

**Gulf Shore Association of Condominiums  
Third Annual Water Forum:  
February 25, 2025**

**“Building Naples’ Coastal Resiliency”**

**Humiston & Moore Engineers**  
Brett D. Moore, P.E., BC.CE, President

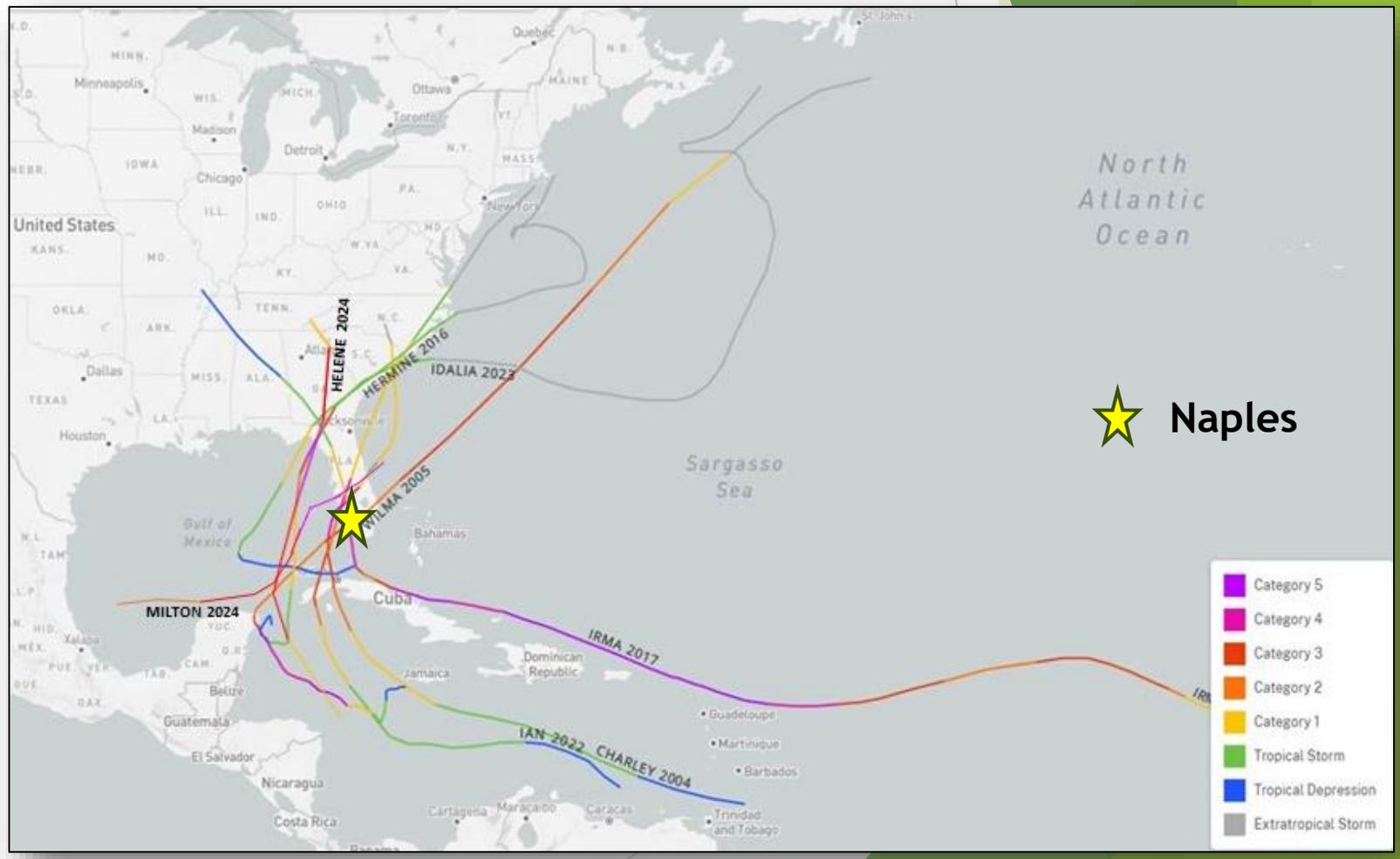
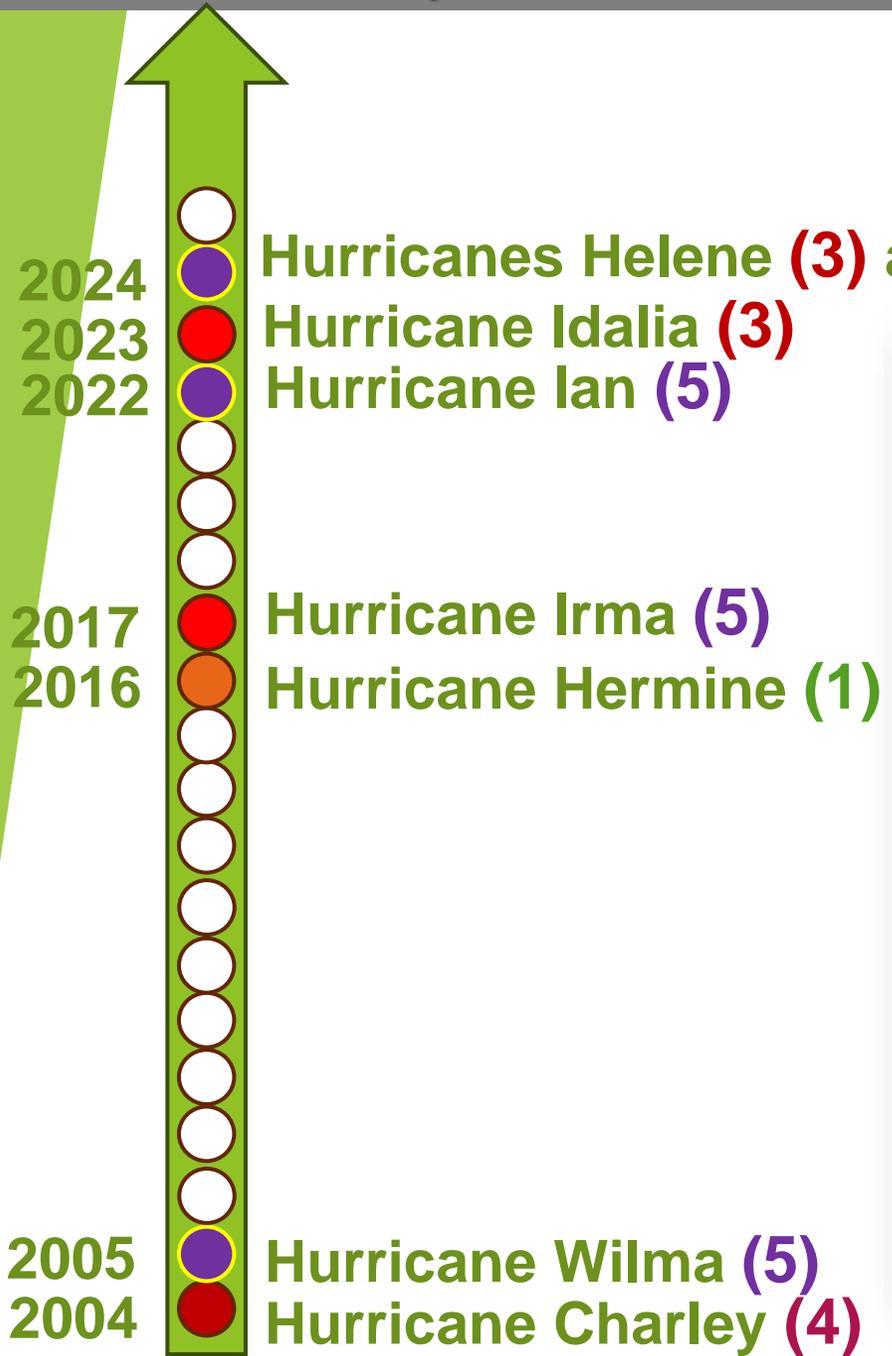


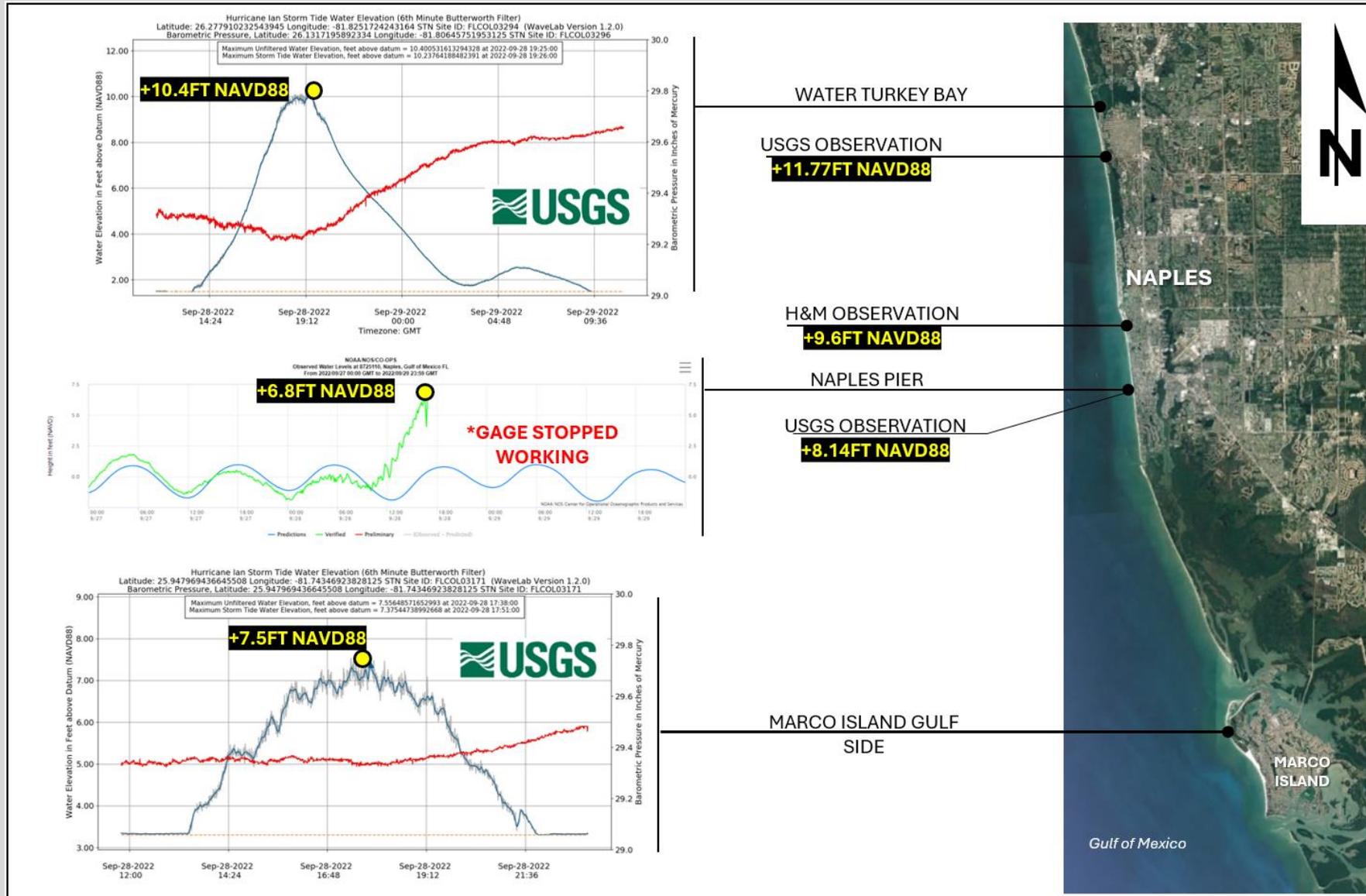
## Coastal Vulnerability

- **Recent Awareness – Storms (2022 thru 2024)**
- **Conditions Post Milton (1/2024 to 12/2024)**

## Building Coastal Resiliency

- **Importance of Beach & Dune Program**
- **Storm Responses – Short Term**
- **Long Term Planning**

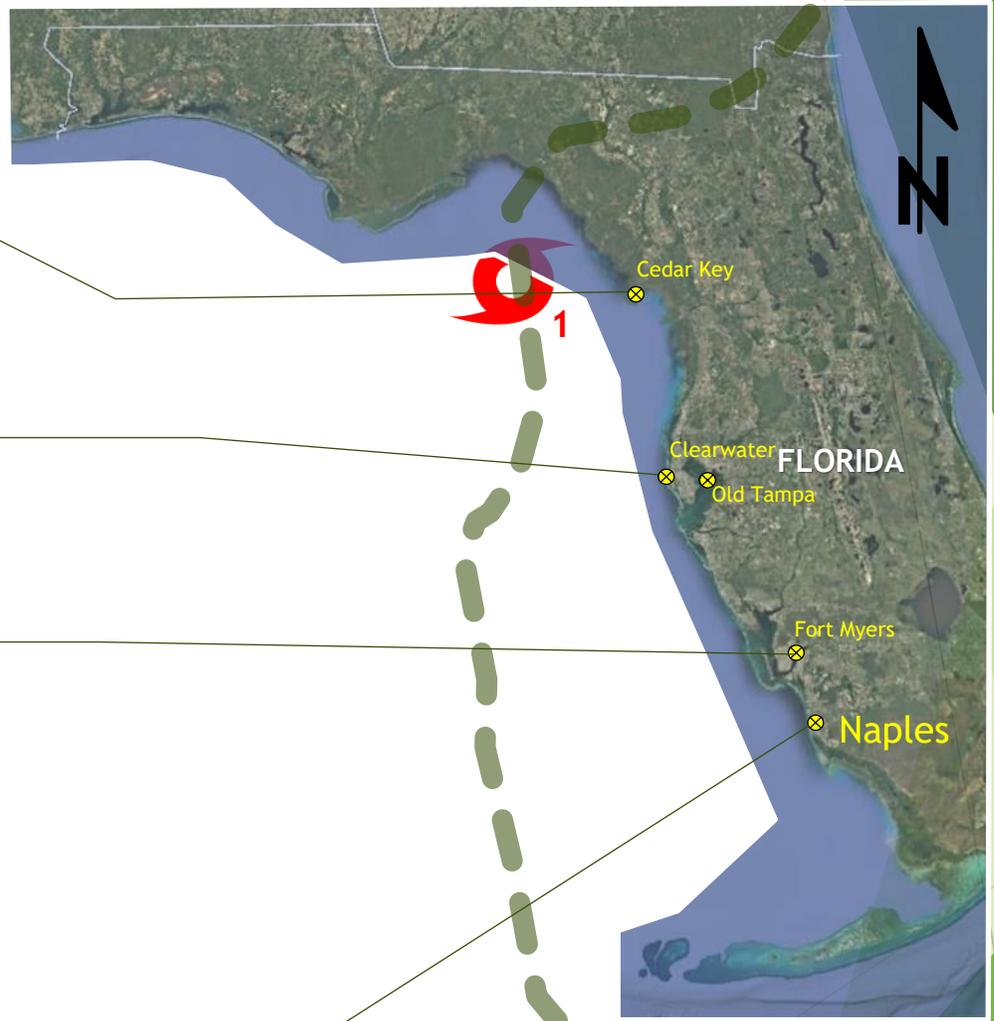
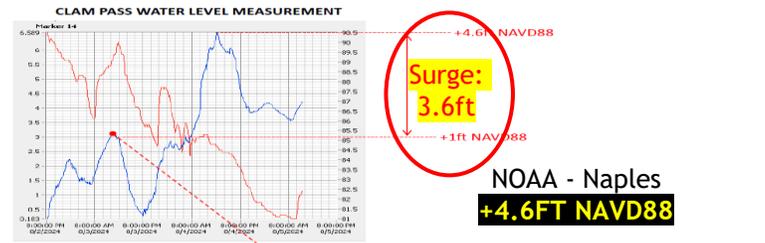
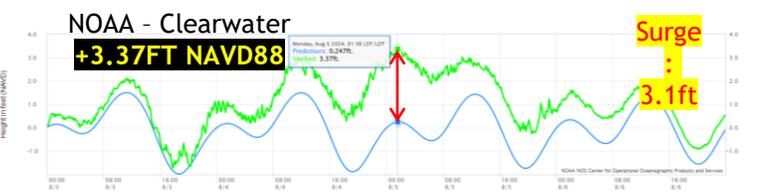
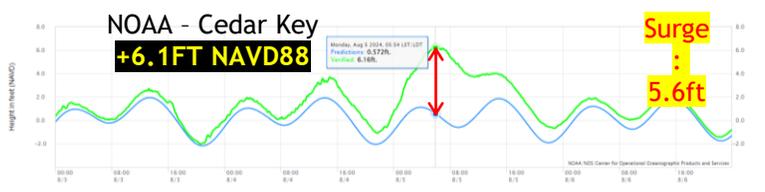




**Figure : Hurricane Ian – Collier County – Documented Surge Data**

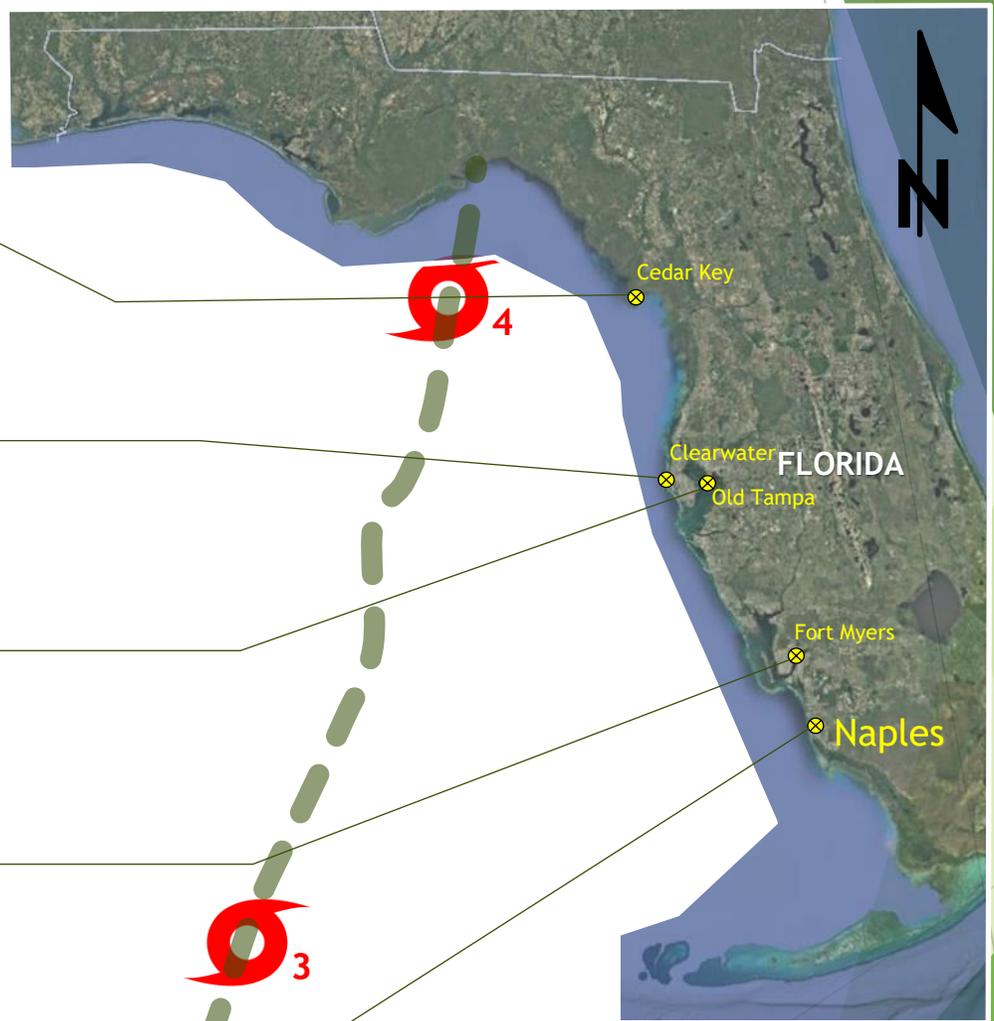
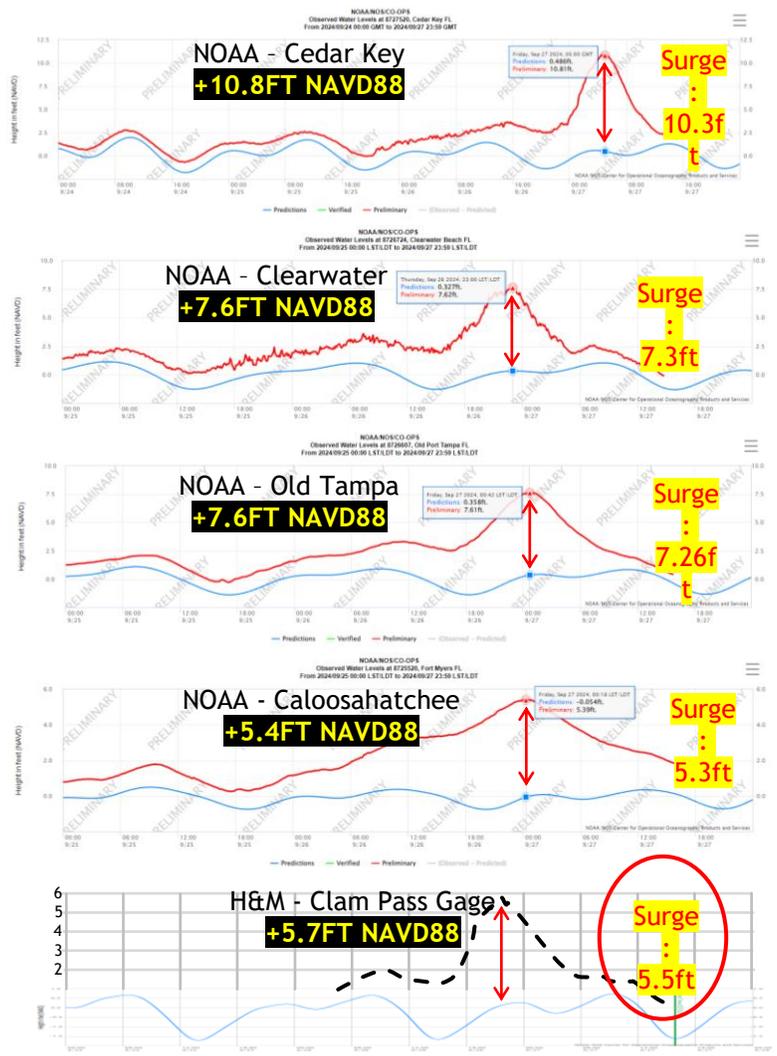


# August 3, 2024 - Hurricane Debby



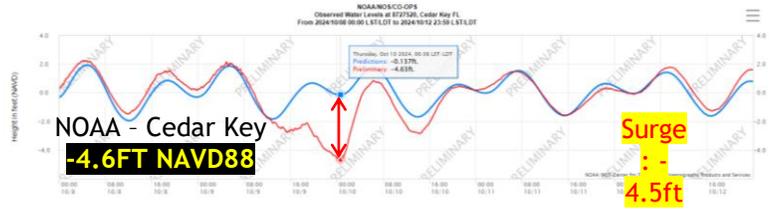
**HURRICANE DEBBY**  
**(08/03/24 - 08/04/24)**

# September 26, 2024 - Hurricane Helene



**HURRICANE HELENE**  
 (09/26/24 -  
 09/27/24)

# October 10, 2024 - Hurricane Milton

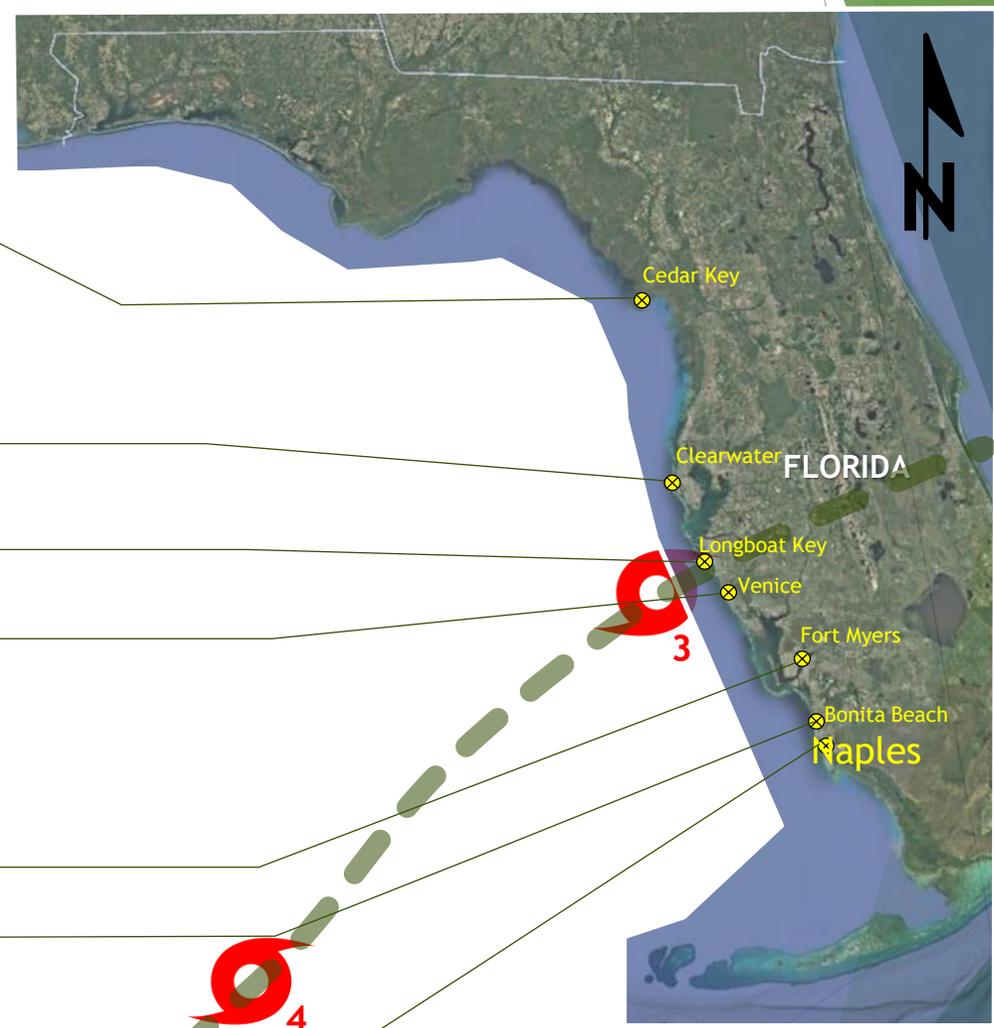
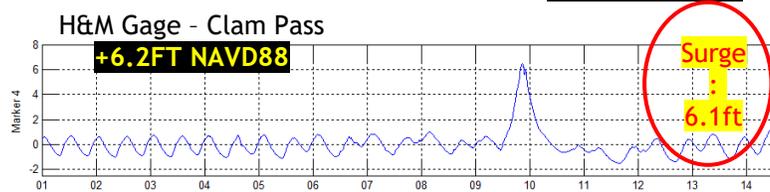


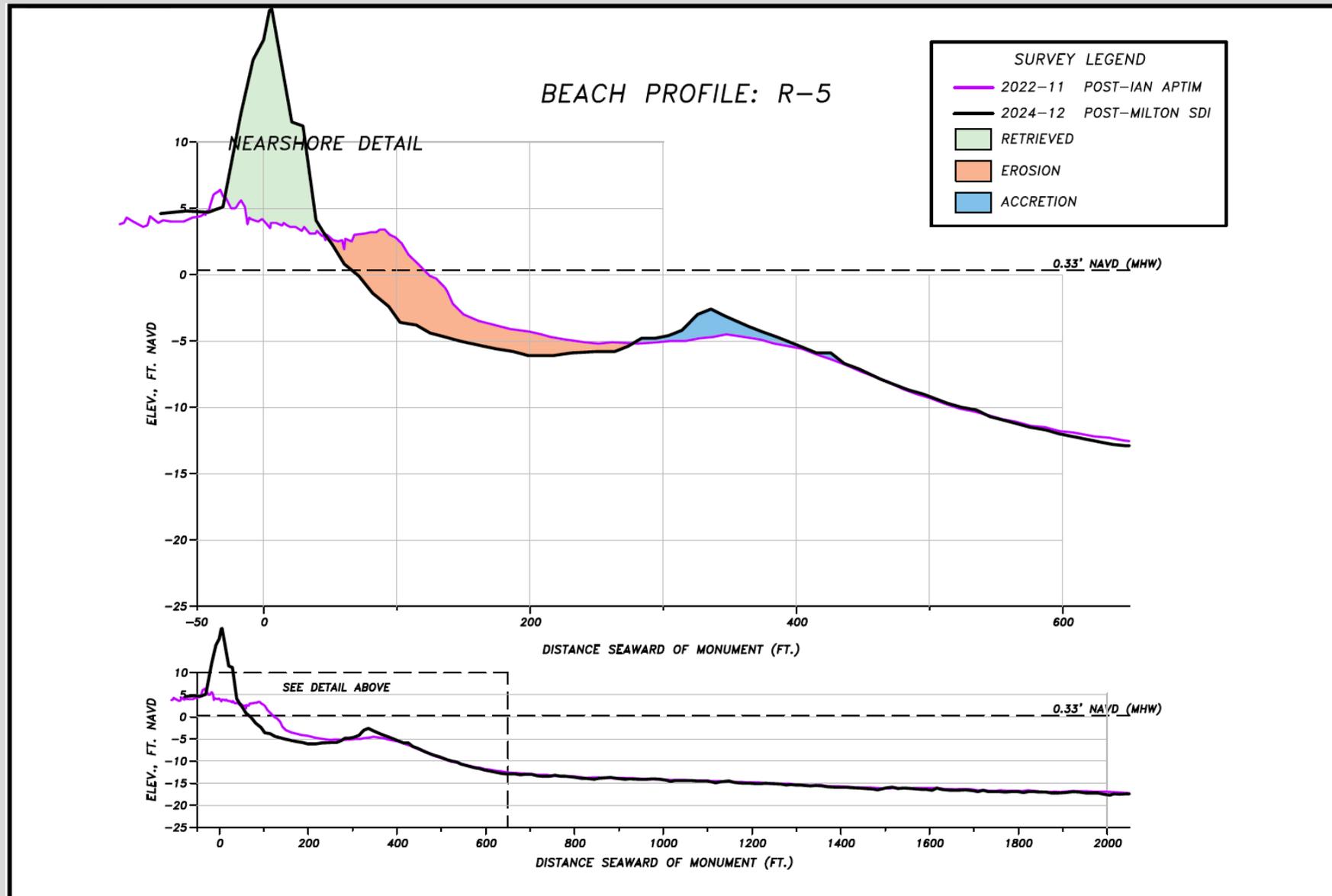
USGS Obs - Longboat Key  
**+8.95FT NAVD88**

USGS Obs - South Venice  
**+11.2FT NAVD88**



USGS Obs - Bonita Beach  
**+6.8FT NAVD88**





**HUMISTON & MOORE ENGINEERS**  
 COASTAL ENGINEERING DESIGN AND PERMITTING

**COLLIER COUNTY BEACH MONITORING BEACH PROFILE**

FOR: COLLIER COUNTY		
DATE: 12/16/24	FILE: SECTION	SCALE: SHOWN
JOB: 29018	DATUM: NAVD	FIGURE:

5679 STRAND COURT  
 NAPLES, FL 34110  
 FAX: (239) 594-2025  
 PHONE: (239) 594-2021  
[www.humistonandmoore.com](http://www.humistonandmoore.com)

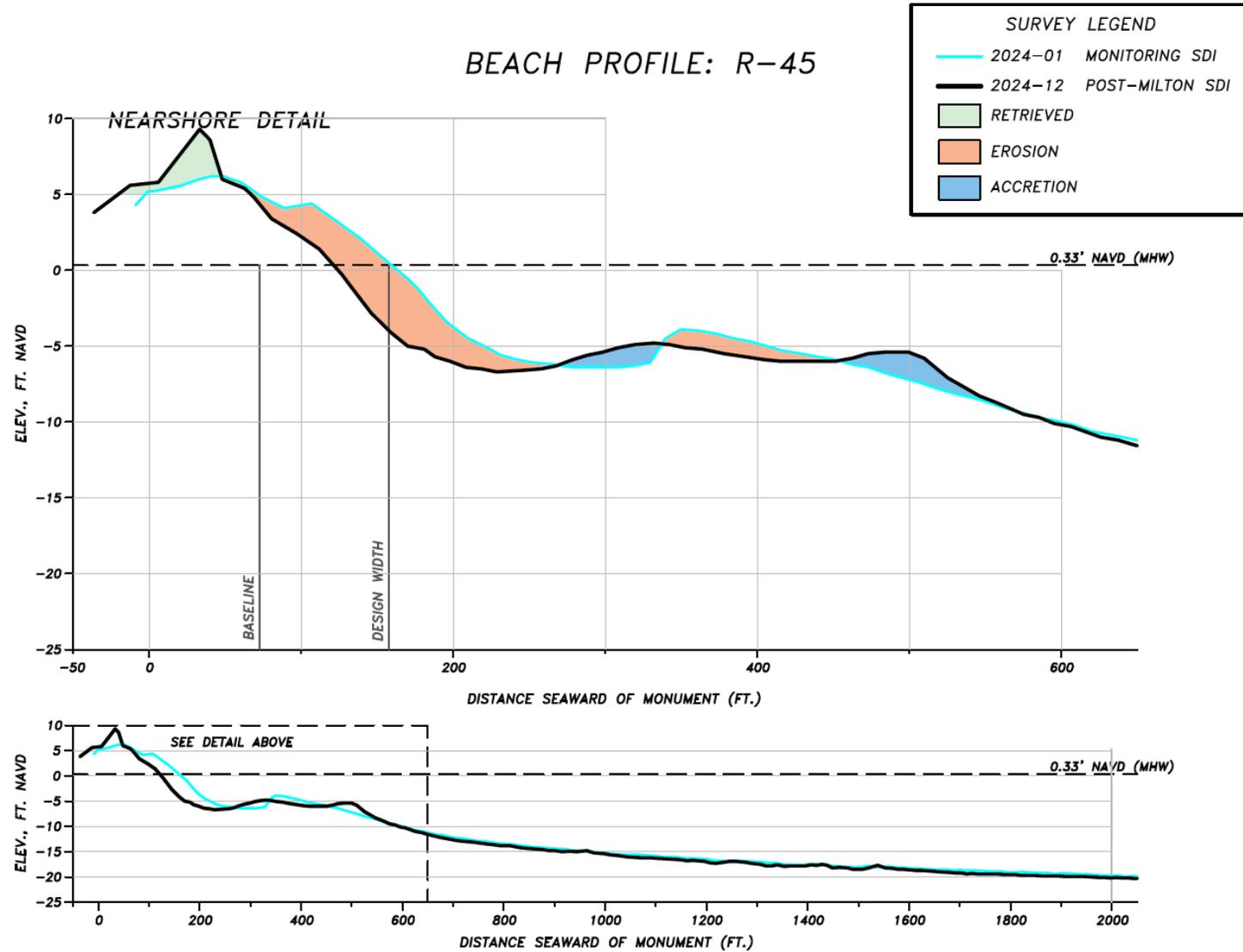


Barefoot Beach R-7  
2025 Retrieval and  
Temporary Stockpiling  
of Overwashed Sand



Barefoot Beach R-7  
2025 Retrieval and  
Temporary Stockpiling  
of Overwashed Sand

## BEACH PROFILE: R-45



COLLIER COUNTY BEACH MONITORING  
BEACH PROFILE

FOR: COLLIER COUNTY		
DATE: 12/16/24	FILE: SECTION	SCALE: SHOWN
JOB: 29018	DATUM: NAVD	FIGURE:

5679 STRAND COURT  
NAPLES, FL 34110  
FAX: (239) 594-2025  
PHONE: (239) 594-2021  
www.humistonandmoore.com

**Naples Cay R-45  
2025 Retrieval and Shaping of Sand into Dune  
- Planting Shown Completed February 2025**



Views along Promenade in 12/31/2019  
3-years prior to impact from Hurricane Ian



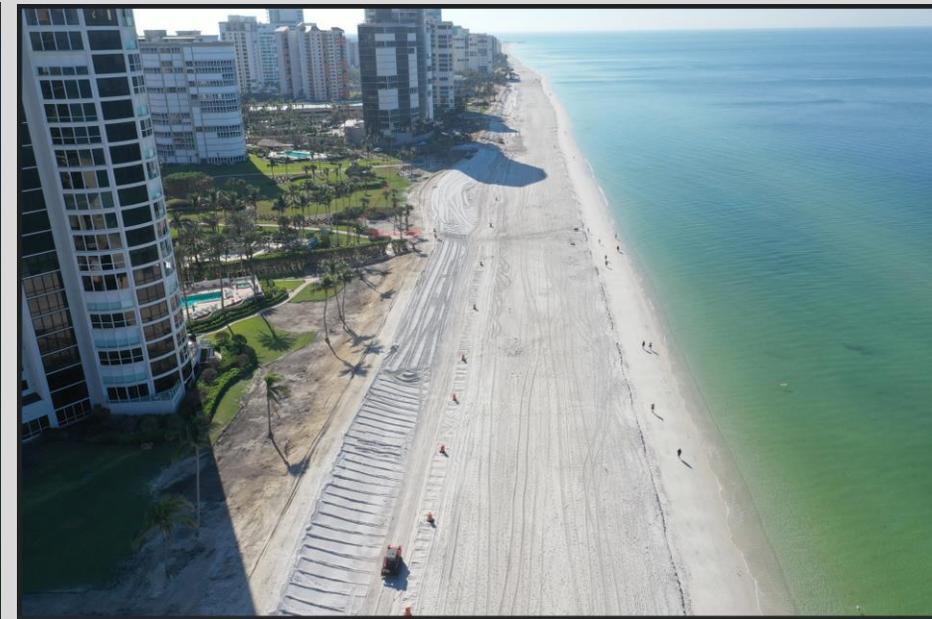
Views along Promenade in April 2019  
3 ½ -years prior to impact from Hurricane Ian

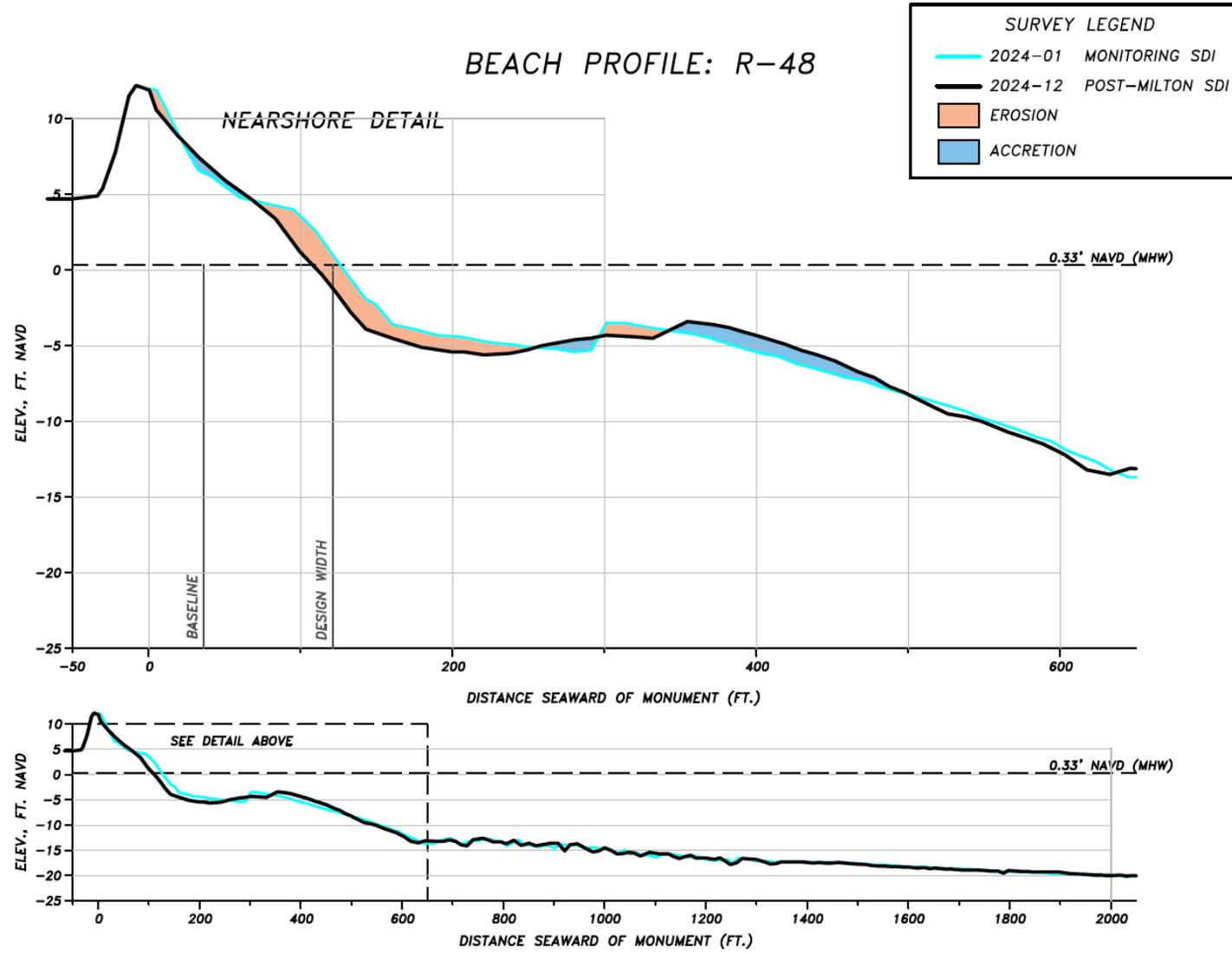


Views along Promenade Post Hurricane Ian



Views along Promenade 3-months Post  
Hurricane Ian 12-13-2022





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 COASTAL ENGINEERING DESIGN AND PERMITTING

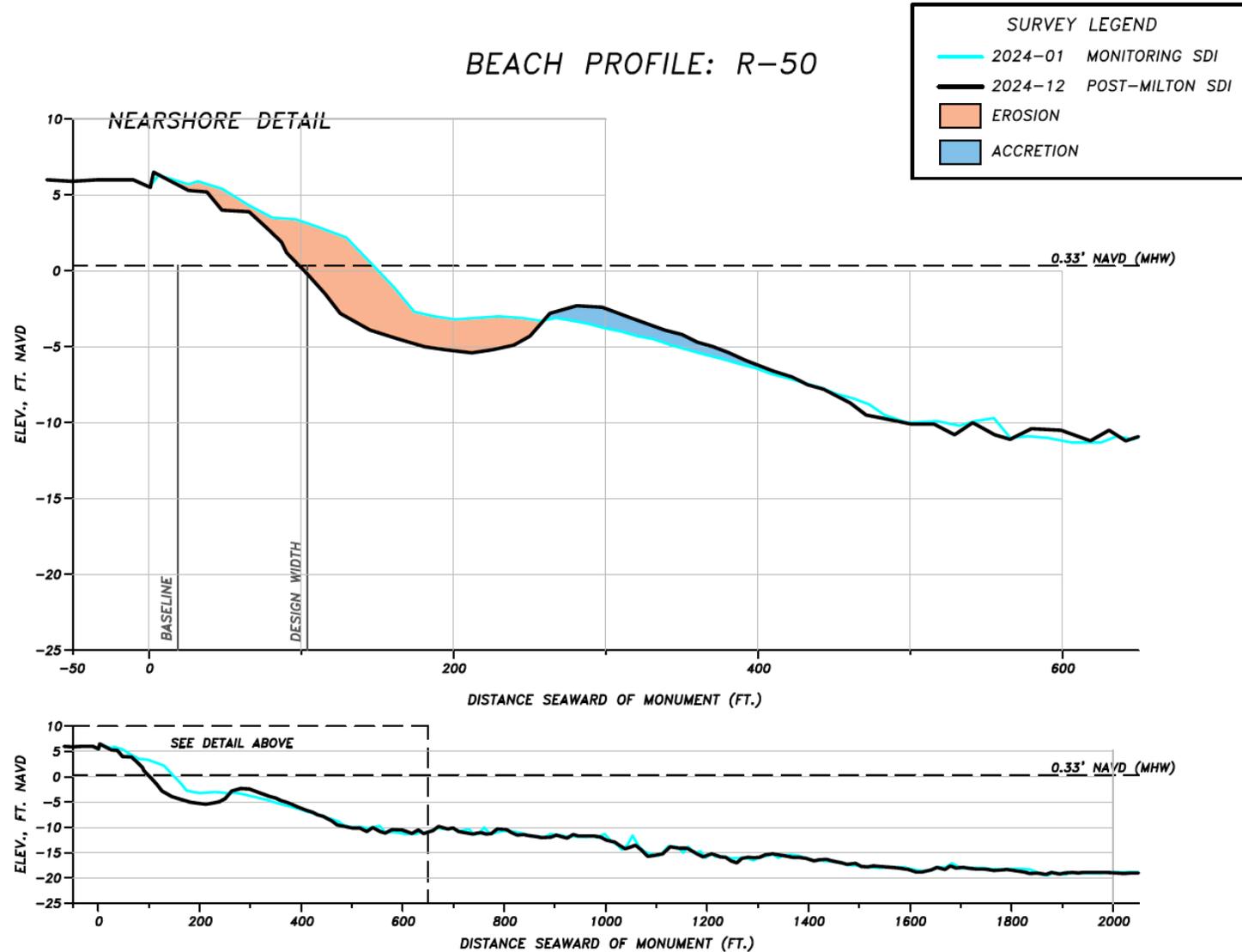
COLLIER COUNTY BEACH MONITORING BEACH PROFILE		
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Promenade at +12.5 ft NAVD



## BEACH PROFILE: R-50



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COLLIER COUNTY BEACH MONITORING BEACH PROFILE		
FOR: COLLIER COUNTY		
DATE: 12/16/24	FILE: SECTION	SCALE: SHOWN
JOB: 29018	DATUM: NAVD	FIGURE:

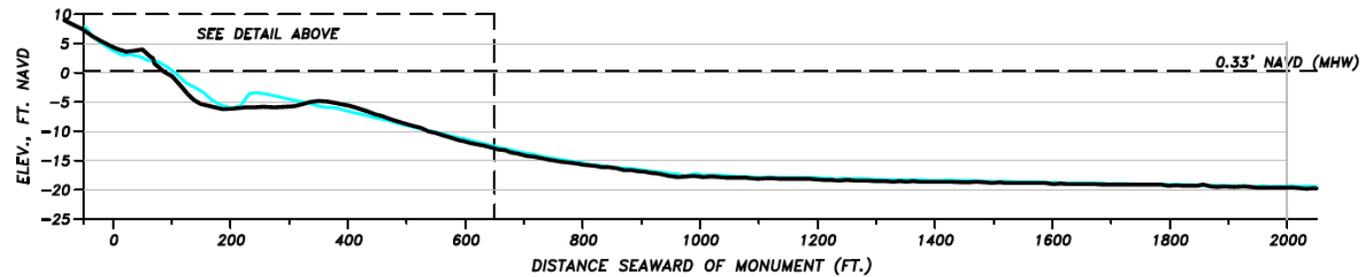
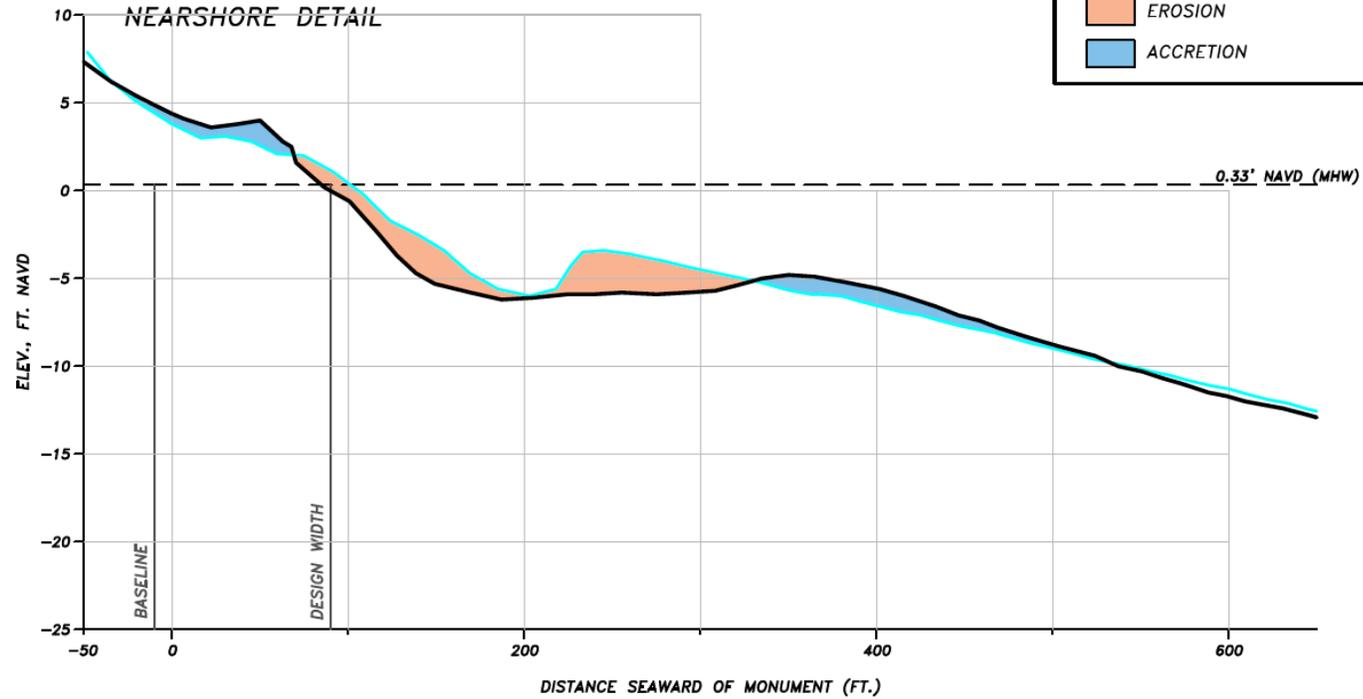
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 NAPLES, FL 34110  
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Promenade at +12.5 ft NAVD

Promenade at +6 ft NAVD

## BEACH PROFILE: R-79



**SURVEY LEGEND**

- 2024-01 MONITORING SDI
- 2024-12 POST-MILTON SDI
- EROSION
- ACCRETION



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COLLIER COUNTY BEACH MONITORING BEACH PROFILE		
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## Post Storm Responses – Dune Construction

### Post Ian Dune Construction and Planting

#### Important *Performance* Factors:

- Elevation
- Beach Width
- Dune Planting & Maintenance Programs

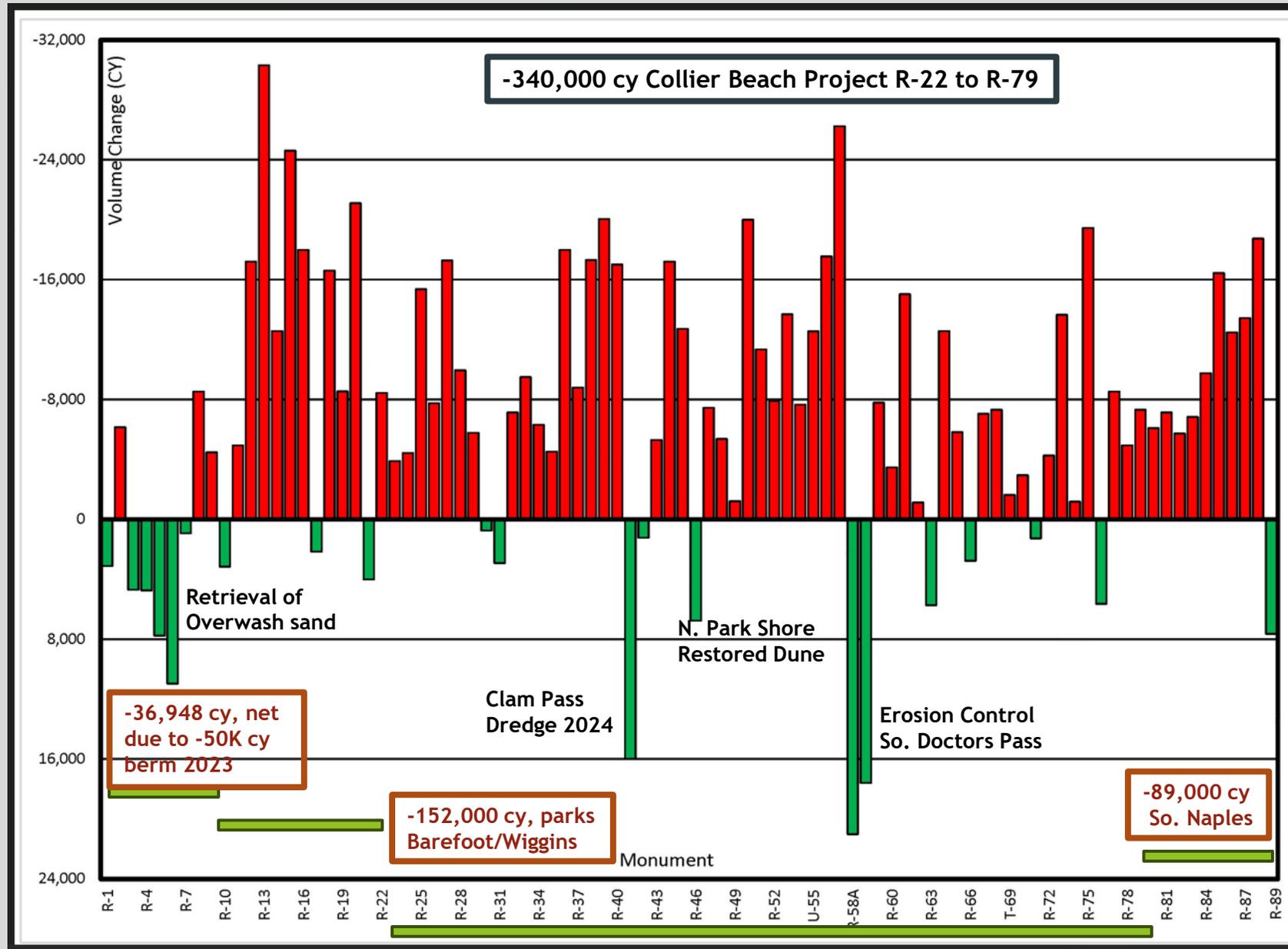
Mon.	Effect. Distance (Ft.)	Landward Limit (Ft.)	Seaward Limit (Ft.)	Volume Change (CY)	Mon.	Effect. Distance (Ft.)	Landward Limit (Ft.)	Seaward Limit (Ft.)	Volume Change (CY)
R-1	570	-85	651	3,103	R-46	1,040	-1	603	6,761
T-2	1,008	78	659	-6,146	R-47	953	0	600	-7,448
R-3	1,002	-43	584	4,700	R-48	1,000	1	583	-5,367
R-4	1,017	-82	507	4,741	R-49	1,077	0	589	-1,209
R-5	1,023	-77	568	7,757	R-50	1,208	1	738	-20,003
R-6	1,023	-118	534	10,963	R-51	1,108	-3	512	-11,337
R-7	1,051	-16	629	929	R-52	967	14	629	-7,900
T-8	1,018	-94	585	-8,523	R-53	1,060	31	667	-13,679
R-9	1,000	-32	644	-4,472	T-54	1,059	0	625	-7,658
R-10	1,025	-35	662	3,151	U-55	985	1	566	-12,554
R-11	1,028	-63	733	-4,935	R-56	846	6	674	-17,549
R-12	1,033	-108	710	-17,200	T-57	944	22	760	-26,237
R-13	1,016	57	861	-30,308	R-58A	699	-4	830	21,007
R-14	1,012	-47	853	-12,565	T-58	790	0	886	17,593
R-15	1,038	-74	1,046	-24,609	R-59	1,033	0	497	-7,795
R-16	622	-117	1,385	-17,973	R-60	1,081	-1	578	-3,460
R-17	1,101	-100	1,541	2,157	R-61	1,049	69	811	-15,029
R-18	1,025	-14	1,072	-16,606	T-62	1,015	2	592	-1,124
R-19	1,039	-7	591	-8,544	R-63	967	61	668	5,721
R-20	1,030	-19	623	-21,111	R-64	854	28	636	-12,570
R-21	1,035	-65	499	4,003	T-65	804	0	621	-5,810
R-22	1,004	-61	579	-8,430	R-66	813	0	724	2,770
R-23	1,013	-101	618	-3,893	R-67	805	1	724	-7,050
R-24	1,070	2	585	-4,432	R-68	810	45	702	-7,306
R-25	1,033	2	593	-15,356	T-69	805	0	670	-1,631
R-26	989	1	601	-7,742	R-70	800	-1	652	-2,937
R-27	1,095	-25	544	-17,278	R-71	803	0	690	1,264
R-28	1,026	-16	512	-9,948	R-72	808	21	754	-4,260
R-29	942	0	588	-5,765	R-73	814	1	649	-13,650
R-30	1,033	11	674	750	R-74	803	0	744	-1,178
R-31	1,022	-20	733	2,909	R-75	795	109	805	-19,441
R-32	1,012	0	634	-7,136	R-76	799	-4	657	5,643
R-33	1,022	-6	672	-9,491	R-77	782	-1	730	-8,518
R-34	1,012	-34	642	-6,317	R-78	936	39	676	-4,932
R-35	998	-15	641	-4,518	R-79	1,128	-47	583	-7,315
R-36	1,028	-47	626	-17,976	R-80	1,114	-9	580	-6,092
R-37	1,017	-11	692	-8,795	R-81	976	-20	583	-7,128
R-38	1,000	-15	663	-17,309	R-82	961	-19	584	-5,720
R-39	1,016	-35	716	-20,038	R-83	1,004	-1	638	-6,837
R-40	1,011	0	677	-17,002	R-84	971	0	558	-9,756
R-41	1,039	79	759	15,978	U-85	932	1	631	-16,436
R-42	1,053	0	679	1,218	T-86	943	105	717	-12,478
R-43	1,018	-58	576	-5,298	R-87	1,033	-2	585	-13,423
R-44	1,023	-19	627	-17,195	R-88	986	261	820	-18,747
R-45	1,078	-8	641	-12,715	R-89	654	-65	1,380	7,635

**Total Net Volume Loss R-1 to R-89 (CY): -610,442**

**\*Total Project Net Volume Loss (CY): -339,940**

\*Includes half of the volume change at project limits.





Barefoot Beach

Vanderbilt Beach

Park Shore Beach

Naples Beach

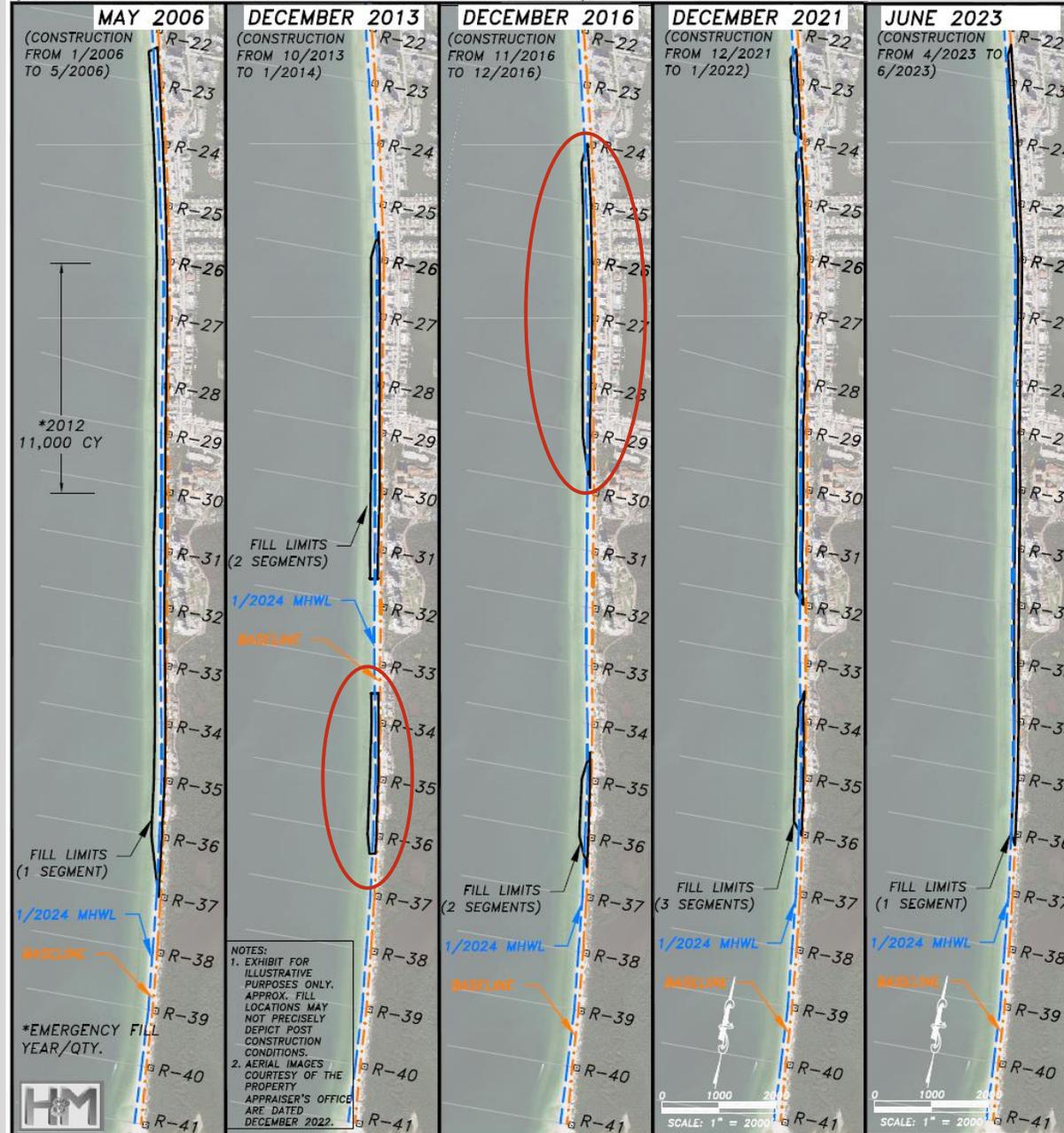
Gordon Pass



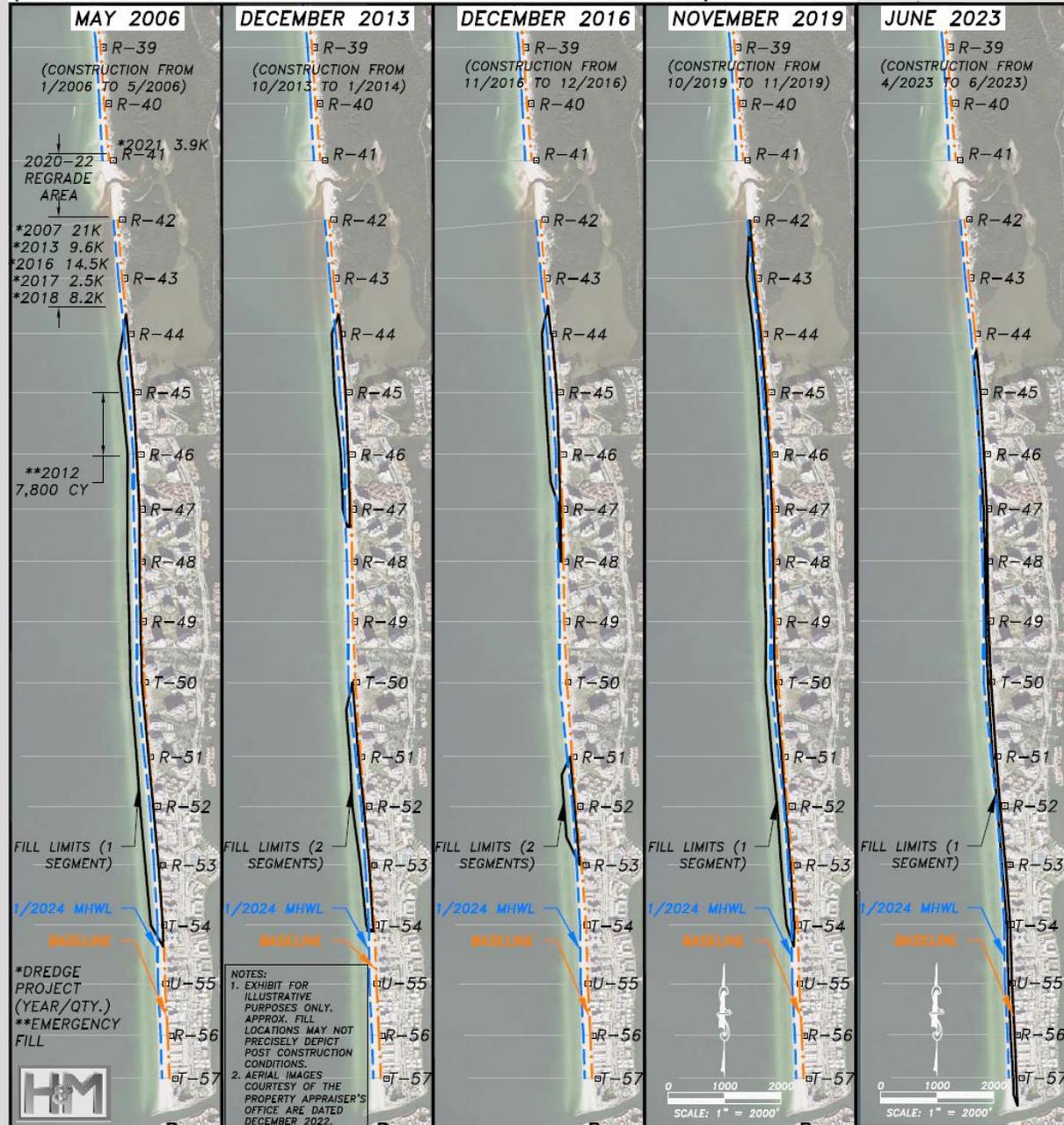
Promenade at +6 ft NAVD

Promenade at +12.5 ft NAVD

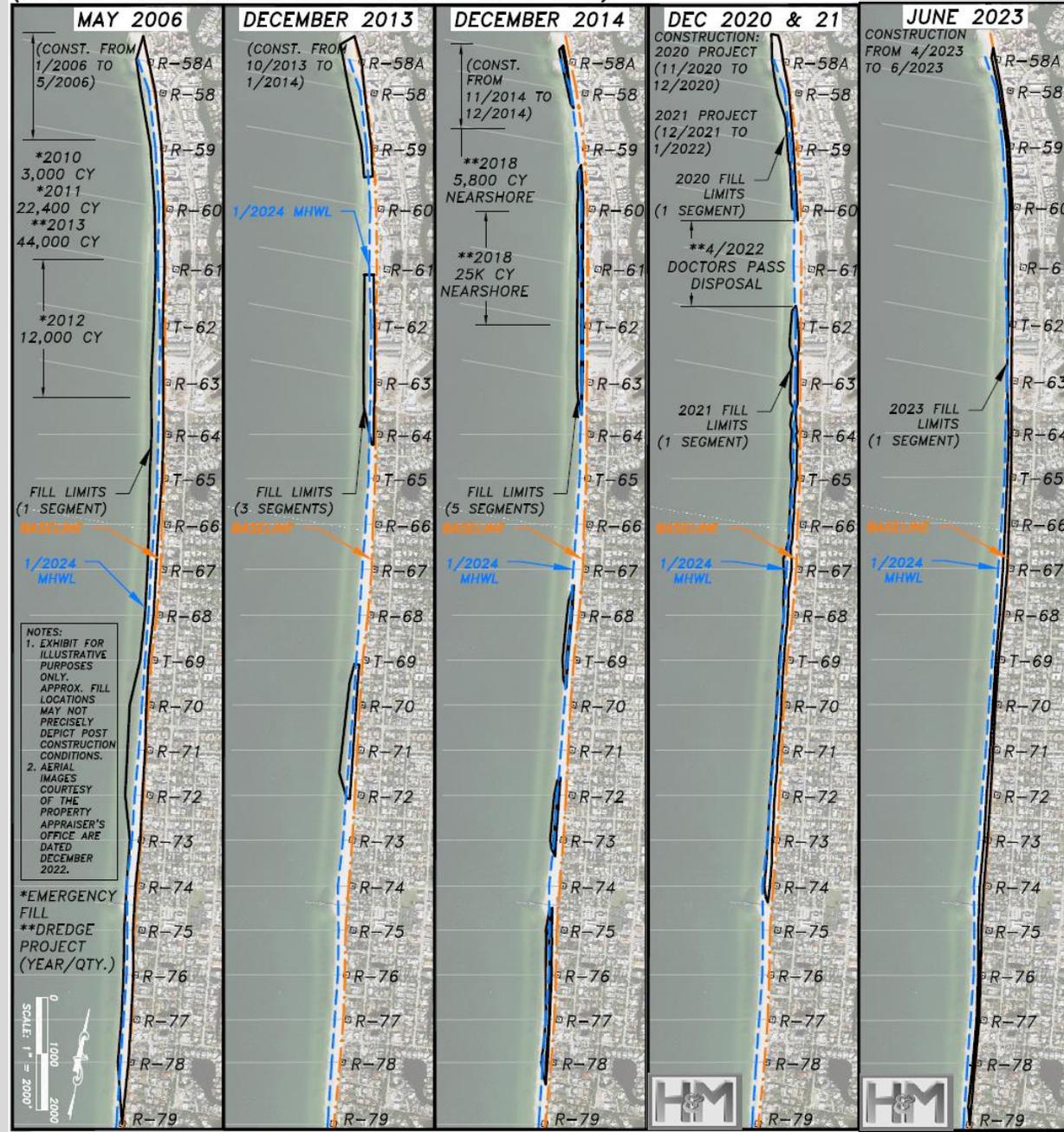
**FIGURE 2a: FILL LIMITS FOR VANDERBILT & PELICAN BAY BEACH (NO FILL PLACED IN 2014, 2015, 2017-2020, 2022)**



**FIGURE 2b: FILL LIMITS FOR PARK SHORE BEACH  
(NO FILL PLACED IN 2014-2015 OR 2017-2018 OR 2020-2022)**



**FIGURE 2c: FILL LIMITS FOR NAPLES BEACH  
(NO FILL PLACED ON THE BEACH FROM 2015 TO 2019)**





# First Line of Protection: Beach & Dunes

## Storm Responses – Short Term (County)

### Construction

Berm Construction

Dune Planting Program

### Funding

State Beach/Dune Recovery Plan

FEMA Funding Assistance Program

County TDC

# **First Line of Protection: Beach & Dunes**

## **Storm Responses – Long-Term**

### **Construction Large Scale**

**Beach Project & Develop Potential Tax Districts**

**Dune Planting Program**

**Beach Maintenance Program**

### **Anticipated Funding**

**State Beach/Dune Recovery Plan Post Milton**

**FEMA Funding Assistance Program**

**County TDC**

# First Line of Protection: Beach & Dunes

Storm Responses – Individuals & Private

Construction & Planning Smaller Scale

Individuals Assessing Seawall Protection

Regional Dune Construction

Dune Planting & Maintenance Programs

