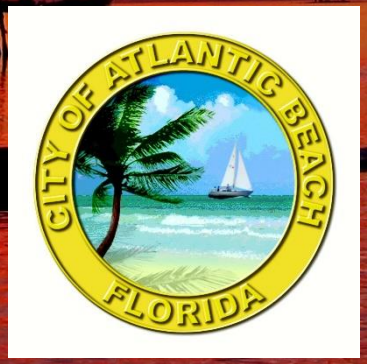
Coastal Vulnerability Assessment and Adaptation Update

Public Meeting

June 25, 2025

5:30



JonesEdmunds

Agenda

- Review Project Background, Goals, and Scope
- Coastal Vulnerability Assessment Update Recap
- Marsh Baseline Survey
- Community Asset Rating
- Adaptation Planning
- Next Steps

Project Background

Project Goals

- Update the City's Coastal Vulnerability Assessment to satisfy FDEP requirements.
- Update future conditions tidal, storm-surge, and rainfall-driven flood mapping.
- Identify vulnerable critical community infrastructure and prioritize them.
- Complete a baseline survey of the City's coastal marsh.
- Update the City's Adaptation Plan

ably with risk when measuring hazard impacts. NOAA provides a useful definition of vulnerability that informs the follow-on actions described later in this chapter (2010):

"The potential for loss of or harm/damage to exposed assets largely due to complex interactions among natural processes, land use decisions, and community resilience." [6]

Why do you need a Vulnerability Assessment?

A Vulnerability Assessment helps a community determine which structural and social assets are likely to be impacted by future coastal flooding and sea level rise.

Fla. Dept. of Environment Protection = FDEP
Sea Level Rise = SLR
Vulnerability Assessment = VA

Grant Funding

Project is 94% Grant Funded

Community Development Block Grant – Mitigation Program - $87k

- Flood Mapping Updates – Covered in February 2025
- Marsh Baseline Survey – Covered in February 2025
- Public Meetings
- Adaptation Plan Updates – Covered Today

FDEP Resilient Florida Grant Program – Planning Grant - $65k

- Data Collection – Covered in February 2025
- Flood Mapping Updates – Covered in February 2025
- Sensitivity Analysis – Covered Today
- Reporting

VA Update Recap

VA Update Recap: Major Changes

2019 and 2021 VA

- 2044, 2069, and 2119 planning horizons.
- Intermediate-high NOAA 2017 SLR Projections.
- Critical asset inventory.
- 2007 LiDAR topographic data.

2025 Update

- 2050 and 2080 planning horizons.
- Intermediate-low and intermediate NOAA 2022 SLR Projections.
- Expanded critical asset inventory.
- 2018 LiDAR topographic data.

PowerPoint Presentation from February 20th Public Input Meeting

VA Update Recap: Critical Community Assets

Asset Type	Count
Affordable Public Housing	10
Airports	0
Bridges	0
Bus Terminals	0
Colleges and Universities	0
Communications Facilities	4
Community Centers	4
Conservation Lands	5
Correctional Facilities	0
Disaster Debris Management Sites	3
Disaster Recovery Centers	1
Drinking Water Facilities	9
Electric Production and Supply Facilities	0
Emergency Medical Service Facilities	0
Emergency Operation Centers	1
Fire Stations	1
Health Care Facilities	10
Historical and Cultural Assets	2
Hospitals	0

Asset Type	Count
Law Enforcement Facilities	1
Local Government Facilities	3
Logistical Staging Areas	2
Major Roadways	83
Marinas	0
Military Installations	0
Parks	16
Ports	0
Rail Facilities	0
Railroad Bridges	0
Risk Shelter Inventory	1
Schools	5
Shorelines	2
Solid and Hazardous Waste Facilities	2
State Government Facilities	0
Stormwater Treatment Facilities and Pump Stations	1
Surface Waters	38
Wastewater Treatment Facilities and Lift Stations	33
Water Utility Conveyance Systems	9
Wetlands	109

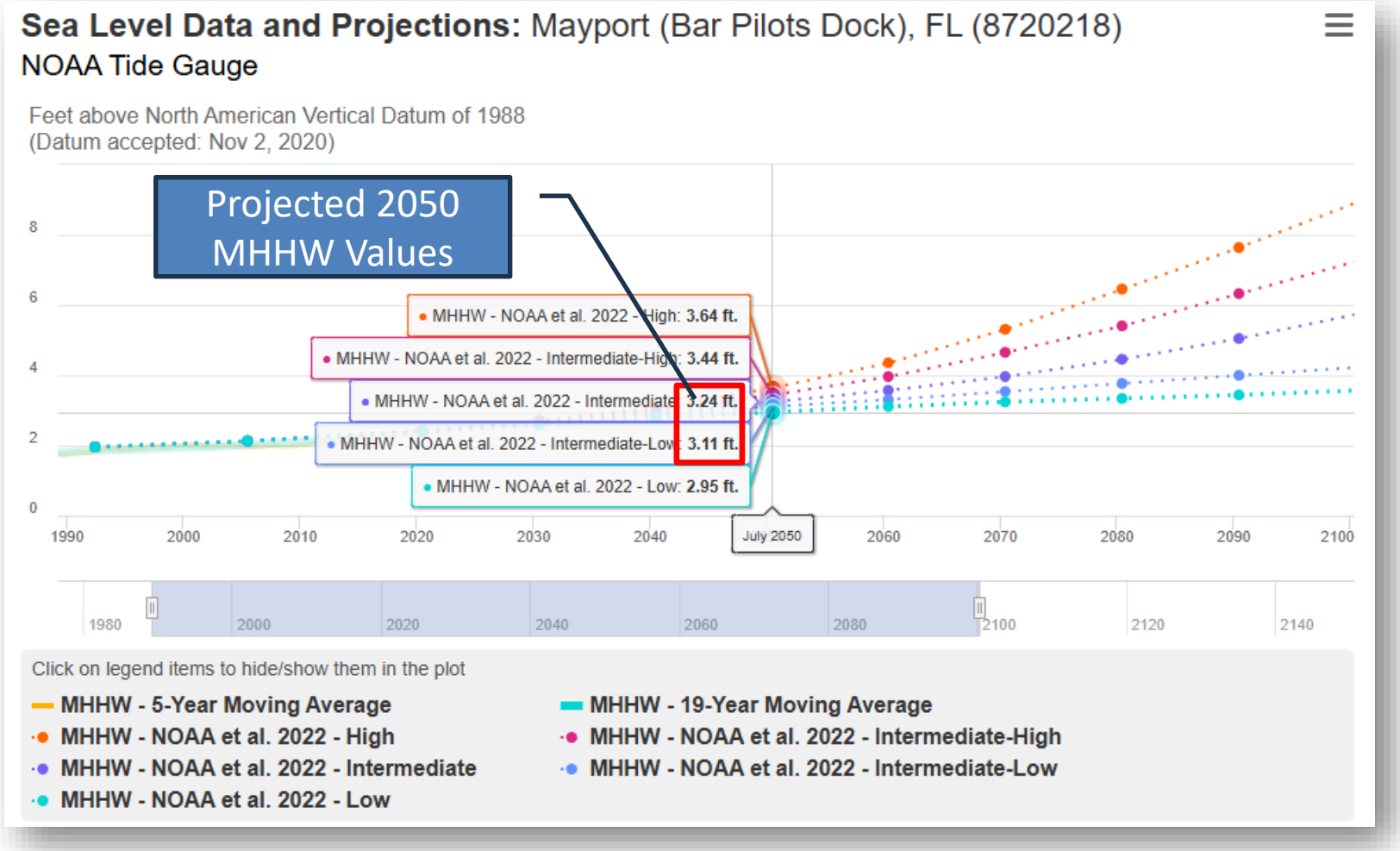
VA Update Recap: Flood Mapping Scenarios

- 20 scenarios are required by State Statute.
- Calculate asset flood depths for each scenario.
- City also chose to map combined surge and rainfall flooding for the 100-year event.

Flooding Type	MHHW+2’	100-Year	500-Year
Tidal/Sunny-Day Flooding			
Existing	X		
2050 Int-Low	X		
2080 Int	X		
2080 Int-Low	X		
2080 Int	X		
Rainfall Induced Flooding			
Existing		X	X
2050 Int-Low		X	X
2080 Int		X	X
2080 Int-Low		X	X
2080 Int		X	X
Storm Surge Flooding			
Existing		X	
2050 Int-Low		X	
2080 Int		X	
2080 Int-Low		X	
2080 Int		X	

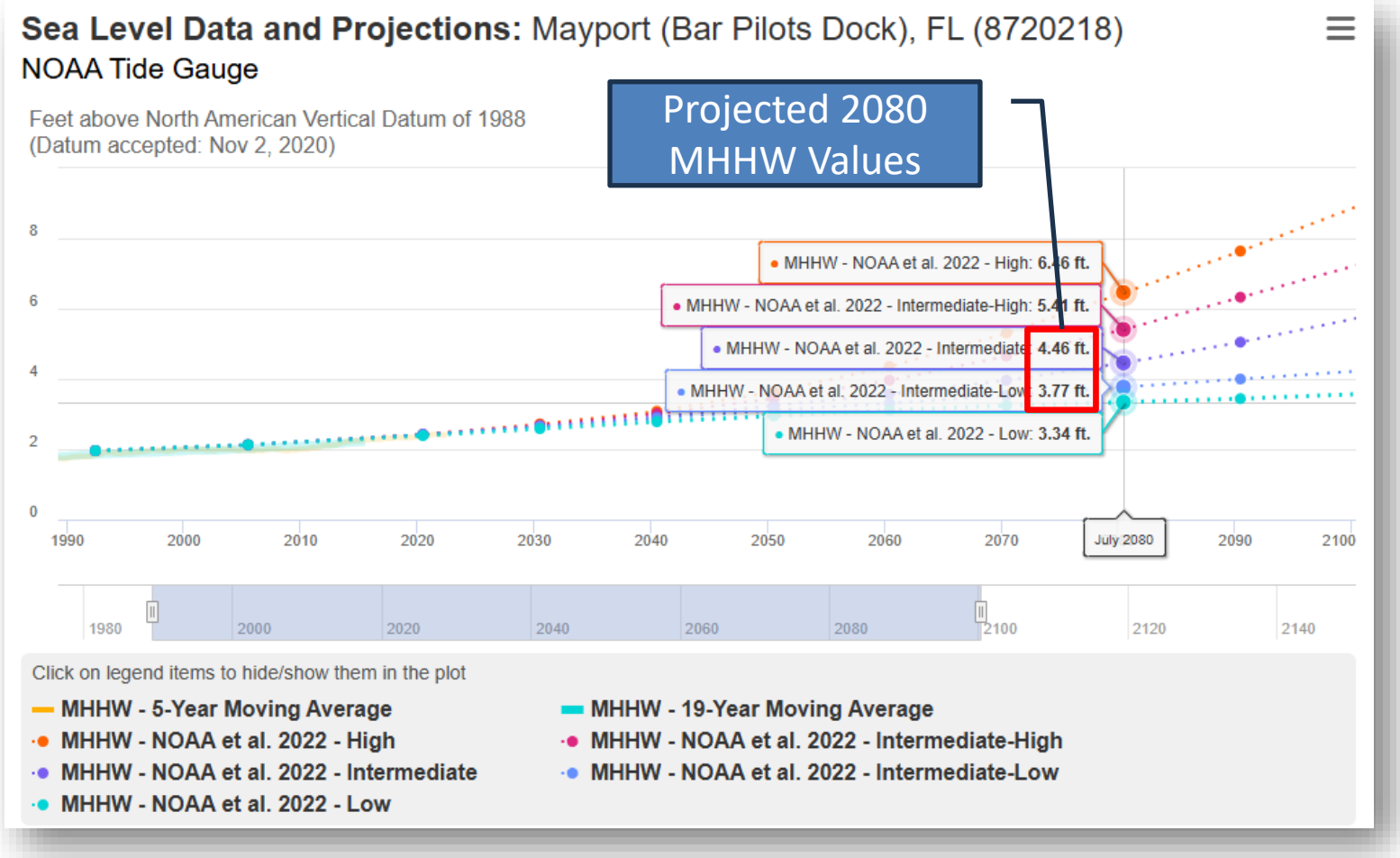
Notes: **Orange** highlighted cells indicate required scenarios.
MHHW = Mean Higher High Water

Sea-Level-Rise Projections



Current MHHW Elev = ~2.4 ft. NAVD88

Sea-Level-Rise Projections



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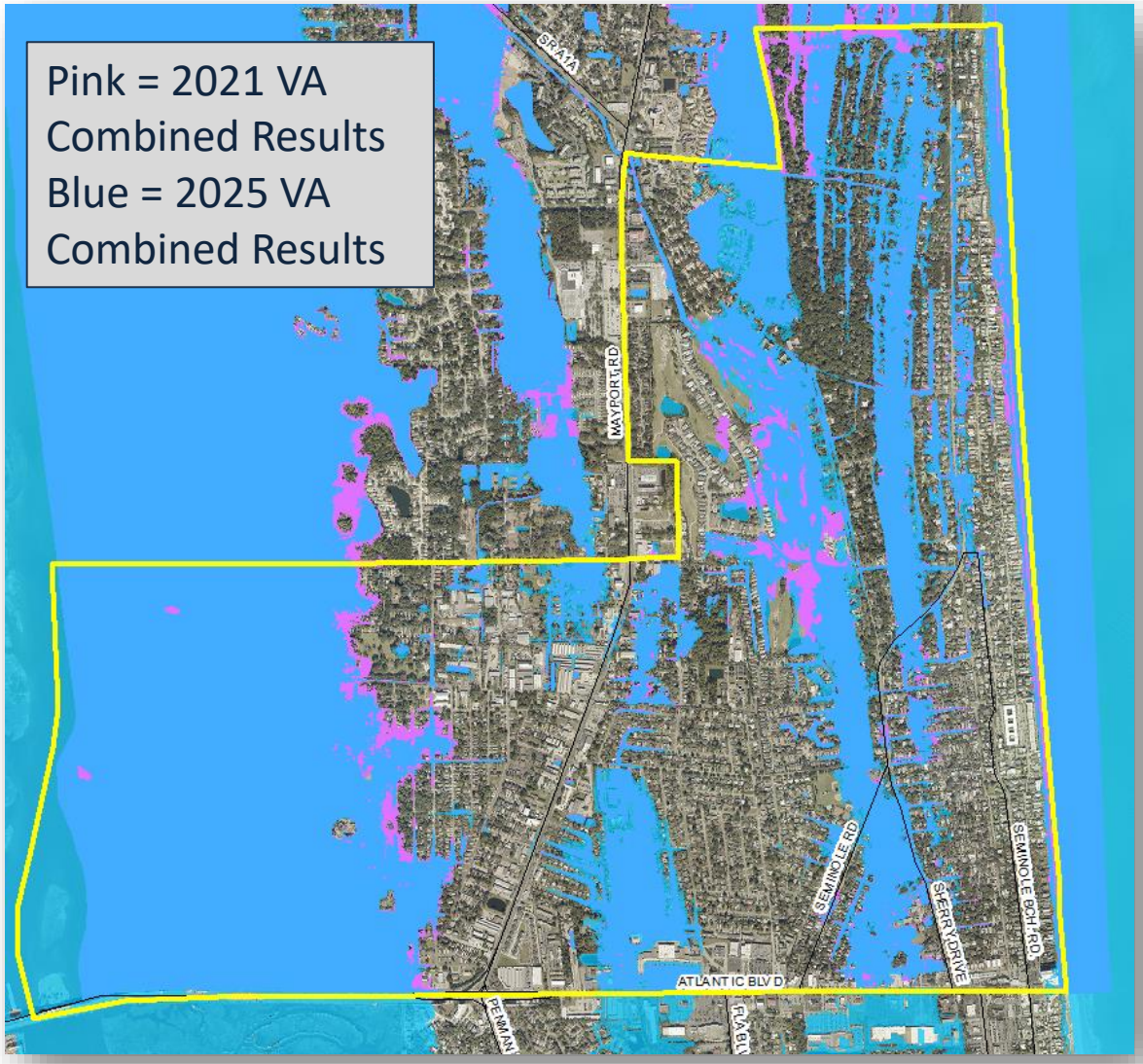
Comparison to Previous Results

Key Differences

- 2007 vs. 2018 FDEM LiDAR for Inundation Mapping
- 2044 Intermediate-High NOAA 2017 vs. 2050 Intermediate NOAA 2022 = Slightly Reduced Surge Inundation Extent
- Rainfall Change Factors Not Used Previously = Expanded Rainfall Inundation Extent



Marsh Baseline Survey

Marsh Baseline Survey

Purpose/Reason

- Monitor marsh extents over time to quantify impacts from sea-level-rise & erosion and identify adaptation needs.
- The City's marsh provides critical habitat as well as flood protection during tropical storms and hurricanes.
- Marsh loss has been reported by residents.

Methodology

- High-resolution (3-cm) RGB aerial imagery collected.
- High-resolution multispectral imagery collected.
- Primary marsh habitats mapped using ArcGIS.
- Repeat every 5 years to monitor changes.

Marsh Baseline Survey

Saltmarsh Loss – 1980 to Present

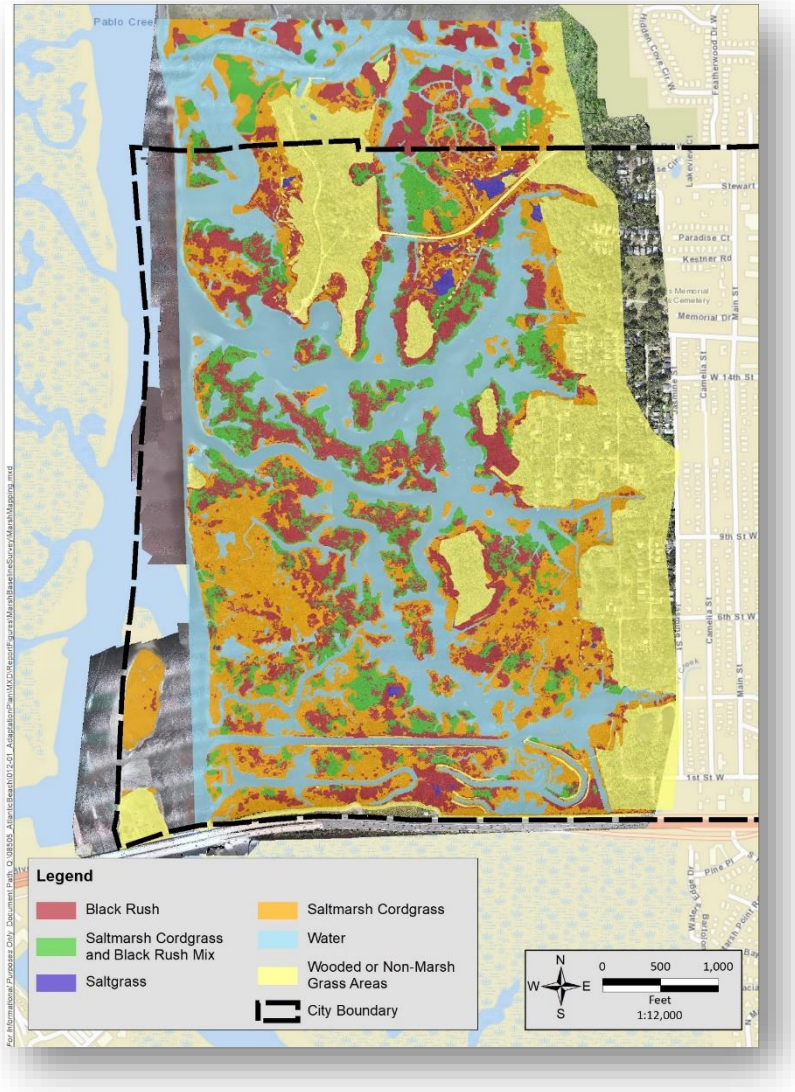
1980

Present Day

Marsh Baseline Survey

Mapped 7 Primary Habitats

- Water – 189 ac.
- Black Rush – 103 ac.
- Saltgrass – 2.5 ac.
- Saltmarsh Cordgrass – 137 ac.
- Black Rush and Saltmarsh Cordgrass mixture – 62 ac.
- Wooded / Non-Marsh Grass Areas – 138 ac.
- Mangrove – 0.01 ac.



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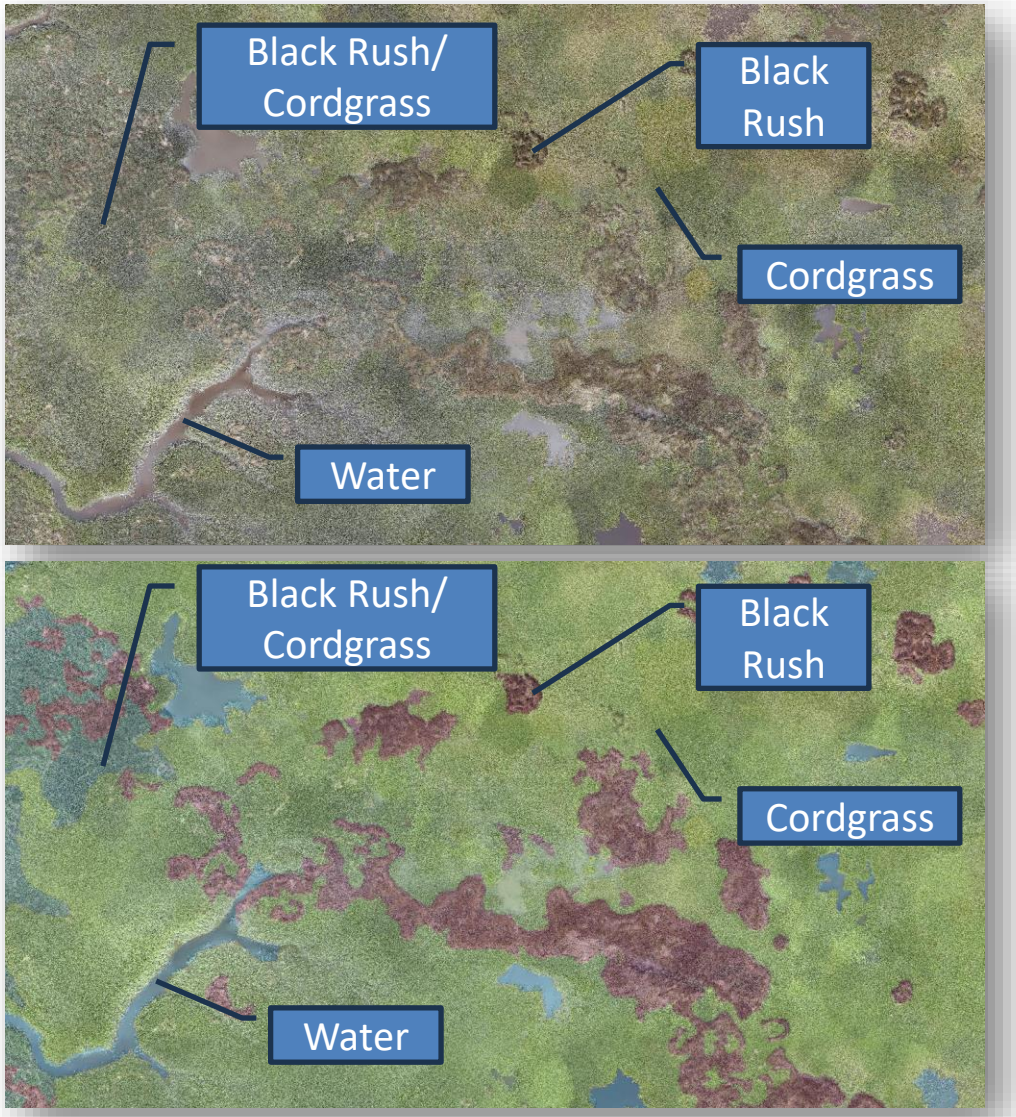


Community Asset Rating

Community Asset Rating

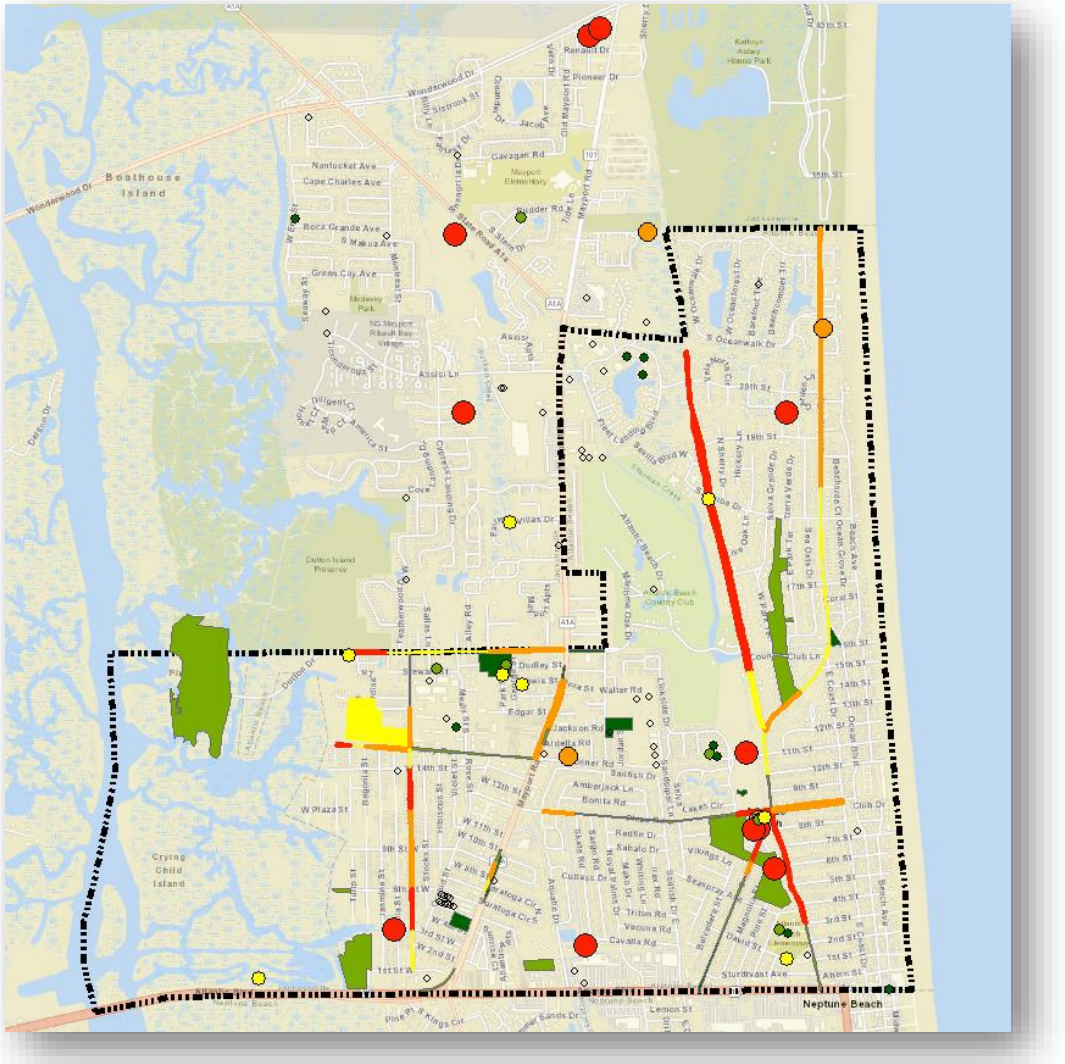
Asset Rating

- 346 total community assets.
- Frequency of flooding.
- Sensitivity to the depth of flooding.
- Impact to the community.
- Rated as highest, high, medium, low, lowest, or not vulnerable/sensitive.
- Purpose: Identify community assets with adaptation needs.

Asset Type	Total	Priority Rating					
		Highest	High	Medium	Low	Lowest	N/A
Affordable Public Housing	10						10
Communication Facilities	4			1		1	2
Community Centers	4				1		3
Conservation Lands	5						5
Disaster Debris Site	3	1					2
Disaster Recovery Center	1						1
Drinking Water Facilities	9				1	1	7
Emergency Operations Center	1				1		
Fire Stations	1		1				
Health Care Facilities	10					3	7
Historical and Cultural Assets	2			1		1	
Law Enforcement Facilities	1			1			
Lift Stations	32	8	3	5	2	1	13
Local Government Facilities	3	2					1
Logistical Staging Area	2			1			1
Parks	16				8	4	4
Risk Shelter Inventory	1						1
Roads	83	10	19	11	11	7	25
Schools	5			1	1	1	2
Shorelines	2						2
Stormwater Facilities	1					1	
Solid and Hazardous Waste Facilities	2					1	1
Surface Waters	38					1	37
Waste Water Facilities	1						1
Wetlands	109						109
Total	**346**	**21**	**23**	**21**	**25**	**22**	**234**

Community Asset Rating

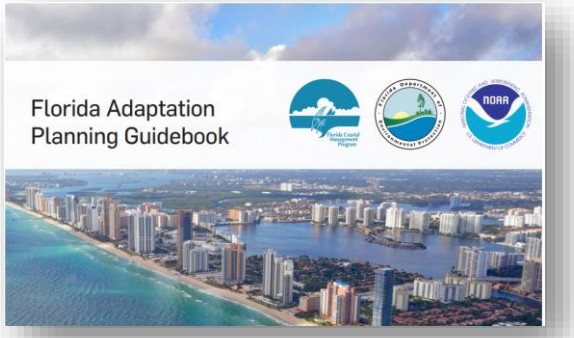
Purpose: Identify community assets with adaptation needs.



Adaptation Planning

Adaptation Planning: Background

Adaptation Planning – The steps a community takes to become more resilient to the impacts of flooding and sea-level-rise.



Assess Adaptive Capacity

Identify Adaptation Needs

Prioritize Adaptation Needs

Identify Adaptation Strategies

Prioritize Adaptation Strategies

Implement Adaptation Strategies

Adaptation Planning: Background

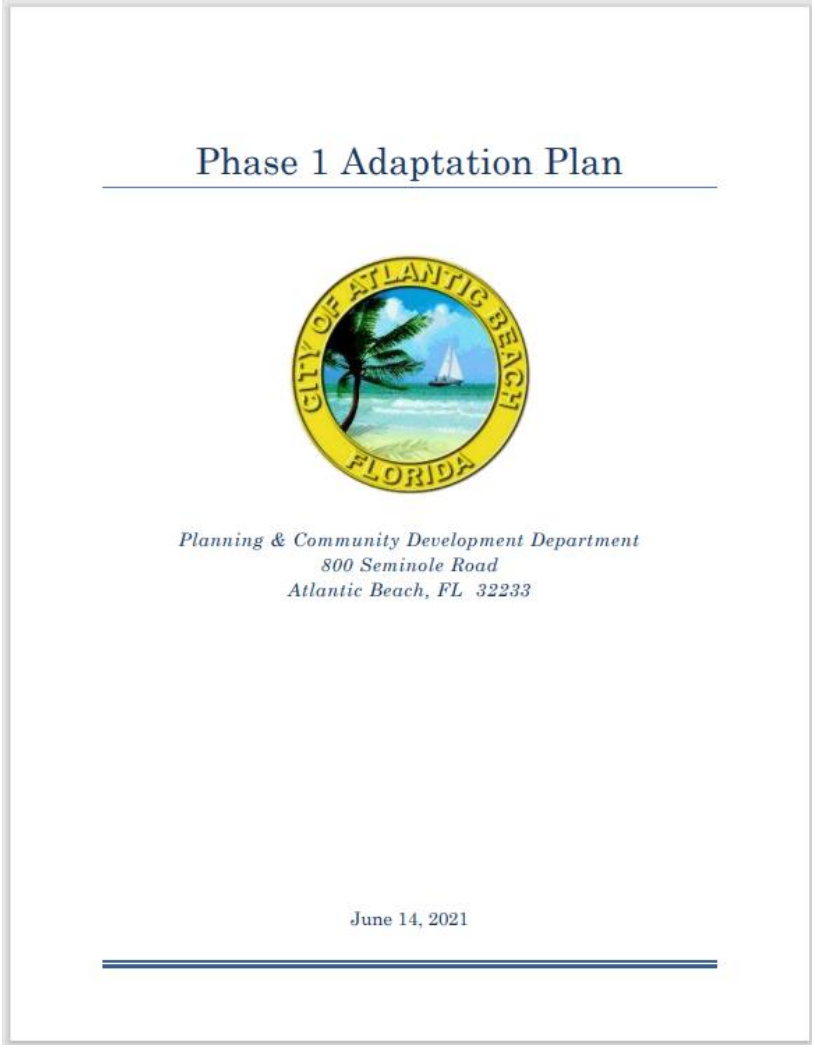
Adaptation Strategy Examples

- Protection – Seawalls, revetments, living shorelines, etc.
- Accommodation – Flood-proofing/raising structures and critical infrastructure.
- Retreat – Home buyout programs, land swaps, etc.
- Avoidance - Land development regulations/codes, zoning regulations, etc.

Adaptation Planning: Focus Areas

Adaptation Focus Areas from 2021 Plan

- Citywide
- Areas West of Mayport Road
- Major Drainageways
- Major Roadways
- Critical Utility Infrastructure
- Critical Public Facilities



Phase 1 Adaptation Plan

Planning & Community Development Department
800 Seminole Road
Atlantic Beach, FL 32233

June 14, 2021

Adaptation Planning: Strategy Updates

Citywide

2021 Adaptation Plan

- Included 17 recommended changes and updates to City policies and ordinances.

2025 Update

- No additional strategies are proposed at this time.

Adaptation Planning: Strategy Updates

Areas West of Mayport Road

2021 Adaptation Plan

- Commission a study to evaluate options for protecting this area.
- Complete a marsh baseline survey.

2025 Update

- Identifies 6 locations where roadway raising, backflow prevention, and/or stormwater pump stations could be considered to protect from tidal and surge-driven flooding.
- Recommends updating the marsh baseline survey every 5 years.

Adaptation Planning: Strategy Updates

Major Drainageways

2021 Adaptation Plan

- Evaluate current drainage CIP projects to account for increasing flooding due to sea-level-rise.
- Develop a 50-year plan for managing the major drainage ways.
- Coordinate/lobby with FDOT to improve the SRA1A Pucket Creek box culverts.

2025 Update

- Identifies locations on Hopkins Creek and Sherman Creek to consider for large-scale backflow prevention and stormwater pump stations.
- Identifies 2 potential flow diversion projects to reduce flooding on Hopkins Creek.
- Identifies 6 locations on Hopkins Creek and 4 location on Sherman Creek for potential backflow prevention measures to reduce tidal flooding.
- Identifies potential locations on Hopkins and Sherman Creeks for large-scale backflow prevention projects (i.e. amil gates, floating weirs, etc.)
- Adds the Dora Drive stormwater pond project.

Adaptation Planning: Strategy Updates

Major Roadways

2021 Adaptation Plan

- Update the pavement management plan to consider resilience and results from the VA.
- Evaluate minor arterial roads to reduce chronic and acute flooding.
- Share VA data with FDOT.

2025 Update

- Identifies 5 vulnerable major roadway segments that should be considered for future improvements to reduce existing conditions flood vulnerabilities.

Adaptation Planning: Strategy Updates

Critical Utility Infrastructure

2021 Adaptation Plan

- Commission studies for vulnerable critical utility infrastructure to identify improvements to protect these assets from flooding.

2025 Update

- Identifies 10 vulnerable sanitary sewer lift stations with a priority rating of “highest” or “high” that should be prioritized for improvements.

Adaptation Planning: Strategy Updates

Critical Public Facilities

2021 Adaptation Plan

- Commission studies for vulnerable critical public facilities to identify improvements to protect these assets from flooding.

2025 Update

- Identifies City Hall, the Commission Chamber building, and the Public Safety building as the highest priority vulnerable critical public facilities that should continue to be evaluated for improvements.
- Conversion of the Marsh Oaks Community Center into a resiliency hub.

Next Steps

- Finalize the Vulnerability Assessment and Adaptation Plan updates based on public and City official feedback.
- July 14, 2025: Present the final documents to City Commission for approval.
- Post finalized VA and AP documents to the City’s website.

Questions?