

MIAMI-DADE BACK BAY COASTAL STORM RISK MANAGEMENT FEASIBILITY STUDY

PROJECT UPDATE FOR:
CORAL GABLES

9 March 2021



US Army Corps
of Engineers®





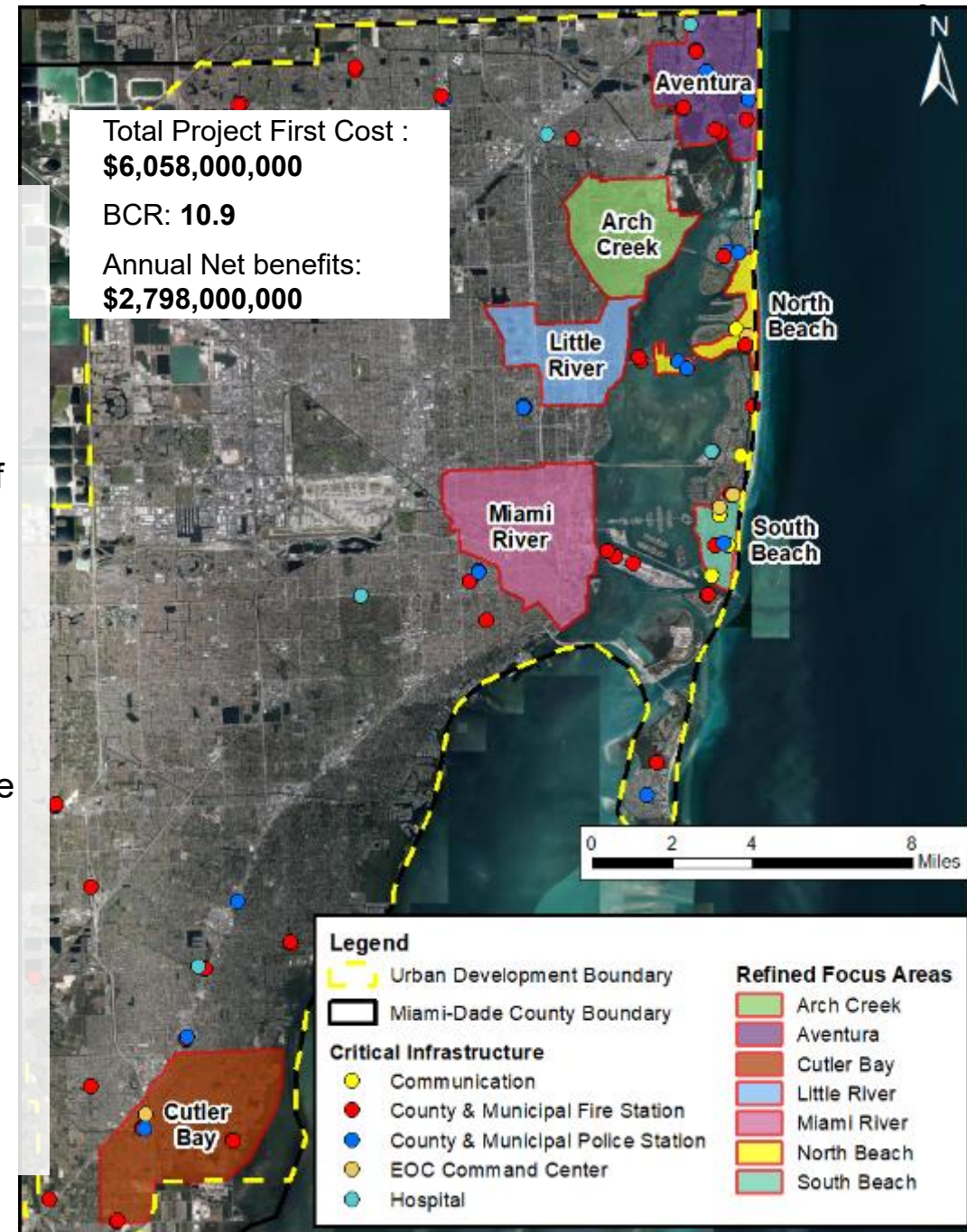
STUDY AUTHORIZATION AND COUNTY-WIDE RECOMMENDED PLAN

Study Authorization:

- Bipartisan Budget Act of 2018, Public Law 115-123, Title IV, Division B
 - Authorizes the Study at full Federal expense
 - Part of a multi-phase county-wide resilient investigation
 - Miami-Dade CSRM (beach study), South Atlantic Coastal Study, Miami-Dade Back Bay
 - Due to complexities, additional studies are required to cover all of Miami-Dade County
 - Close collaboration with the County ongoing

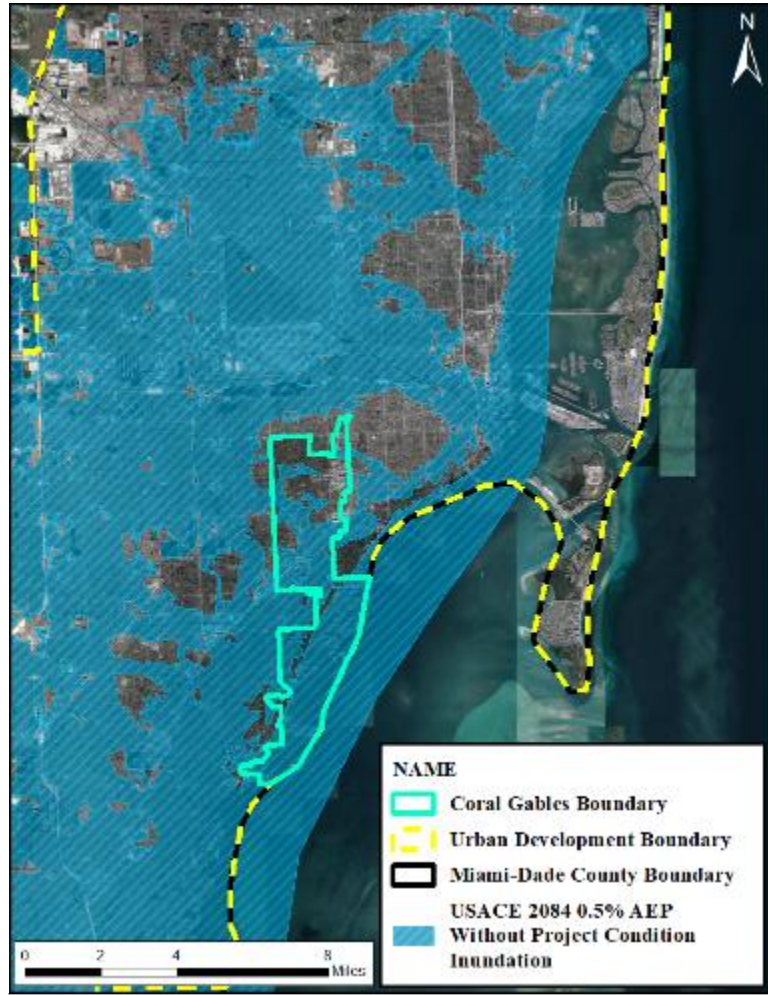
Recommended Plan:

- 7 x high risk focus areas featuring structural, nonstructural and/or NNBFs.
- Critical infrastructure - floodproofing approximately 200 x critical facilities
- Structural measures:
 - Surge barriers, floodwalls, and pump stations at Biscayne Canal, Little River, Miami River, Coral Gables Way, and S22 (Snapper Creek Canal).
 - Potential storm surge risk reduction to 220,000 structures.
- Nonstructural measures:
 - Elevating residential buildings: 5,800
 - Floodproofing non-residential buildings: 4,600
- NNBFs were identified through coordination with local stakeholders, State agencies, and Federal agencies.

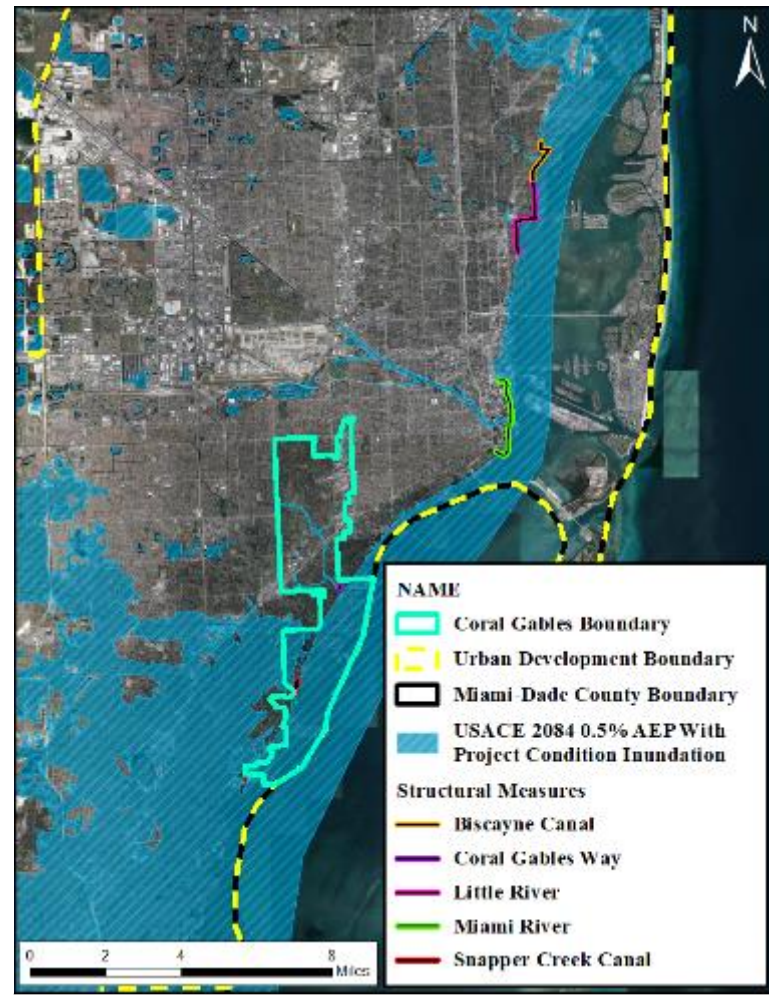




RECOMMENDED PLAN STORM SURGE INUNDATION BOUNDARIES



FUTURE WITHOUT PROJECT



FUTURE WITH PROJECT

Historical Storms	Peak Storm Surge
Donna* (1960)	13'
Andrew* (1992)	16.9'
Irma* (2017)	6'
Dorian** (2019)	23'

Structural Area	Range of Top of Wall Elevations (ft. NAVD88)
Miami River	15.6 – 19.3
Little River	10.7 – 14.6
Biscayne Canal	11.6 - 13

Structural Area	# of Structures with Potential Risk Reduction for City of Coral Gables
Coral Gables Way	8,000
Snapper Creek Canal	500

Note: The inundation layers are based on the USACE 0.5% annual exceedance probability mean value confidence level for the year 2084. The 2084 value is the total water level which includes astronomical tides, storm surge, and USACE high curve sea level change for a particular storm event. This inundation boundary does not include precipitation.

* Data from Miami-Dade Local Mitigation Strategy (2018)
 ** Hurricane Dorian was headed directly toward Miami-Dade County, but took a strong northeast turn 100 miles away. Surge is reflective of the Bahamas.

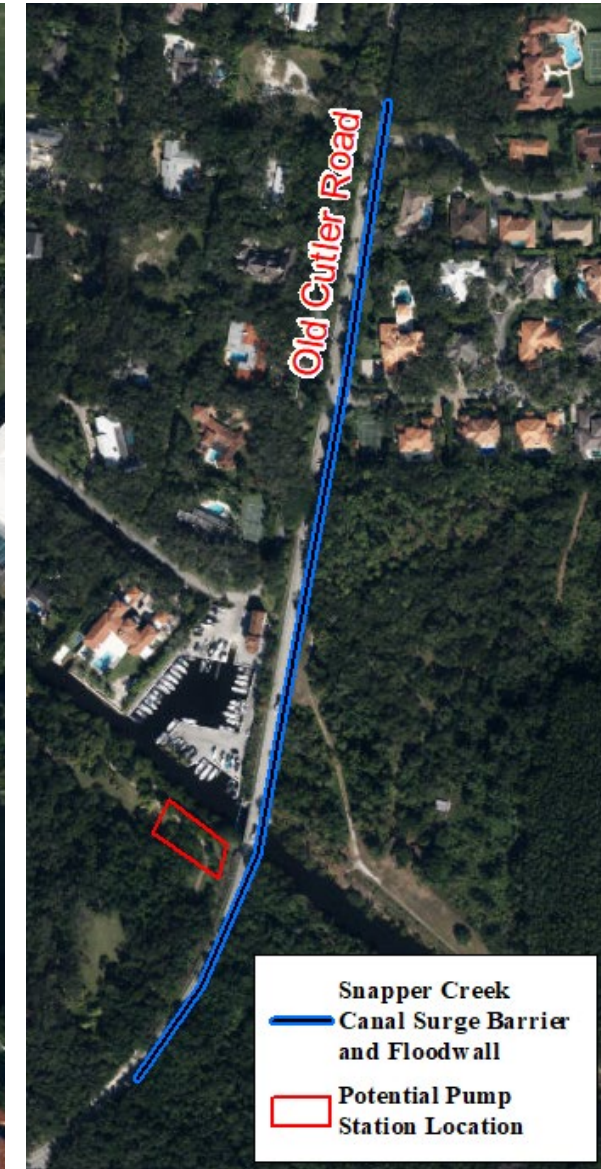
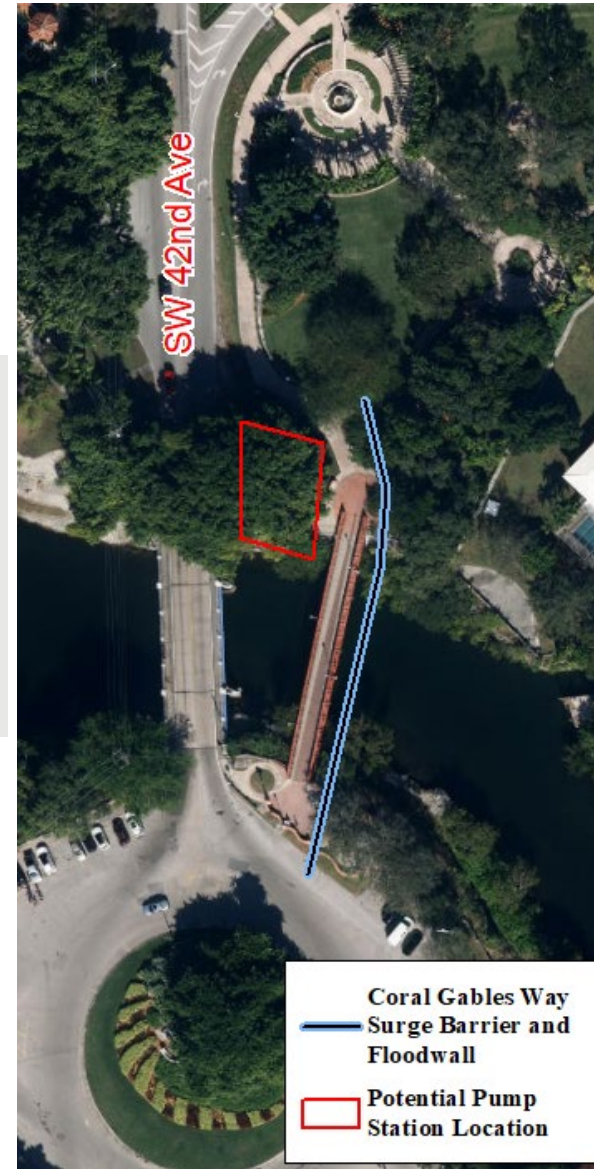


STRUCTURAL DESIGN WATER SURFACE ELEVATION



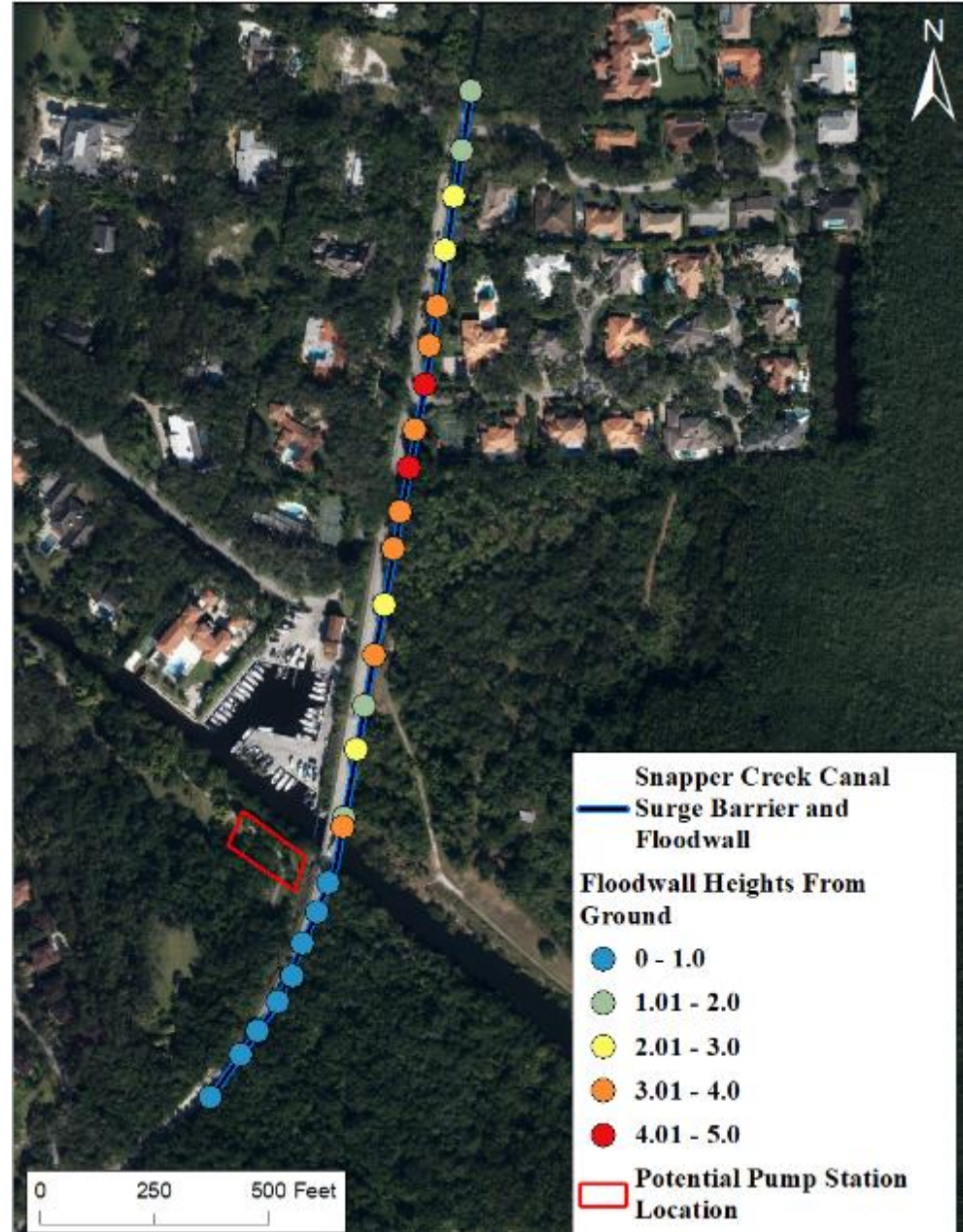
Structural Area	Structural Breakdown	Top of Wall Elevation (ft. NAVD88)	Visible Wall Height (feet)
Coral Gables Way	Floodwall	21.5	4
Snapper Creek Canal	Floodwall	15.5	2 - 4

Note: The design water surface elevation is 13.9' and 13.2' NAVD88 for Coral Gables Way and Snapper Creek Canal respectively. These were based on the mean confidence levels which included storm surge, tides, and wave setup for the 0.5% annual exceedance probability + USACE High Curve sea level change. Top of wall elevations were adjusted and determined based on wave overtopping rates.





STRUCTURAL ELEVATION ESTIMATES

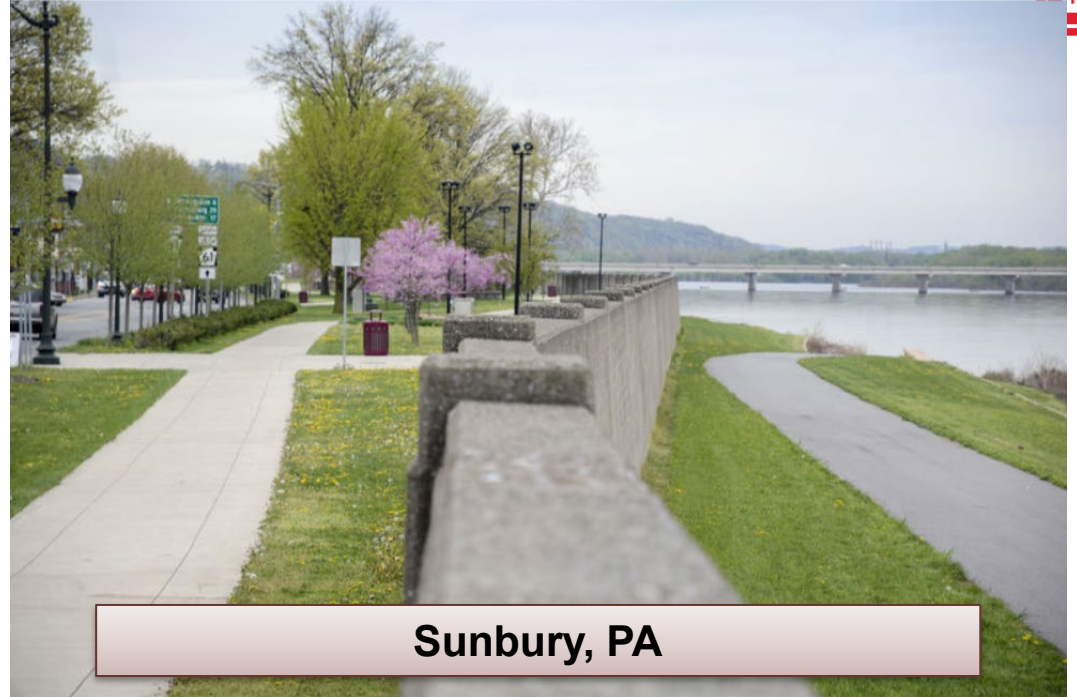




EXAMPLE FLOODWALL DESIGNS



Open Gate for Neighborhood Access



Sunbury, PA



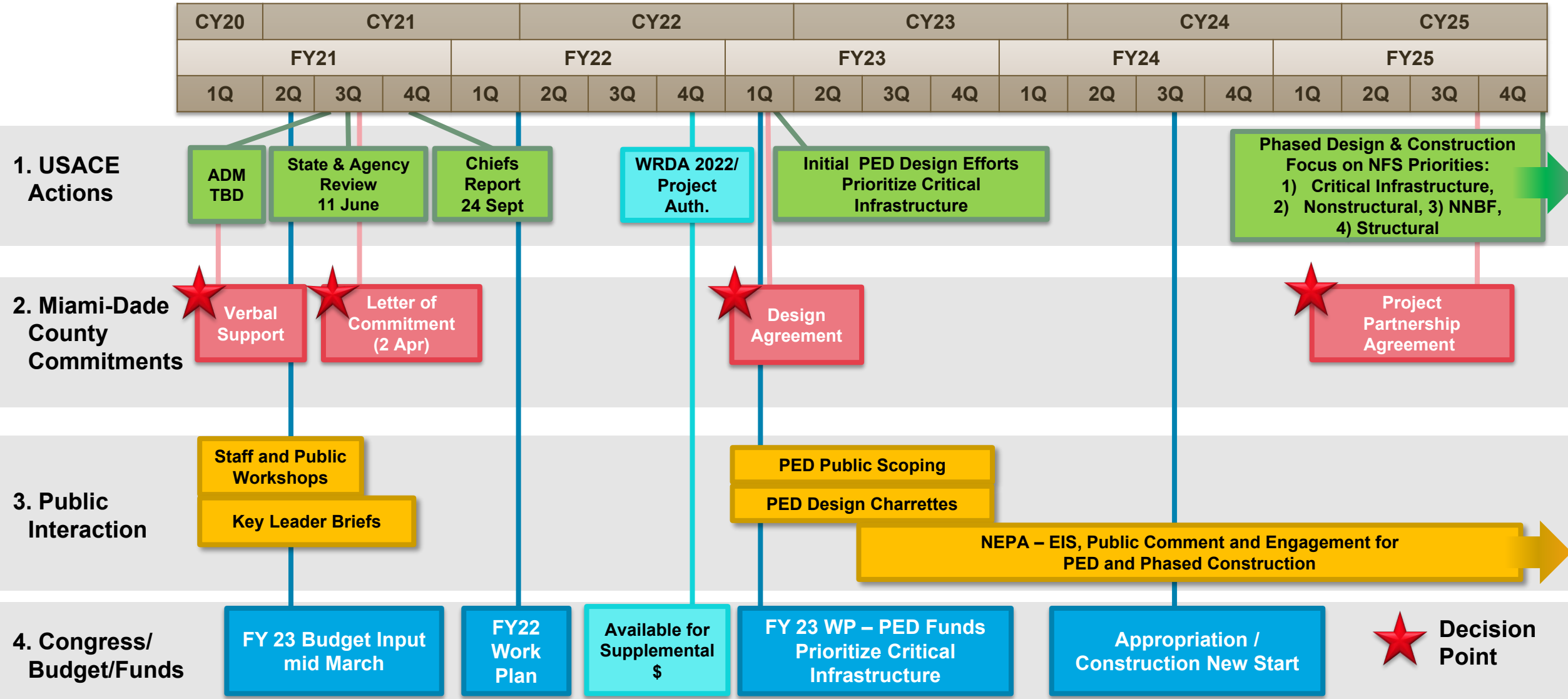
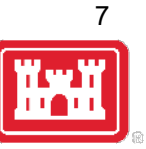
Norfolk Floodwall Along Residences



Architectural Features



PROJECT DECISION POINTS / KEY MILESTONES



★ Decision Point



CURRENT FEASIBILITY STUDY MILESTONE SCHEDULE



Signing of Feasibility Cost Share Agreement (CW130)	09 Oct 2018 (A)
Alternatives Milestone (CW261)	09 Jan 2019 (A)
In-Progress Review	07 May 2019 (A)
Tentatively Selected Plan Milestone (CW262)	17 Jan 2020 (A)
Release of Draft Study for Concurrent Reviews (CW250)	5 June 2020 (A)
Agency Decision Milestone (CW263)	18 Nov 2020 (A)
2 nd Agency Decision Milestone (Internal USACE Milestone)	TBD
Submit Final Report Package to MSC / Policy and Legal Compliance Review Team (CW160)	23 April 2021 (S)
State and Agency Review	11 June 2021 (S)
Signed Chief's Report (CW270)	24 Sep 2021 (S)



IMPLEMENTATION OF RECOMMENDED PLAN



Measure	Approximate Duration (Years)	FY Start	FY End	Priority
Critical Infrastructure	10	2026	2035	1
Nonstructural Measures	10	2026	2035	2
NNBF - Cutler Bay	5	2026	2030	3
Miami River Surge Barrier and associated features	10	2026	2035	4
Little River Surge Barrier and associated features	3	2028	2030	5
Biscayne Canal Surge Barrier and associated features	5	2031	2035	5
Mitigation (prior to construction of respective feature)	11	2025	2035	-

- Implementation strategy discussed and agreed upon with Miami-Dade County
- Critical infrastructure and nonstructural measures are first due to less design and construction time
 - Larger structural measures could still be in PED, obtaining permits, etc.



SUMMARY



- **Feedback - Thank you!**
- **Request community support and input on structural solutions**
- **USACE Civil Works Process –**
 - Significant flexibility/decision points – even after Congressional Authorization
 - Structural solution can be addressed through enhancements during design phase
- **Tremendous opportunity to reduce long term coastal storm risk to Miami**



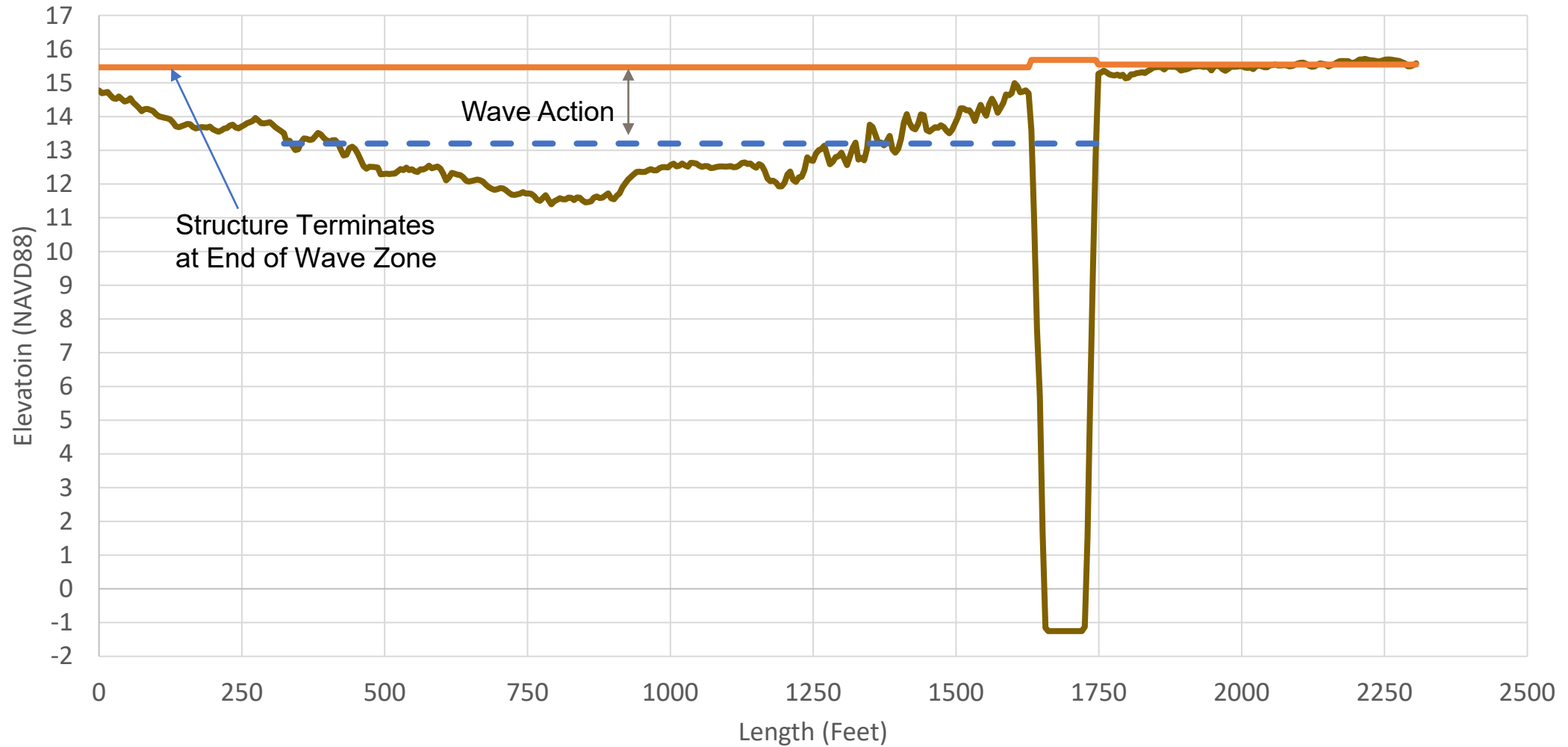
QUESTIONS?



BACKUP SLIDES



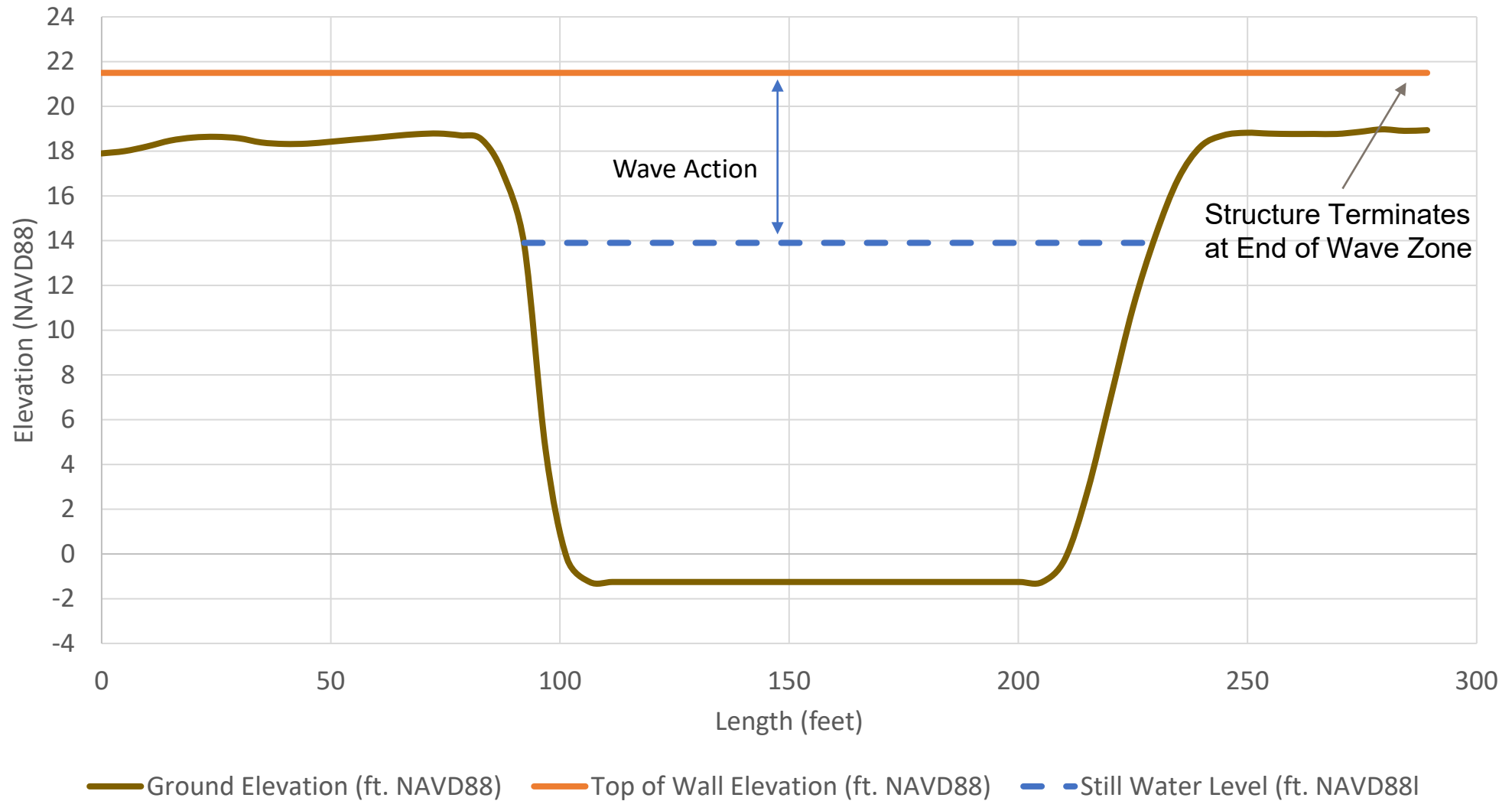
Proposed Structure Elevation Profile at Snapper Creek 200-yr (0.5% ACE) Storm Surge



— Ground Elevation (ft. NAVD88) — Top of Wall Elevation (ft. NAVD88) - - Still Water Level (ft. NAVD88)



Proposed Structure Elevation Profile at Coral Gables Way 200-yr (0.5% ACE) Storm Surge





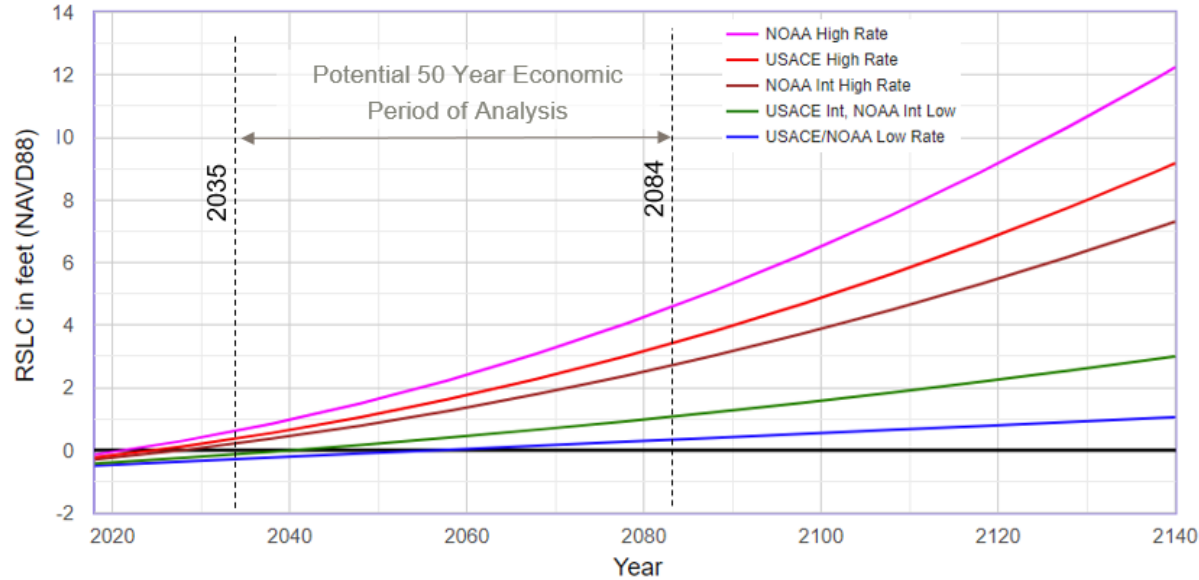
SEA LEVEL CHANGE

SE Florida region recognizes the USACE intermediate and high curves, but not the low in their sea level rise guidance

USACE sea level change curve calculator – NOAA gage 8723970, at Vaca Key, FL, is the nearest compliant gage

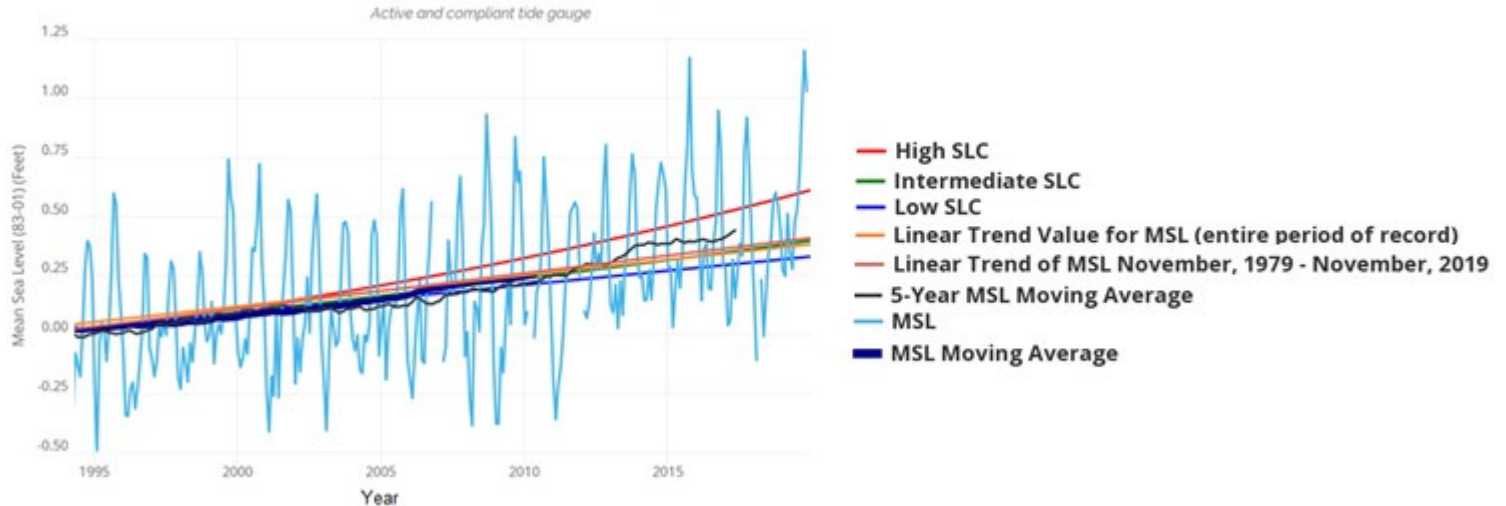
Local preference is to formulate using the NOAA high curve. District formulated to USACE high curve with approval from Climate Community of Practice. Sea level tracker shows Mean Sea Level (MSL) trending above intermediate curve for 20 years. The PDT will also look at project performance at USACE low and intermediate curves.

Estimated Relative Sea Level Change Projections - Gauge: 8723970, Vaca Key, FL



Projected SLR Increase (ft) to 2084 using 2019 sea level trend of 0.01263 ft/yr	
USACE Low	0.83
USACE Intermediate	1.52
USACE High	3.72
NOAA High	4.82

Sea Level Rise with USACE SLC Scenarios for Vaca Key, FL (8723970)





ENVIRONMENTAL COORDINATION



- Notice of Intent to prepare an Environmental Impact Statement (EIS) published 18 July 2019; Notice of Availability of draft Integrated Feasibility Report and Programmatic EIS published 5 June 2020

- Interagency meetings held approximately bi-monthly

- Participating/Cooperating Agencies:
 - Florida Department of Environmental Protection
 - Biscayne Bay Aquatic Preserve
 - Florida Department of Transportation*
 - U.S. Fish and Wildlife Service
 - National Park Service
 - Federal Emergency Management Agency
 - National Marine Fisheries Service *
 - U.S. Environmental Protection Agency*
 - U.S. Coast Guard
 - South Florida Water Management District

* = Cooperating Agencies