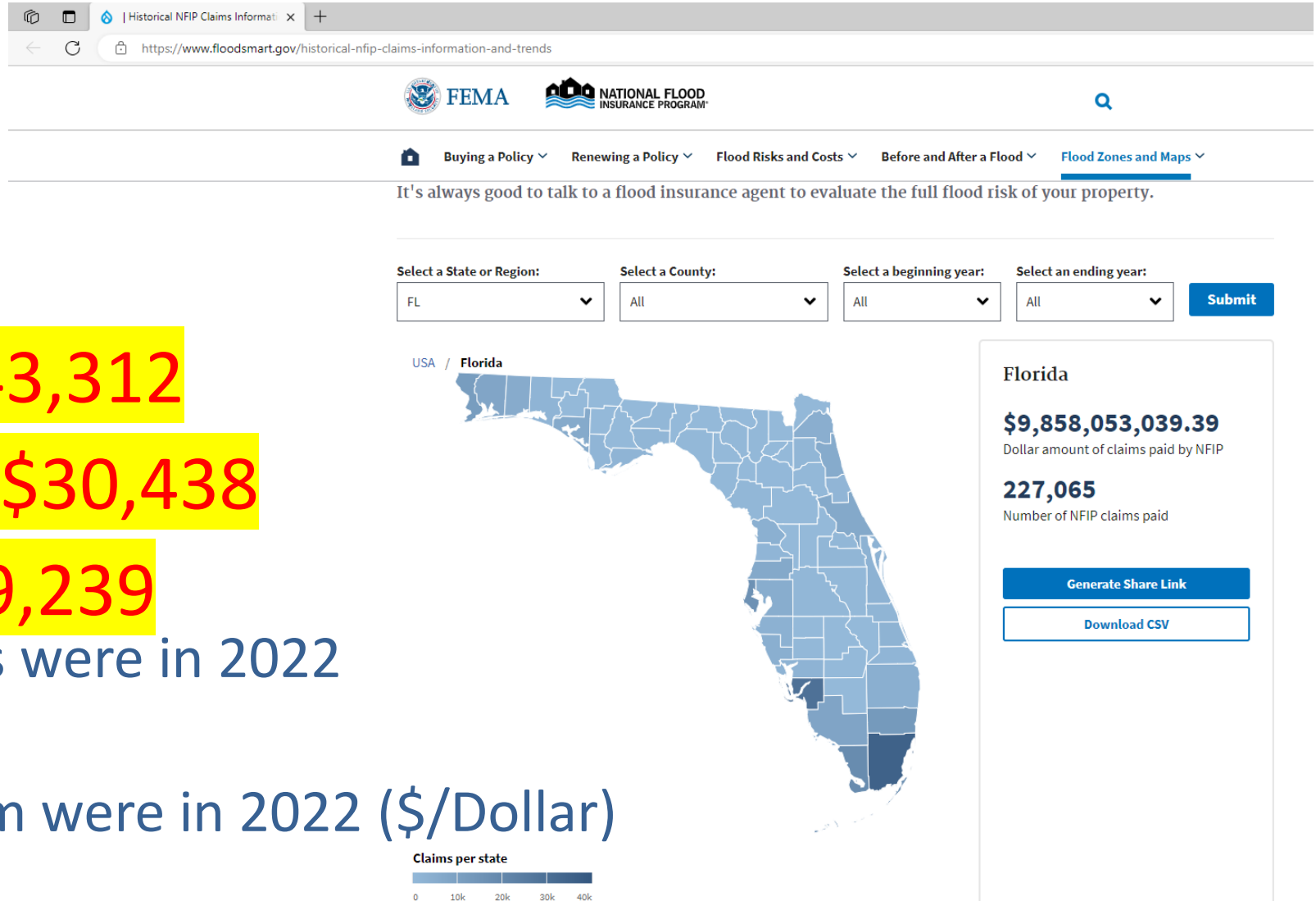
United States

All Years

Average Claim -

\$41,399

Historical NFIP Claims Information (Florida)



Florida

All Years Average Claim - **\$43,312**

1980-2021 Average Claim - **\$30,438**

2022 Average Claim - **\$109,239**

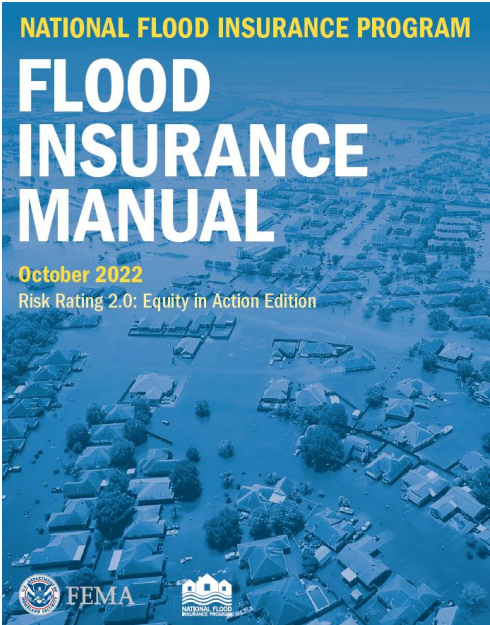
16% of Florida's NFIP Claims were in 2022 (Number/Quantity)

41% of Florida's NFIP \$ Claim were in 2022 (\$/Dollar)

Elevated vs Non-Elevated Building

Table 8. Foundation Type – Slab on Grade (Non-Elevated)

A building whose foundation is slab-on-grade or slab-on-stem-wall with fill.



One floor, slab on grade



Slab with attached garage



Crawlspace with converted garage or attached finished room



Stem wall



Two floor frame wall both floors

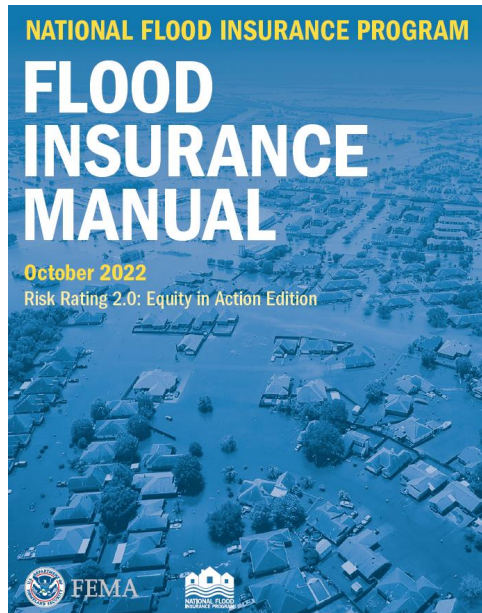


Three or more floors on slab

Elevated vs Non-Elevated Building

Table 10. Foundation Type – **Elevated** Without Enclosure on Posts, Piles, or Piers

A building that has its lowest floor raised above the ground by posts, piles, piers, columns, or parallel shear walls with no enclosure below the lowest elevated floor.



Elevated no enclosure



Elevated hanging floor



Elevated with lattice



Elevated with utility chase

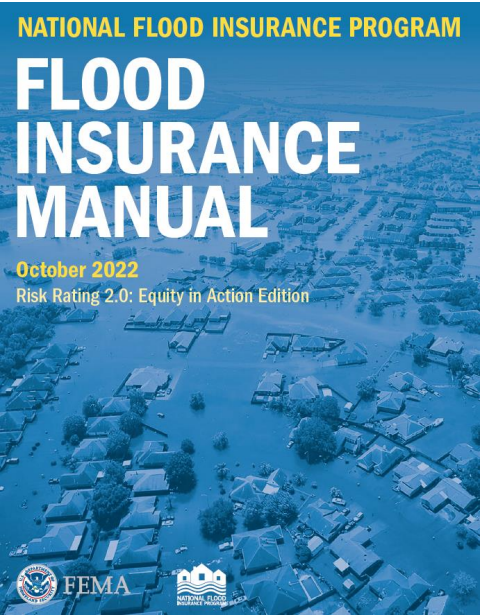


Mobile home with skirting

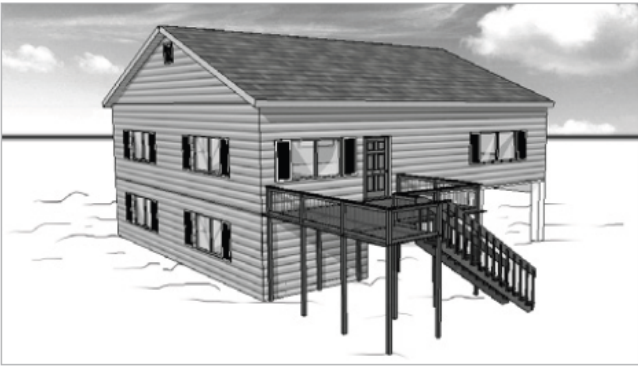
Elevated vs Non-Elevated Building

Table 11. Foundation Type – **Elevated With Enclosure on Posts, Piles, or Piers (With an Enclosure Below the Elevated Floor)**

A building that has its lowest floor raised above the ground by posts, piles, piers, columns, or parallel shear walls with an enclosure below the elevated floor.



Elevated with a garage

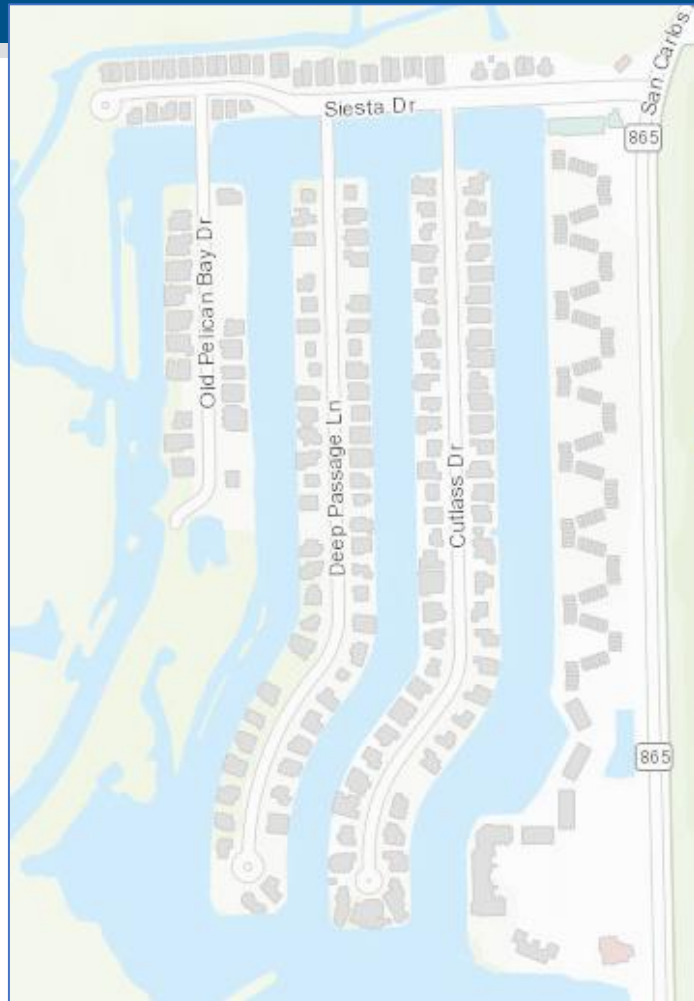
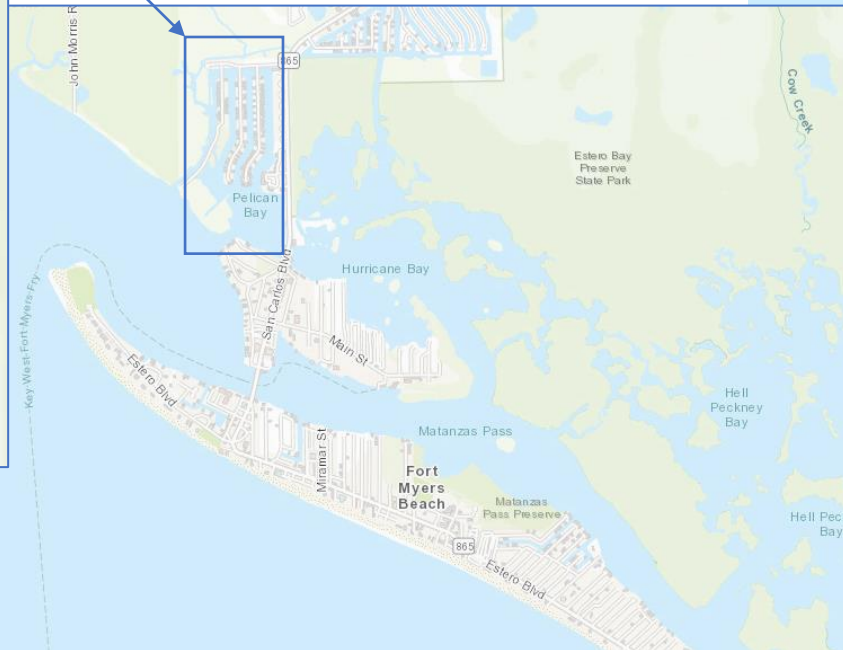
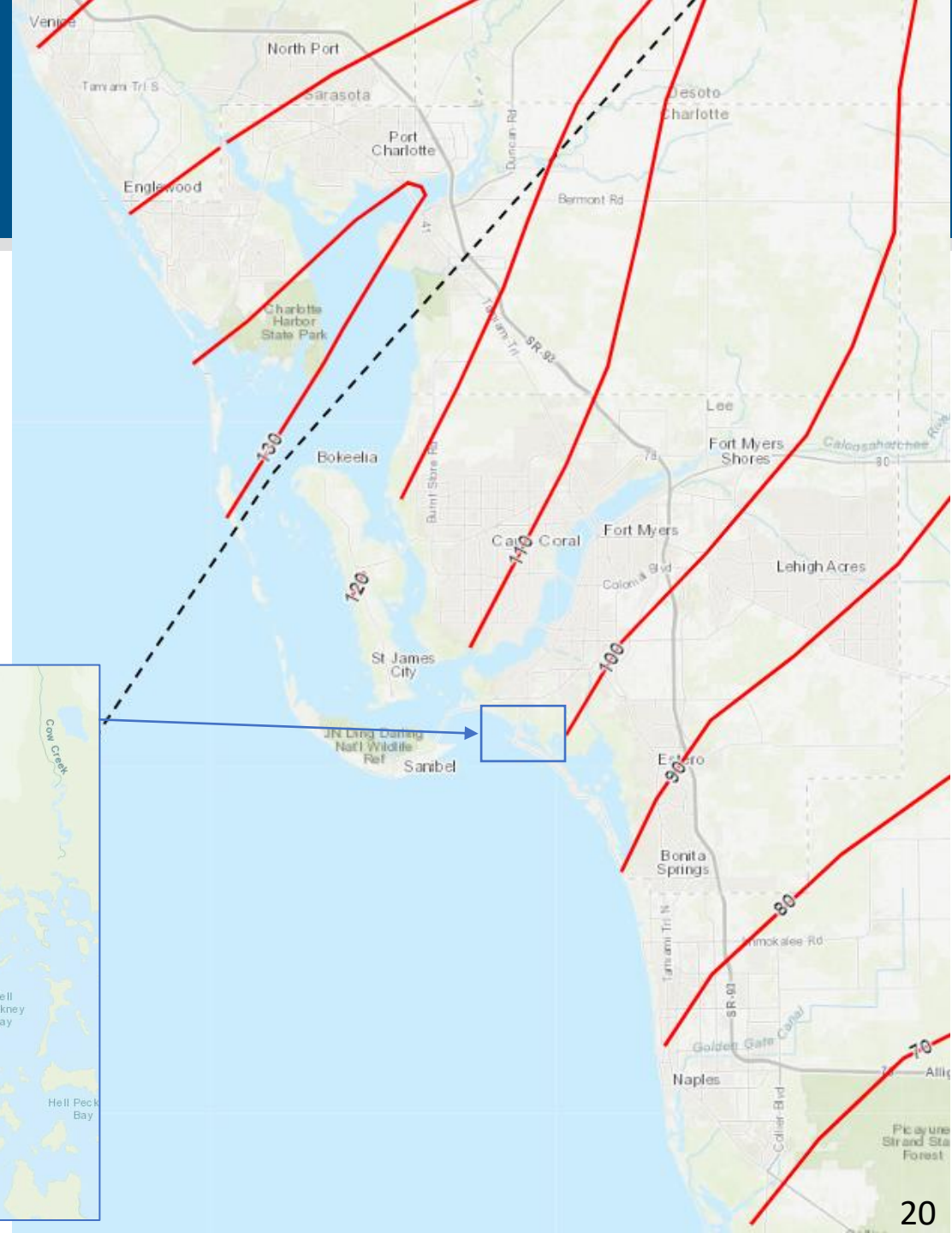


Elevated with a bedroom below the elevated floor



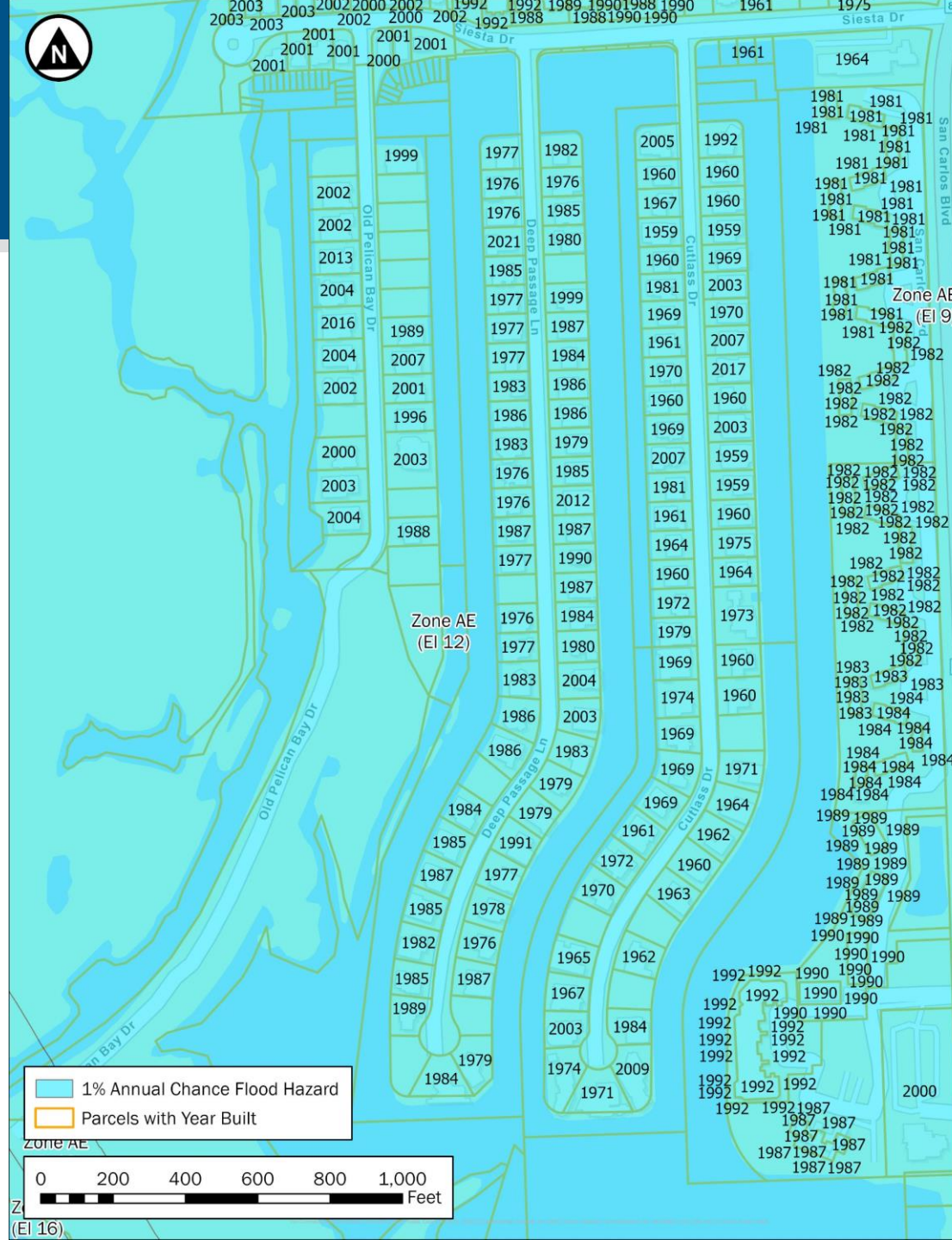
Elevated on posts, piles, or piers with a properly vented partial enclosure

Area of Interest #4



AOI #4

- Size - about 170 single family houses, started in 1959 and continuing with several houses under construction
- Flood Zone – AE (BFE 12) effective 2008
- High Water Marks – USGS 12.3 and 12.5 NAVD 88
- Up to 7-8' of flooding in slab on grade construction



Area of Interest #4

1964



1979



1991



2009



2017



New



Area of Interest #4 – Buildings vs NFIP Coverage

Decade Built	Total Buildings	Percent	Average Size	Buildings w/ Policy	Percent	Average Size
Pre 1980	67	39%	2,047	37	35%	2,040
1980s	41	24%	2,216	30	28%	2,235
1990s	18	11%	2,232	6	6%	2,038
2000s	40	23%	2,877	30	28%	2,914
Post 2010	5	3%	2,768	3	3%	3,031
Total	171	100%	2,322	106	62%	2,371

Area of Interest #4 – Buildings vs NFIP Coverage

Decade Built	Total Buildings	Percent	Average Size	Buildings w/ Policy	Percent	Average Size
Pre 1980	67	39%	2,047	37	35%	2,040
1980s	41	24%	2,216	30	28%	2,235
1990s	18	11%	2,232	6	6%	2,038
2000s	40	23%	2,877	30	28%	2,914
Post 2010	5	3%	2,768	3	3%	3,031
Total	171	100%	2,322	106	62%	2,371

Area of Interest #4 – NFIP Building Claims

Year Built	Quantity	Average Total Claim	Average Building Claim	Average Building Size	Avg \$/SF	Average Building Coverage	Quantity Max NFIP	Quantity Max Coverage
Pre- 1980	37	\$213,346	\$186,897	2,040	\$97.71	\$238,346	14	3
1980s	30	\$86,425	\$77,029	2,235	\$36.59	\$246,073	1	0
1990s	6	\$75,165	\$71,330	2,038	\$32.28	\$296,833	1	0
2000s	30	\$79,713	\$68,141	2,914	\$23.90	\$242,397	3	1
Post- 2010	3	\$173,149	\$146,847	3,031	\$47.17	\$250,000	0	0
Total	106	\$130,645	\$114,517	2,371	\$54.39	\$245,320	21	4

Area of Interest #4 – NFIP Building Claims

Year Built	Quantity	Average Total Claim	Average Building Claim	Average Building Size	Avg \$/SF	Average Building Coverage	Quantity Max NFIP	Quantity Max Coverage
Pre- 1980	37	\$213,346	\$186,897	2,040	\$97.71	\$238,346	14	3
1980s	30	\$86,425	\$77,029	2,235	\$36.59	\$246,073	1	0
1990s	6	\$75,165	\$71,330	2,038	\$32.28	\$296,833	1	0
2000s	30	\$79,713	\$68,141	2,914	\$23.90	\$242,397	3	1
Post- 2010	3	\$173,149	\$146,847	3,031	\$47.17	\$250,000	0	0
Total	106	\$130,645	\$114,517	2,371	\$54.39	\$245,320	21	4

Area of Interest #4 – NFIP Building Claims

Year Built	Quantity	Average Total Claim	Average Building Claim	Average Building Size	Avg \$/SF	Average Building Coverage	Quantity Max NFIP	Quantity Max Coverage
Pre- 1980	37	\$213,346	\$186,897	2,040	\$97.71	\$238,346	14	3
1980s	30	\$86,425	\$77,029	2,235	\$36.59	\$246,073	1	0
1990s	6	\$75,165	\$71,330	2,038	\$32.28	\$296,833	1	0
2000s	30	\$79,713	\$68,141	2,914	\$23.90	\$242,397	3	1
Post- 2010	3	\$173,149	\$146,847	3,031	\$47.17	\$250,000	0	0
Total	106	\$130,645	\$114,517	2,371	\$54.39	\$245,320	21	4

Area of Interest #4 – NFIP Building Claims

Year Built	Quantity	Average Total Claim	Average Building Claim	Average Building Size	Avg \$/SF	Average Building Coverage	Quantity Max NFIP	Quantity Max Coverage
Pre- 1980	37	\$213,346	\$186,897	2,040	\$97.71	\$238,346	14	3
1980s	30	\$86,425	\$77,029	2,235	\$36.59	\$246,073	1	0
1990s	6	\$75,165	\$71,330	2,038	\$32.28	\$296,833	1	0
2000s	30	\$79,713	\$68,141	2,914	\$23.90	\$242,397	3	1
Post- 2010	3	\$173,149	\$146,847	3,031	\$47.17	\$250,000	0	0
Total	106	\$130,645	\$114,517	2,371	\$54.39	\$245,320	21	4

Area of Interest #4 – NFIP Building Claims

Year Built	Quantity	Average Total Claim	Average Building Claim	Average Building Size	Avg \$/SF	Average Building Coverage	Quantity Max NFIP	Quantity Max Coverage
Non-Elevated	51	\$205,505	\$179,150	2,281	\$86.05	\$241,545	21	3
Elevated	55	\$61,230	\$54,584	2,454	\$25.04	\$239,729	0	1
Total	106	\$130,645	\$114,517	2,371	\$54.39	\$245,320	21	4



One floor, slab on grade



Elevated with a garage

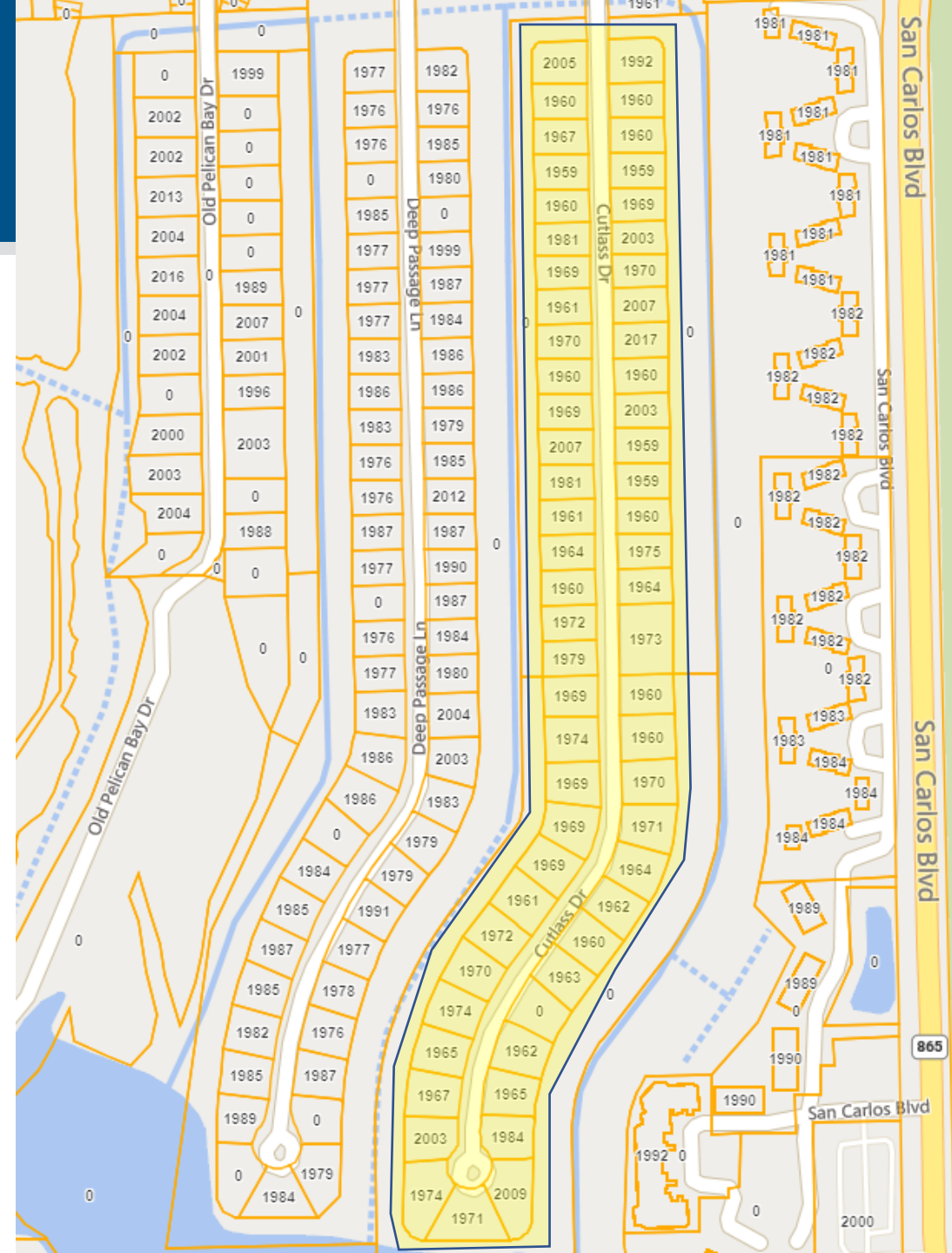


Elevated on posts, piles, or piers with a properly vented partial enclosure

AOI#4

Street w/ Predominantly "Non-Elevated" Buildings

- Street
 - 58 Houses
 - Year Built: 1959 – 2017
 - Average Size: 2,302 SF
- Insured
 - 35 Policies (60%)
 - Year Built: 1959 – 2009
 - Average Size: 2,329 SF

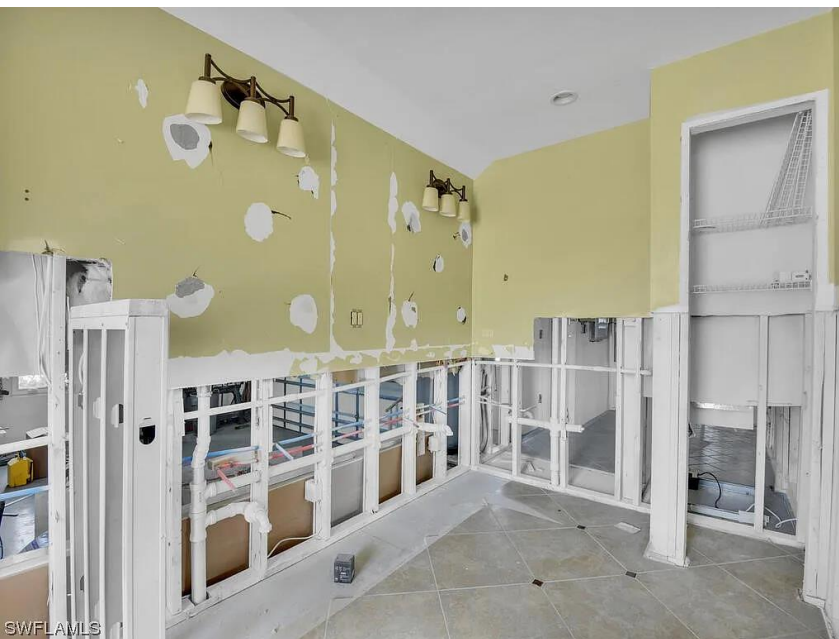












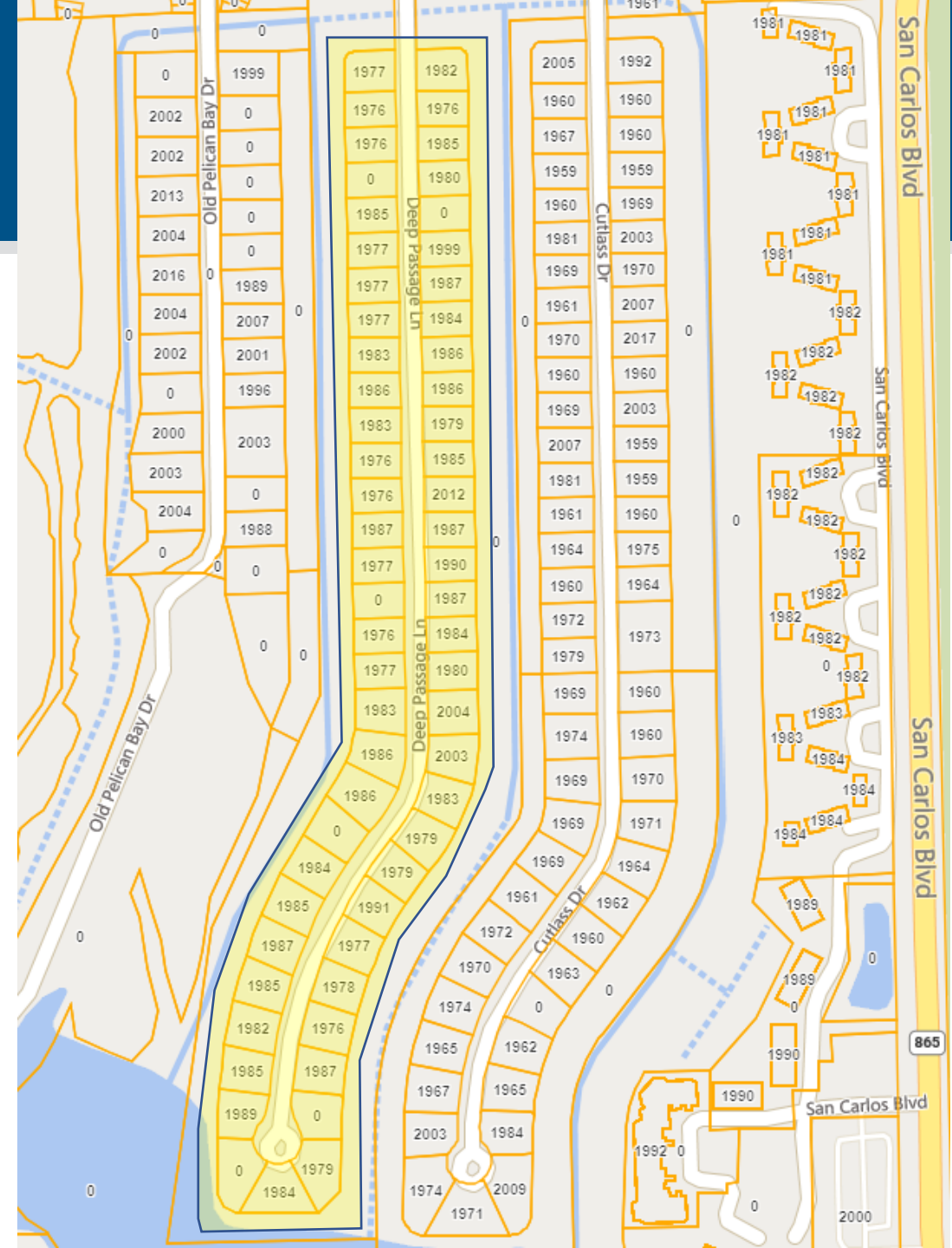
FOR SALE

Source: SWFLMSL

AOI#4

Street w/ Predominantly "Elevated" Buildings

- Street
 - 56 Houses
 - Year Built: 1976 – 2021
 - Average Size: 2,385 SF
- Insured
 - 38 Policies (68%)
 - Year Built: 1976 – 2012
 - Average Size: 2,303 SF









Street w/ Predominantly "Non-Elevated" Buildings

Year Built	Buildings	Insured	Average Building Claim
Pre- 1980	46	26	\$210,476
1980s	3	3	\$209,877
1990s	1	1	\$250,000
2000s	7	5	\$160,608
Post- 2010	1	0	N/A
Total	58	35	\$200,609

Street w/ Predominantly "Elevated" Buildings

Year Built	Buildings	Insured	Average Building Claim
Pre- 1980	19	11	\$131,164
1980s	30	24	\$65,353
1990s	3	0	N/A
2000s	2	2	\$76,164
Post- 2010	2	1	\$173,928
Total	56	38	\$87,830

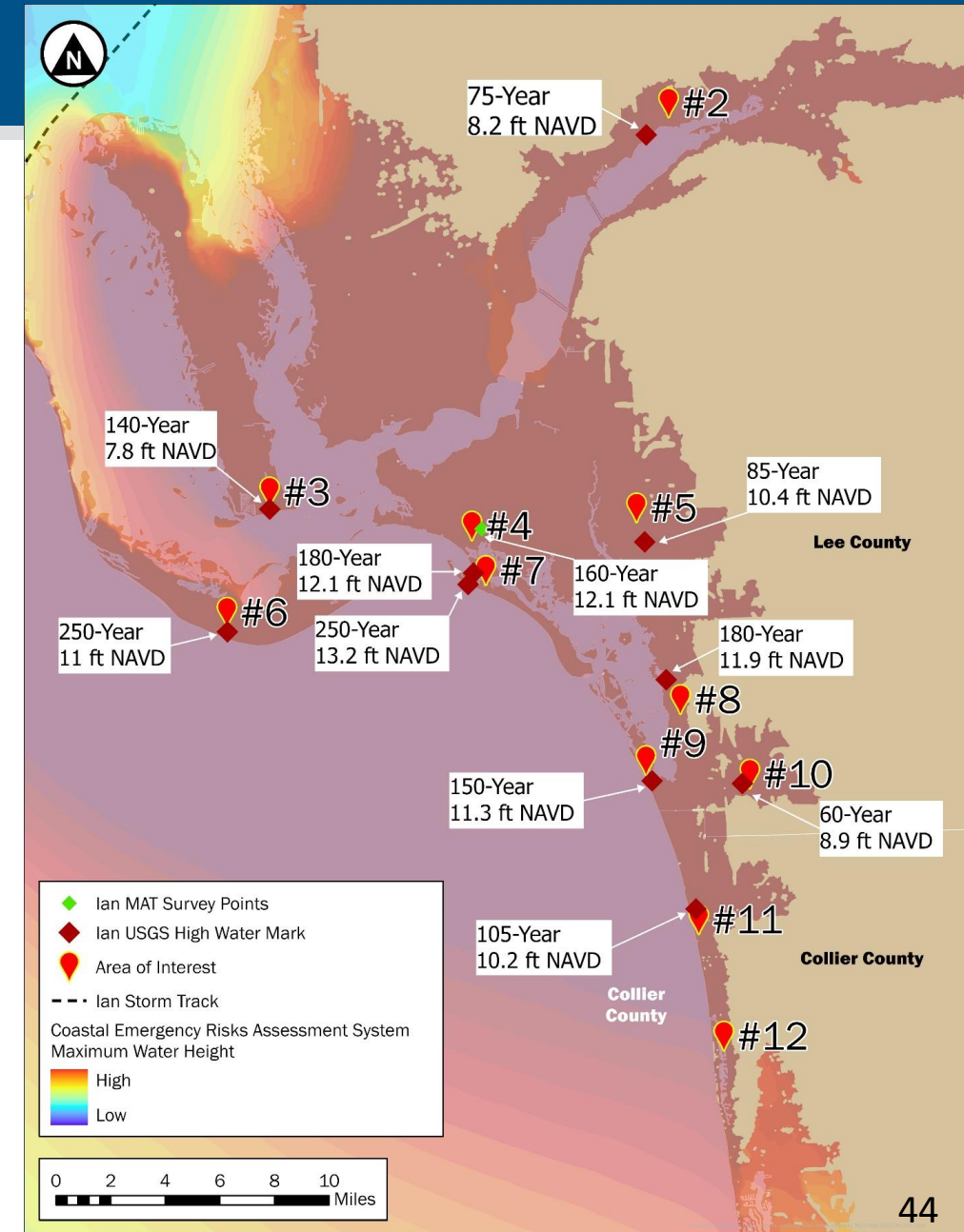
Construction & Demolition Debris

- Credit/data provided by Lee County Solid Waste Department
- Street w/ Predominantly “Non-Elevated” Buildings
 - 58 houses / 133,500 SF
 - 282 debris loads
 - 4.9 loads per house / 2.1 loads per 1,000 SF
- Street w/ Predominantly “Elevated” Buildings
 - 56 houses / 127,800 SF
 - 125 debris loads
 - 2.2 loads per house / 0.98 loads per 1,000 SF



Hurricane Ian MAT - Representative Areas of Interest

Area of Interest	Estimated flood depth (feet)
1 – DeSoto County along Peace River	2-3
2 – Lee County along Caloosahatchee River	2-3
3 – Pine Island	1-2
4 – San Carlos Bay	7-8
5 – Tenmile Canal	3-4
6 – Sanibel Island	4-5
7 – Fort Myers Beach/Estero Island	8-9
8 – Estero Bay	5-6
9 – Bonita Beach	5-6
10 – Lee County along Imperial River	2-3
11 – Collier County – Vanderbilt	4-5
12 – Venetian Bay	2-3

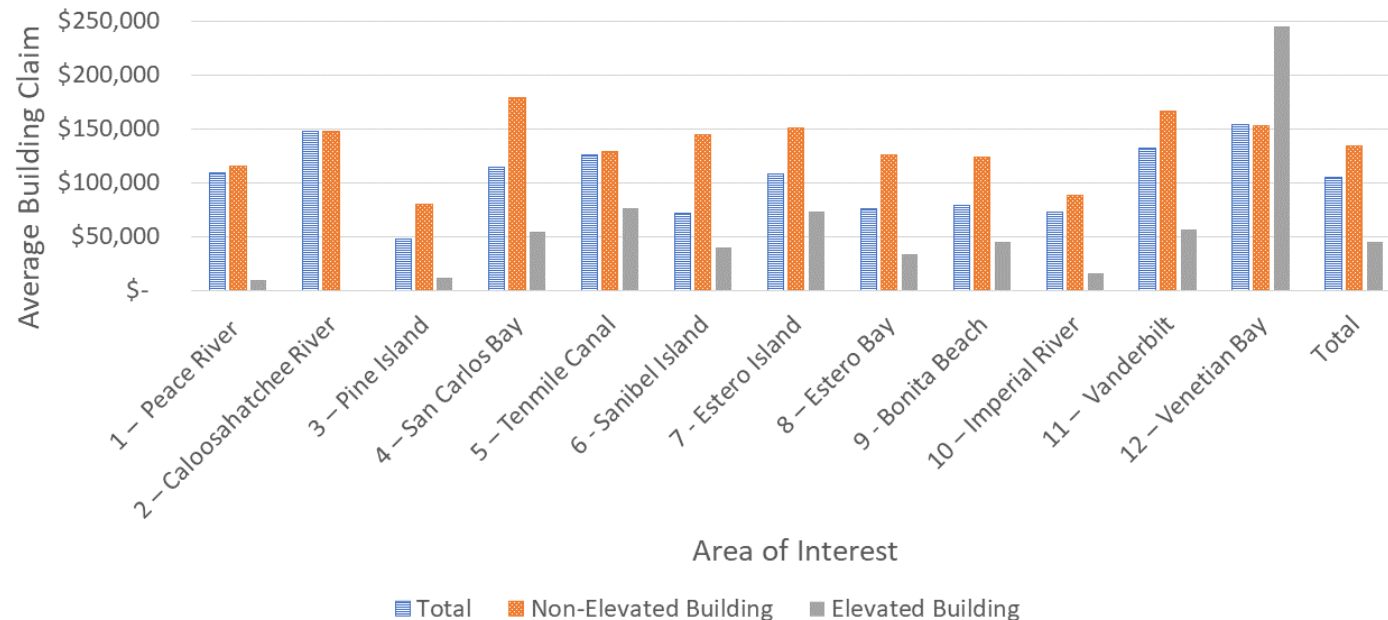
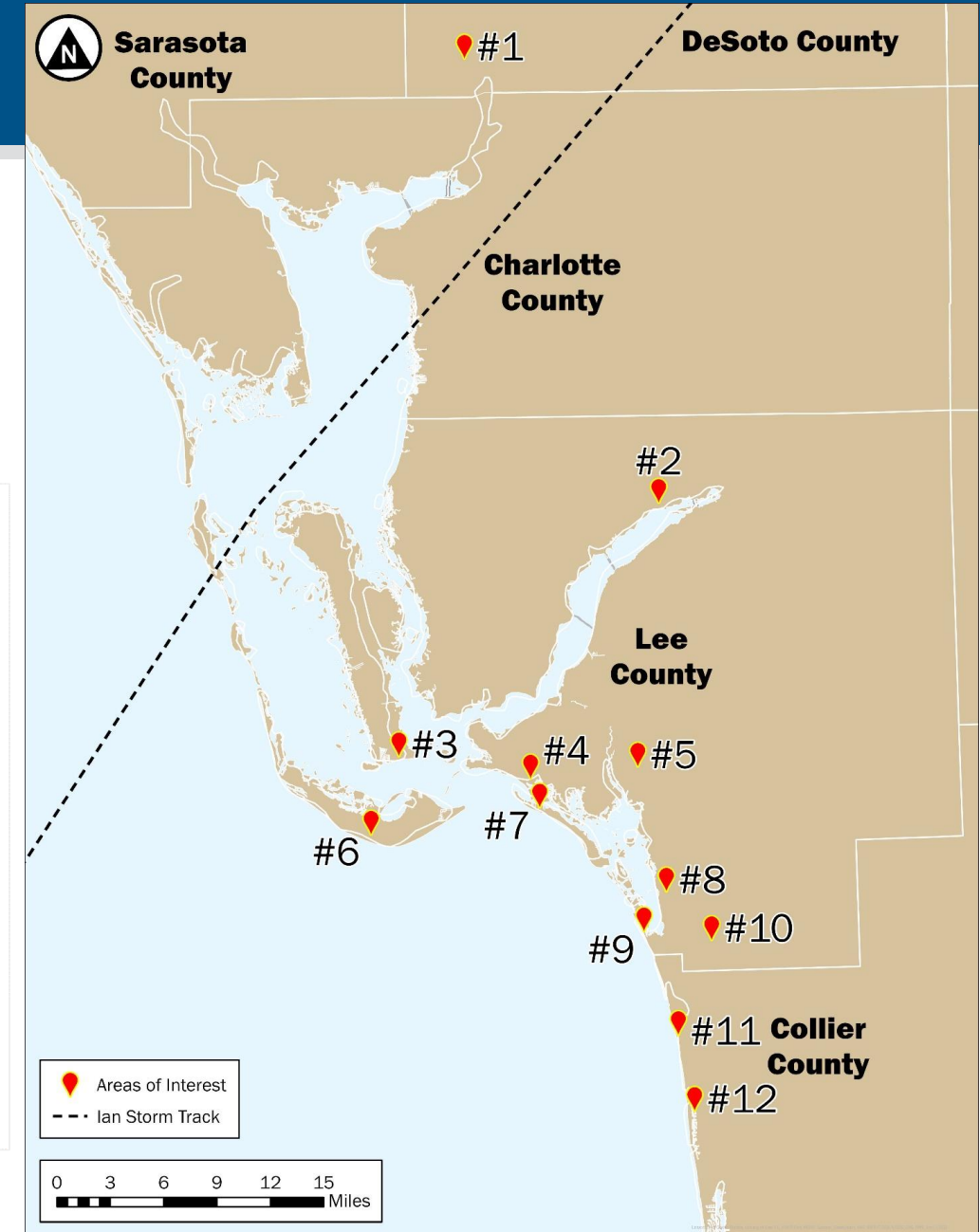


Hurricane Ian MAT - Representative Areas of Interest

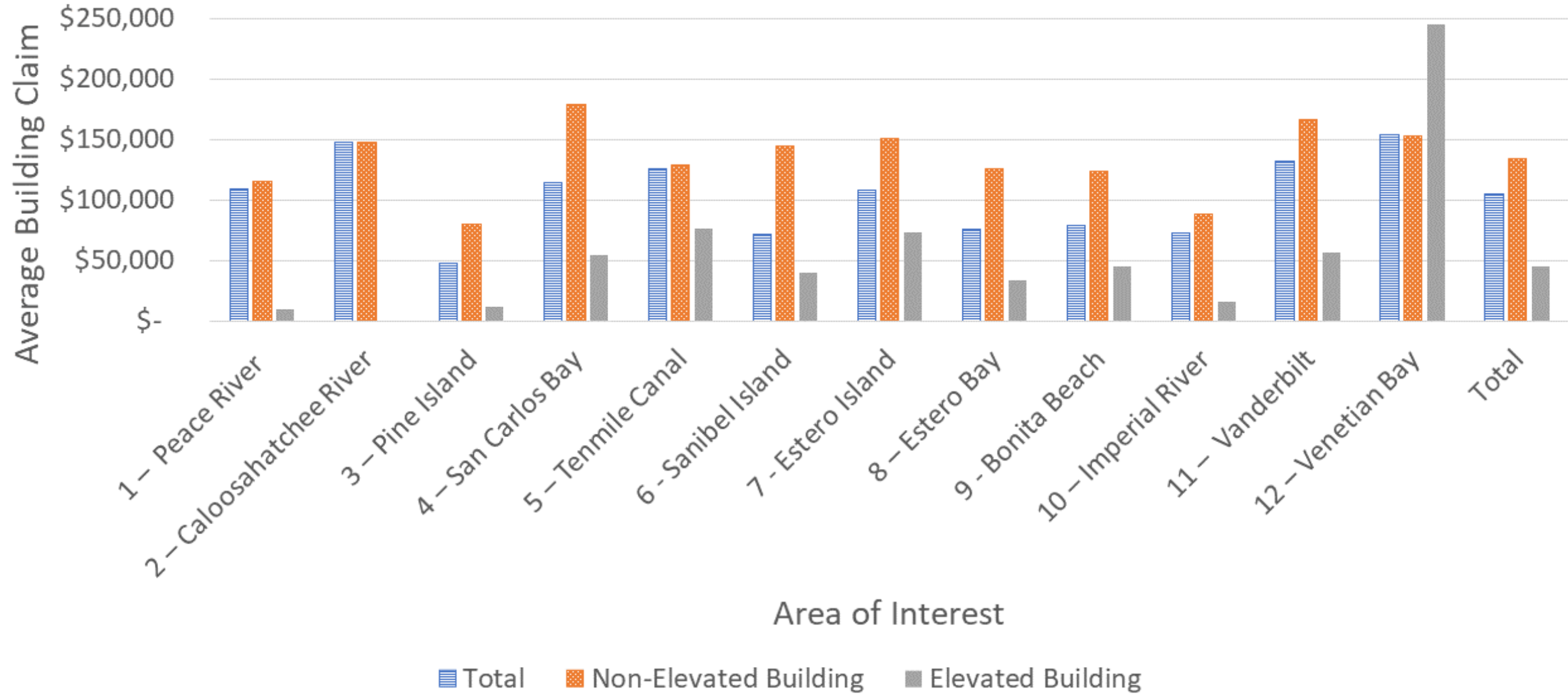
ELEVATED BUILDING

For insurance purposes, an elevated building is a non-basement building that has its lowest elevated floor raised above ground level by foundation walls, shear walls, posts, piers, pilings, or columns (per 44 CFR 59.1).

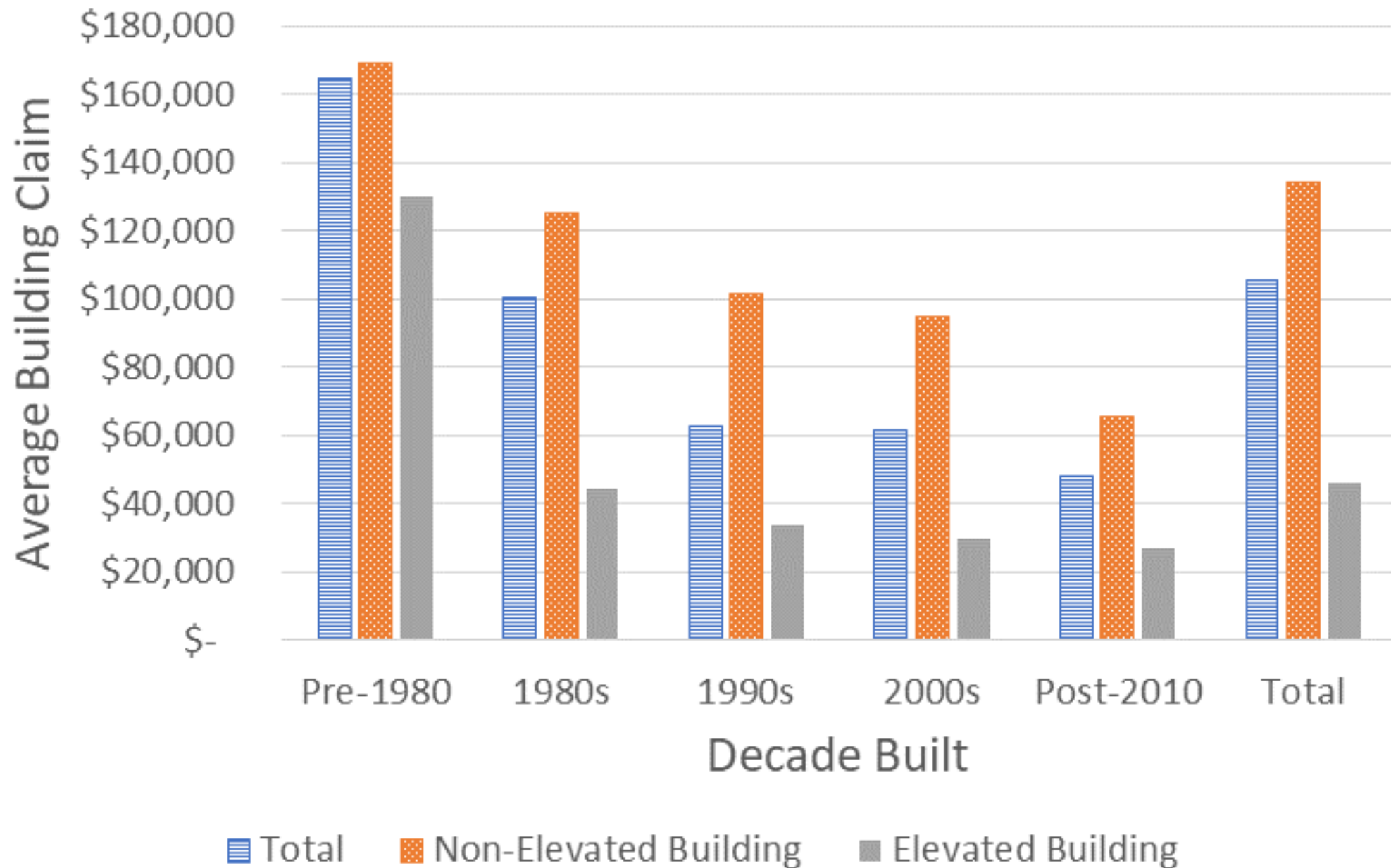
Average Building Claim by Area of Interest



Average Building Claim by Area of Interest



Average Building Claim by Decade



Conclusions and Recommendations (C&R)

- Flood-related C&R correlated to building codes, standards, regulations, and floodplain management
- Wind-related C&R correlated to building codes and standards
- Manufactured homes-related C&R
- Flood-related building performance C&R
- Wind-related building performance C&R
- Critical facility and sheltering-related C&R



Mitigation Assessment Team Report

Hurricane Ian in Florida

Building Performance Observations,
Recommendations, and Technical Guidance

FEMA P-2342/December 2023



Design & Construction Related Improvements

- Recommendation FL-7a - FEMA should encourage the use of flood damage-resistant materials up to 4 feet above the BFE and consider requiring flood damage-resistant materials for at least 2 feet above the BFE.
- Recommendation FL-7b - FEMA should consider requiring the use of flood damage-resistant materials as part of a flood insurance building claim payment.
- Recommendation FL-7c - FEMA, FDEM, and the FBC should consider developing practical criteria for when elevated buildings should be required for new construction within the regulated floodplain.



Mitigation Assessment Team Report

Hurricane Ian in Florida

Building Performance Observations,
Recommendations, and Technical Guidance

FEMA P-2342/December 2023



Flood Summary

- Siting and elevation matter
- Hazard mitigation matters
- Adoption and enforcement matter
- Planning and implementation matter



Questions?



FEMA Building Science Disaster Support Program email:
FEMA-BuildingScienceDisasterSupport@fema.dhs.gov

866-927-2104

<http://www.fema.gov/building-science>