

RESILIENT MARTIN

SEA LEVEL RISE PLAN





MARTIN COUNTY SEA LEVEL RISE PLAN

- Background
- Development Process
- Resilience Planning
- Martin County Vulnerability Assessment
- Sector Impacts
- Economic Analysis
- Implementation Recommendations



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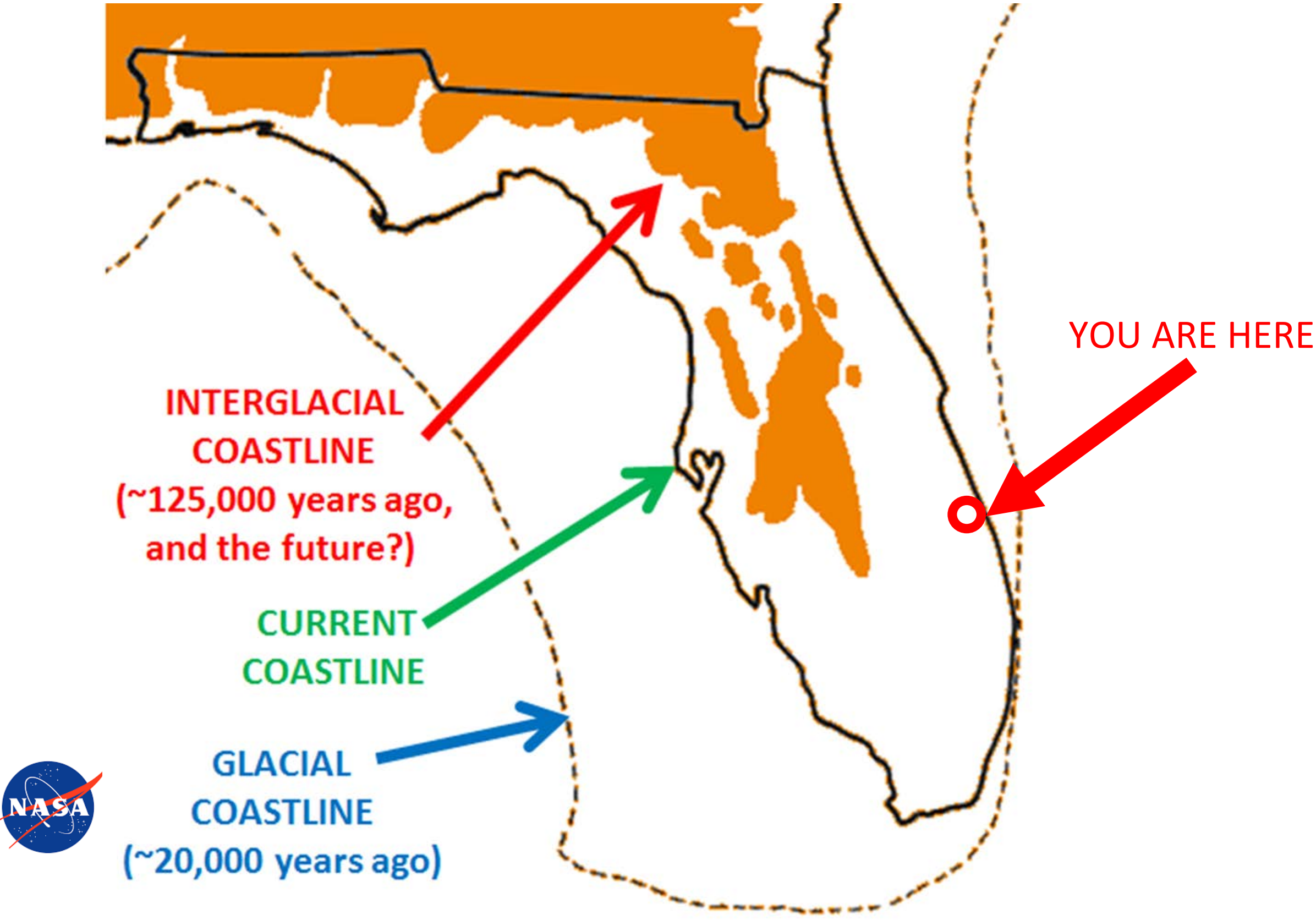


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WHAT IS CLIMATE CHANGE?



CLIMATE CHANGE -- HOW DOES IT WORK AND WHAT DOES IT DO?





EFFECTS OF CLIMATE CHANGE

- ▶ Environmental
- ▶ Economic
- ▶ Personal

Coastal Dynamics of Sea Level Rise with Tides



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EFFECTS OF CLIMATE CHANGE

- ▶ Increased Temperature
- ▶ Rising Sea Levels
- ▶ More Powerful Storms
- ▶ Greater Flooding
- ▶ Threats To Water Table
- ▶ Impaired Water Quality
- ▶ Ocean Acidification
- ▶ Vector Borne Disease
- ▶ Economic and property value impacts



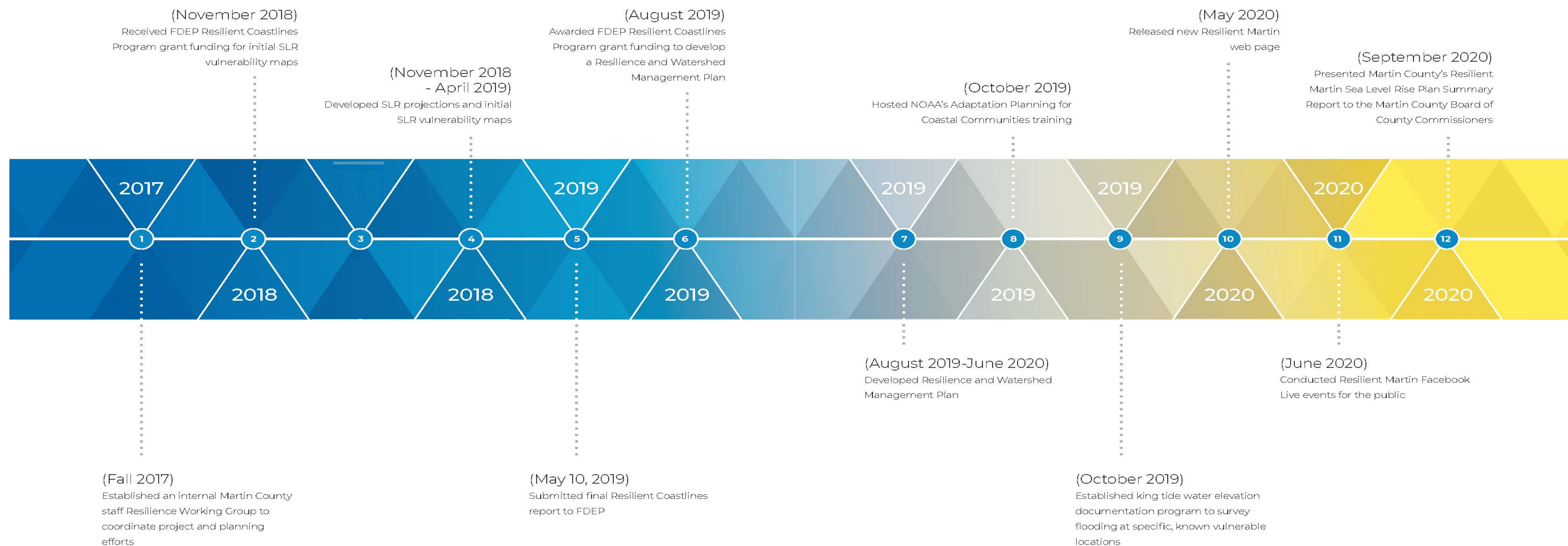
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SEA LEVEL RISE PLAN DEVELOPMENT PROCESS



The following presents the history of recent SLR project efforts.

PROJECT MILESTONES/TIMELINE





GUIDING PRINCIPLES

- ▶ Interdisciplinary planning
- ▶ Open communication
- ▶ Establish/maintain partnerships
- ▶ Quality data





KEY PARTNERSHIPS

- ▶ Florida's Resilient Coastlines Program
- ▶ NOAA's Office of Coastal Management
- ▶ FEMA's Community Rating System
- ▶ SE Florida Climate Compact
- ▶ Martin County Resilience Working Group
- ▶ The Public



VULNERABILITY PLANNING IS LINKED TO FEMA'S COMMUNITY RATING SYSTEM PROGRAM

CRS AND SEA LEVEL RISE

- ▶ Better flood management
 - bigger premium discounts
 - safer community
- ▶ NEW - CRS credit for sea level rise planning
- ▶ Development of Martin County's Watershed Management Plan



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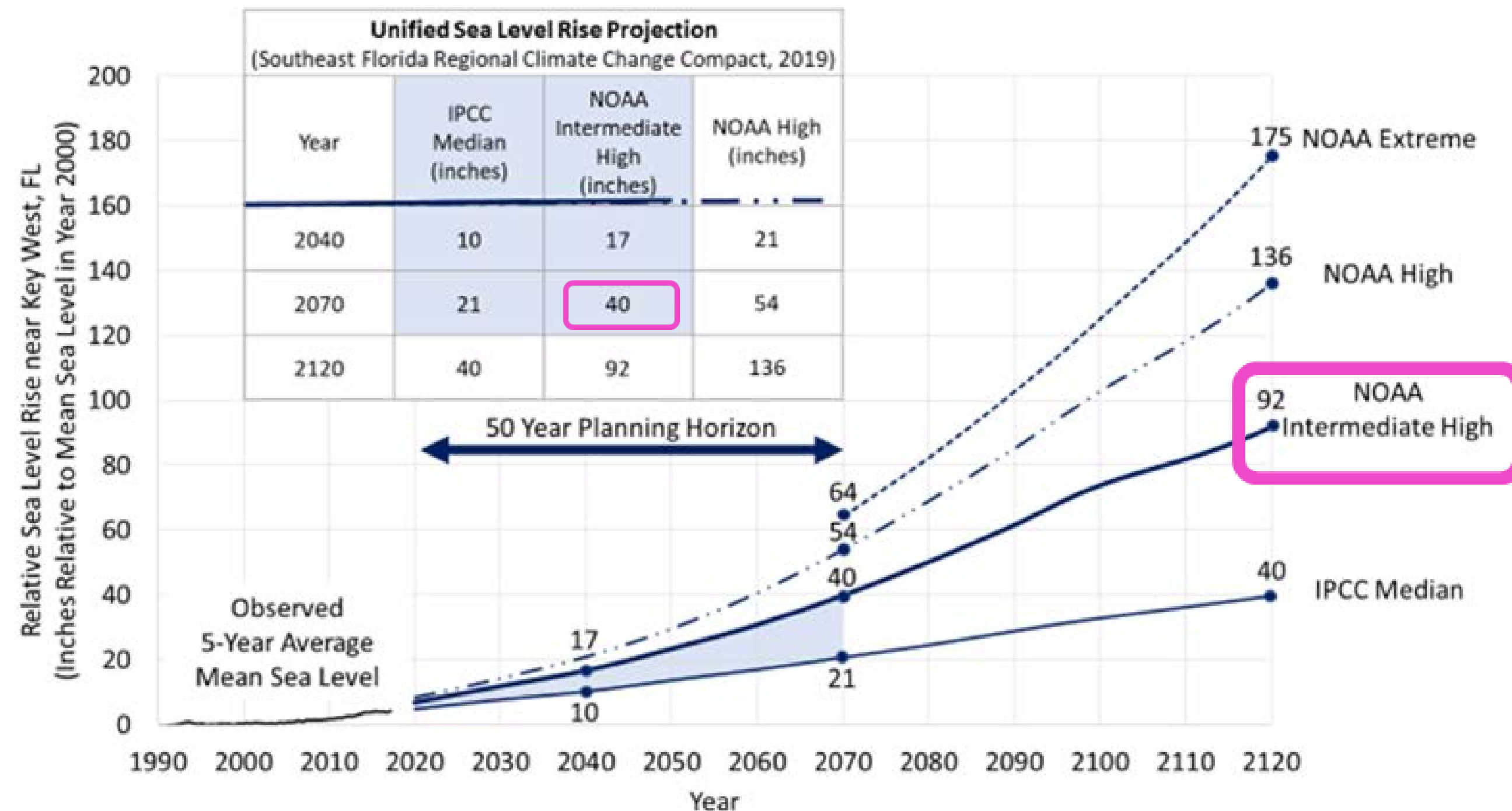
ASSESSING VULNERABILITY



UPDATED 2019 SEA LEVEL RISE PROJECTIONS IN OUR VULNERABILITY ANALYSIS

SOUTHEAST FLORIDA REGIONAL CLIMATE COMPACT PROJECTIONS

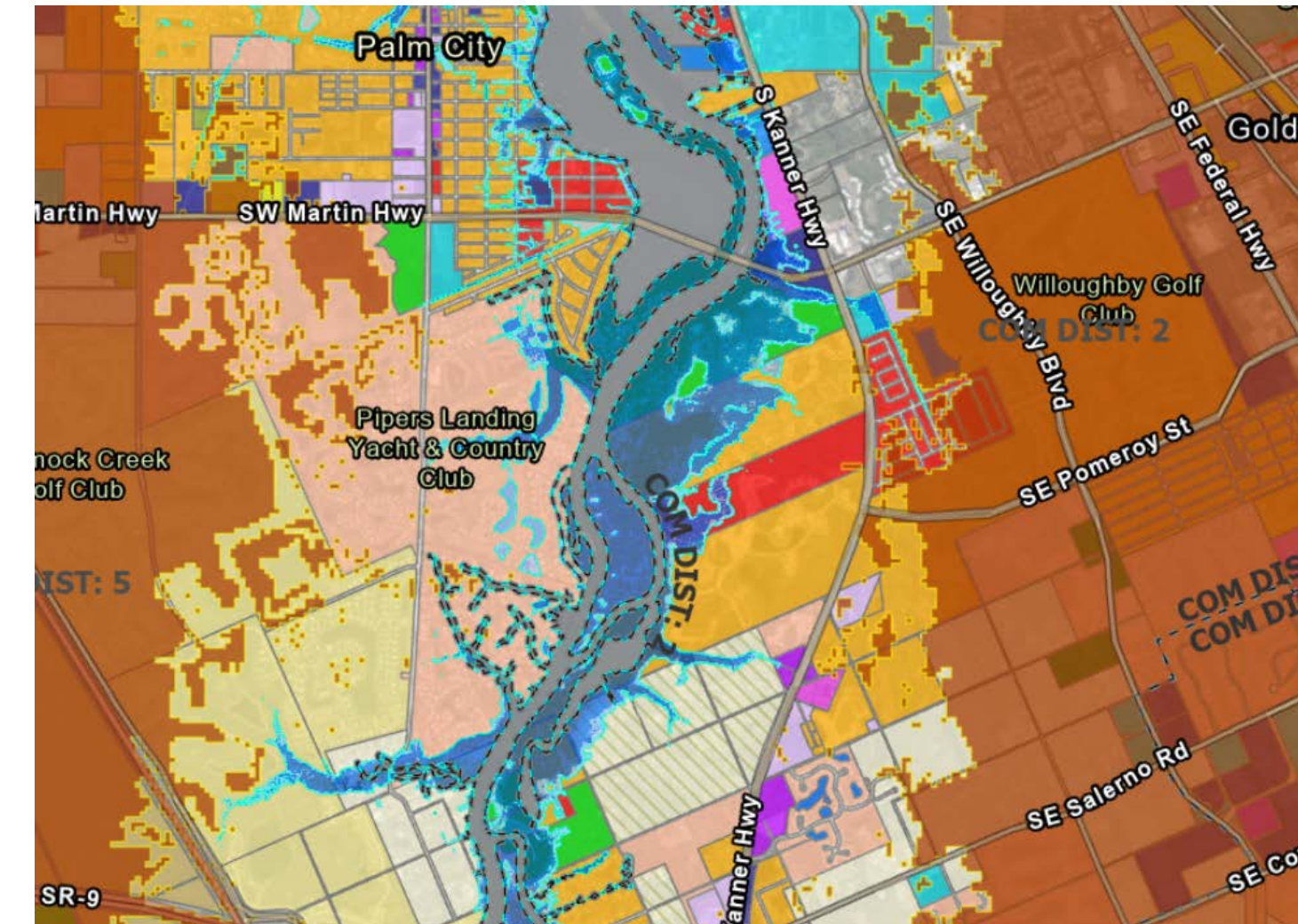
- ▶ Martin County Vulnerability Assessment uses the **NOAA Intermediate** sea level rise projection
- ▶ Focus on the 2070 future condition



PERSONAL IMPACTS - QUALITY OF LIFE

MODELING AND MAPPING FUTURE WATER CONDITIONS FROM SALTWATER INUNDATION

- ▶ To assess potential vulnerability
- ▶ Areas vulnerable to flooding and when
- ▶ Analysis stretches across data collected
- ▶ Community level impacts
- ▶ Focused on 2070



DATA-DRIVEN PLANNING

- ▶ In-depth consideration of future conditions
- ▶ Project prioritization
- ▶ Refined analysis: Phase 1 – Phase 2

Phase 1 (CM933)

Identify by location using estimated ground elevation to prioritize future efforts

Figure 1: Stages of Stormwater Infrastructure Failure due to Sea Level Rise

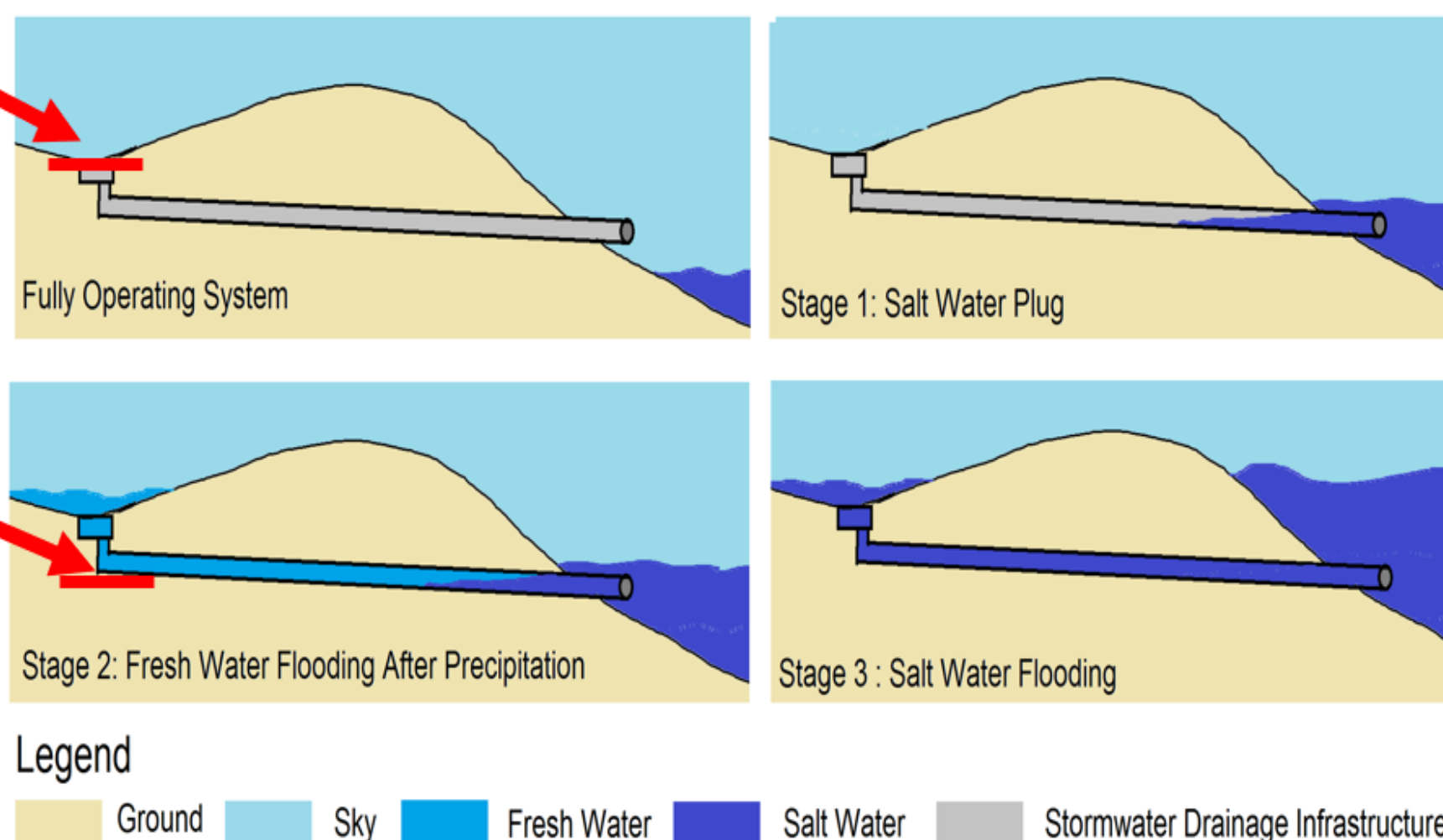
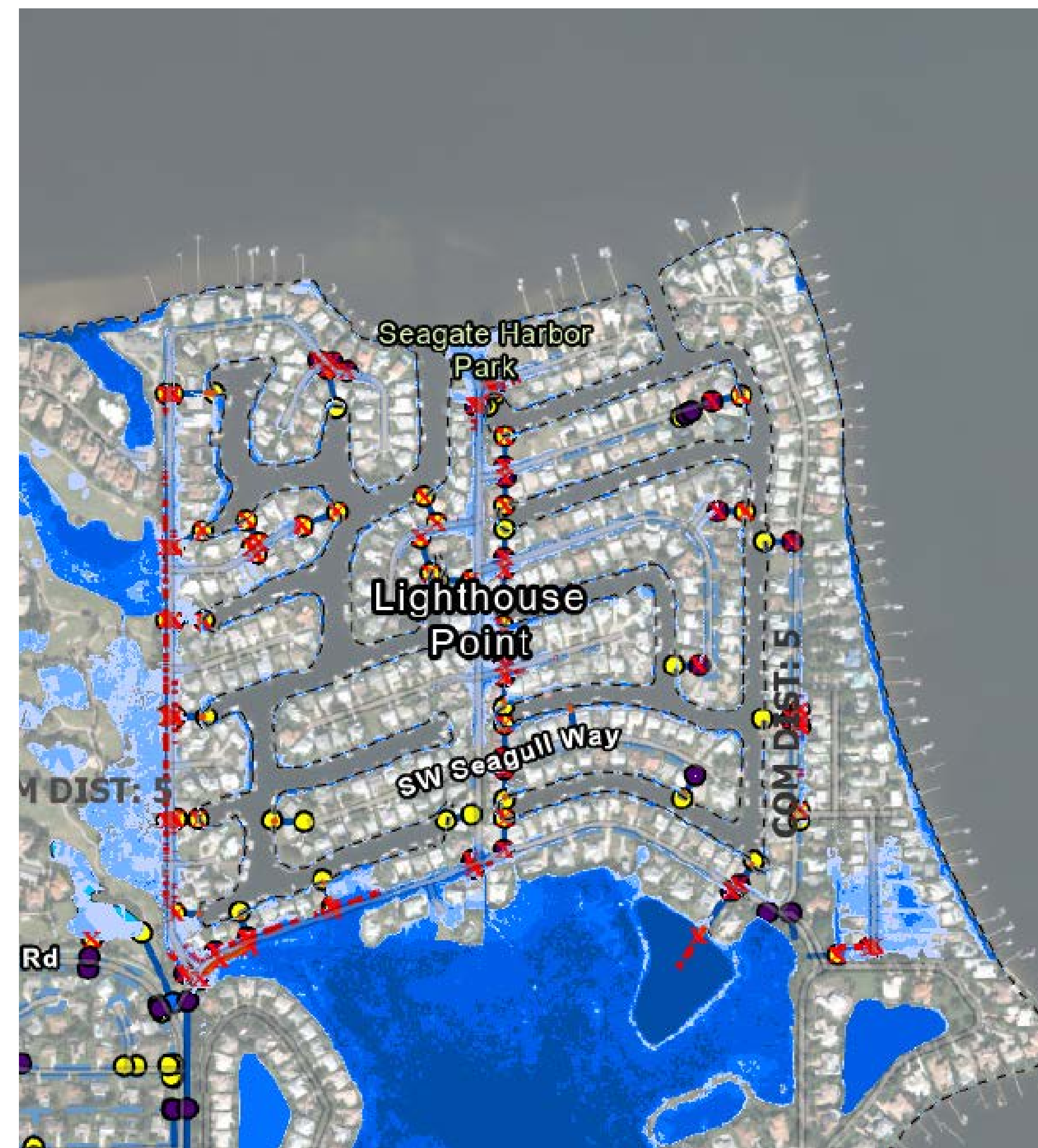


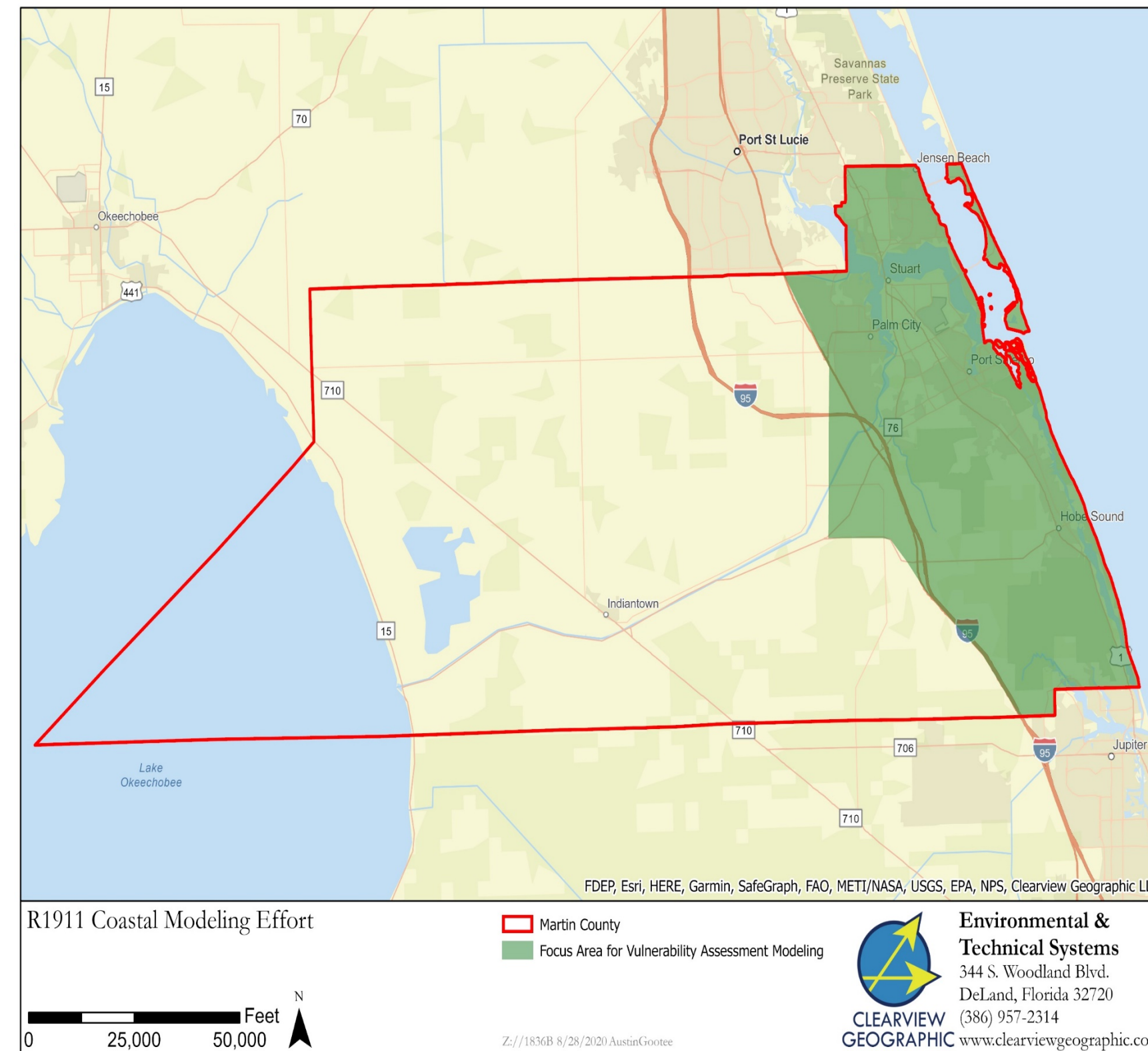
Figure by Emily Niederman



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COASTAL SEA LEVEL RISE ANALYSIS

- CRS required analysis
- Address 50% developed area
- Multiple years
- Impact by sector

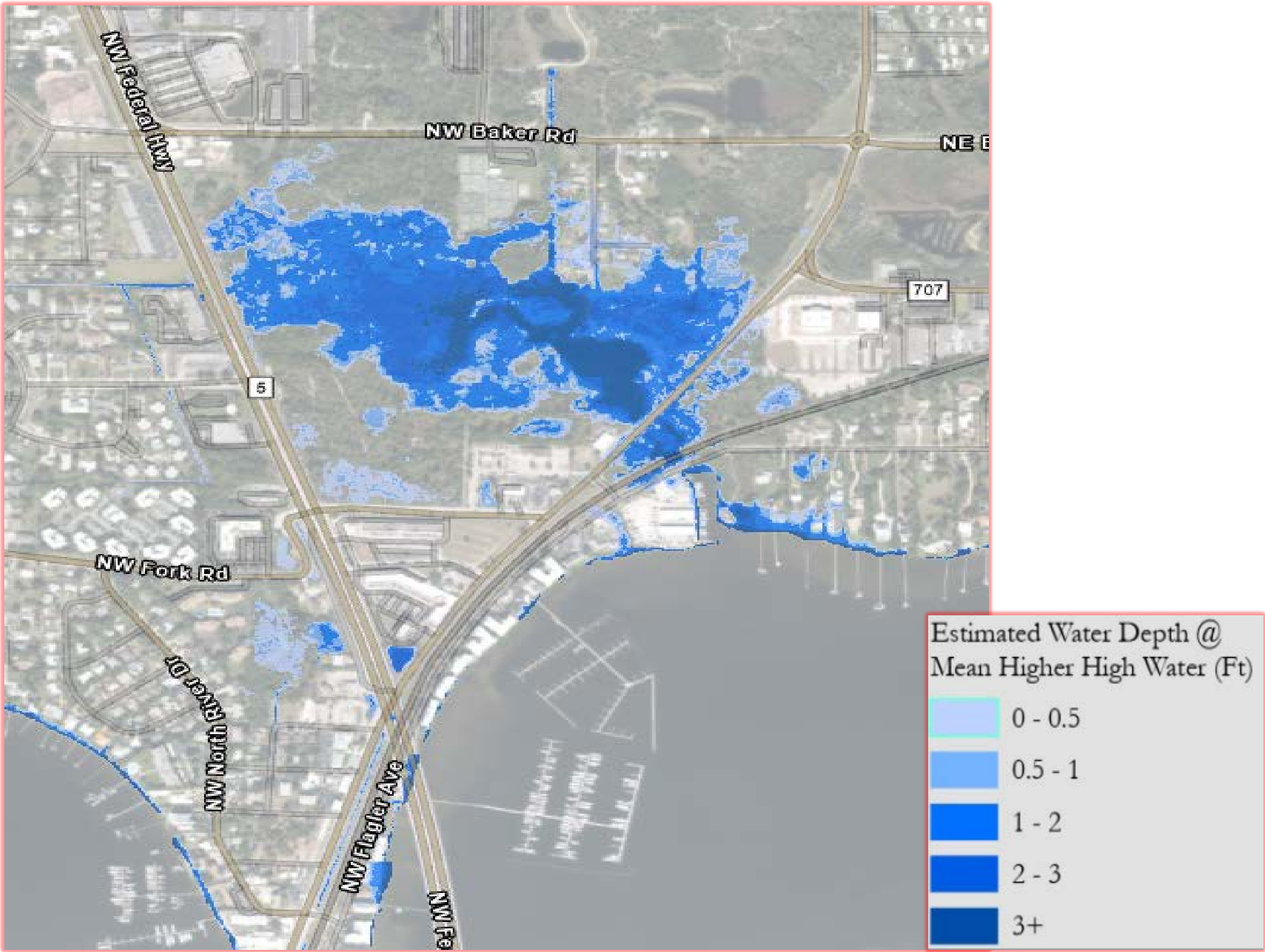


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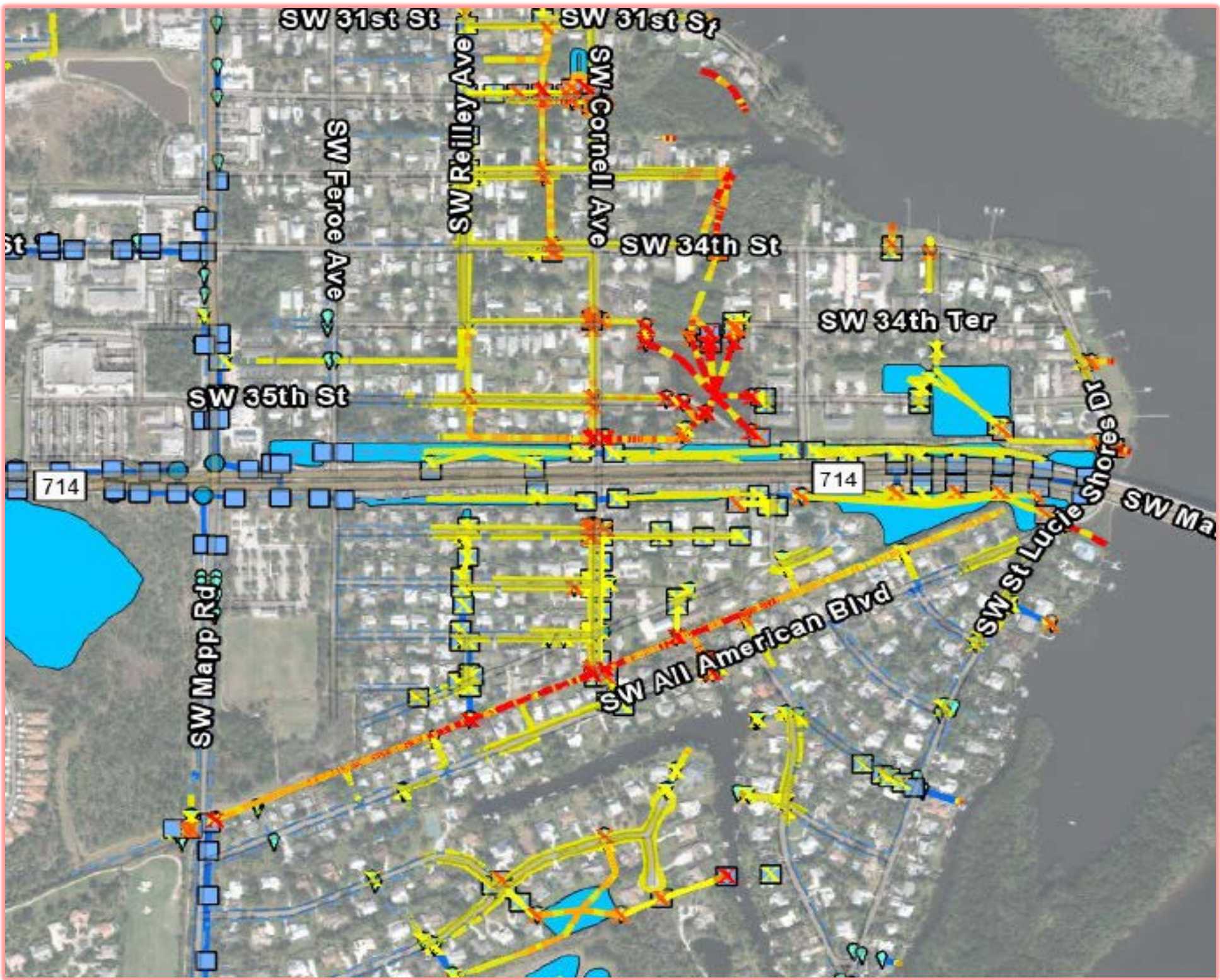
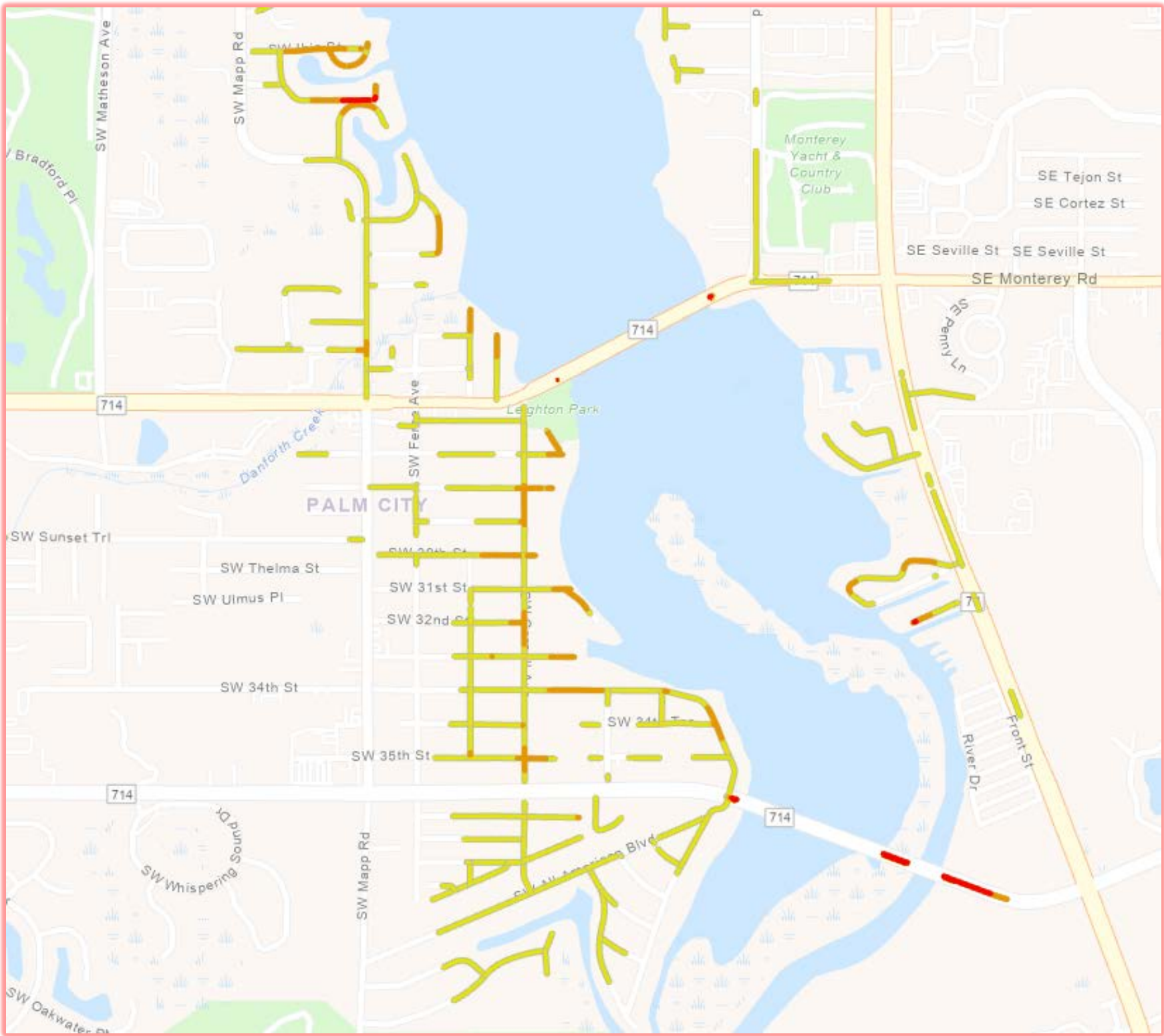
ANALYSIS BY SECTOR



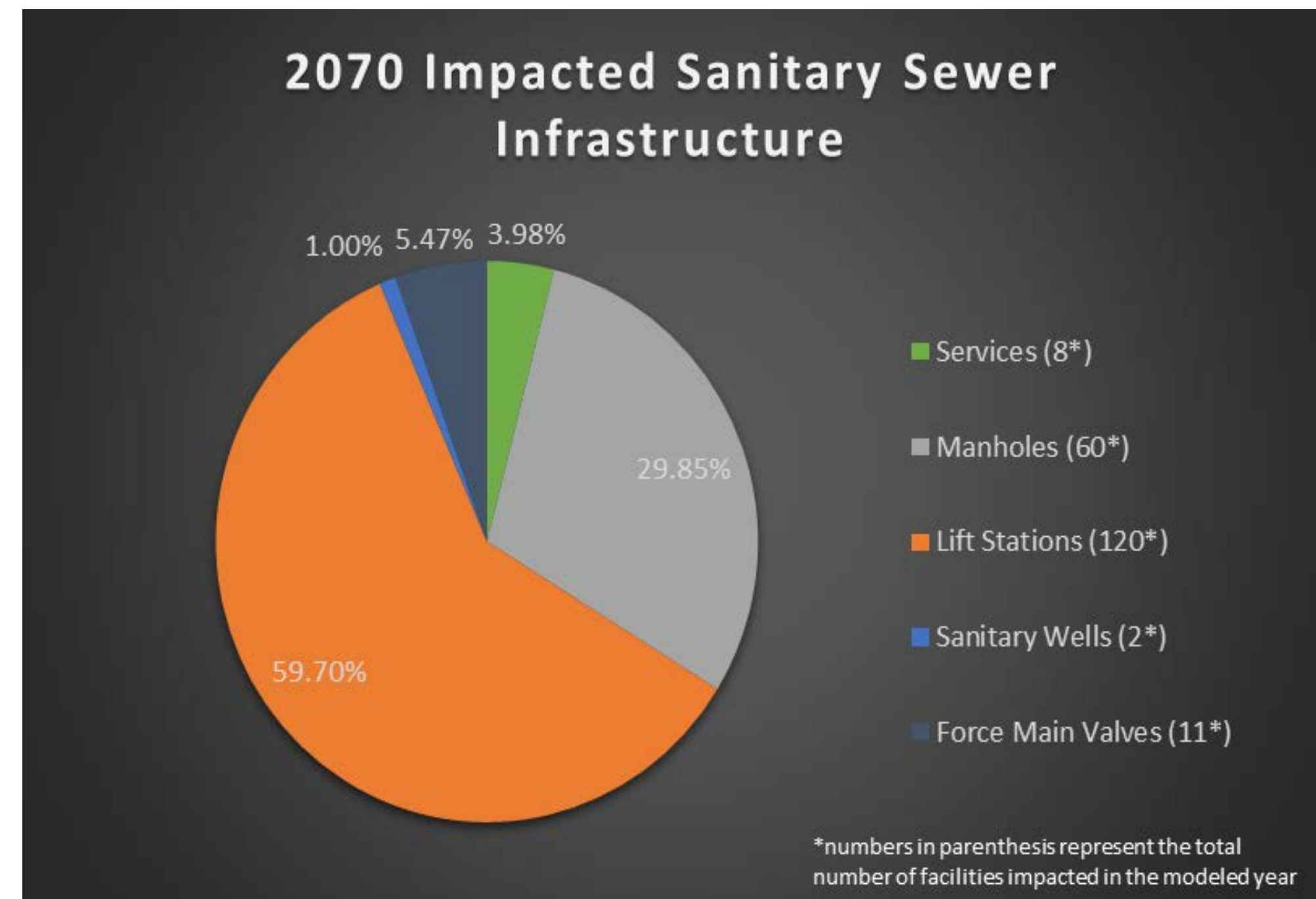
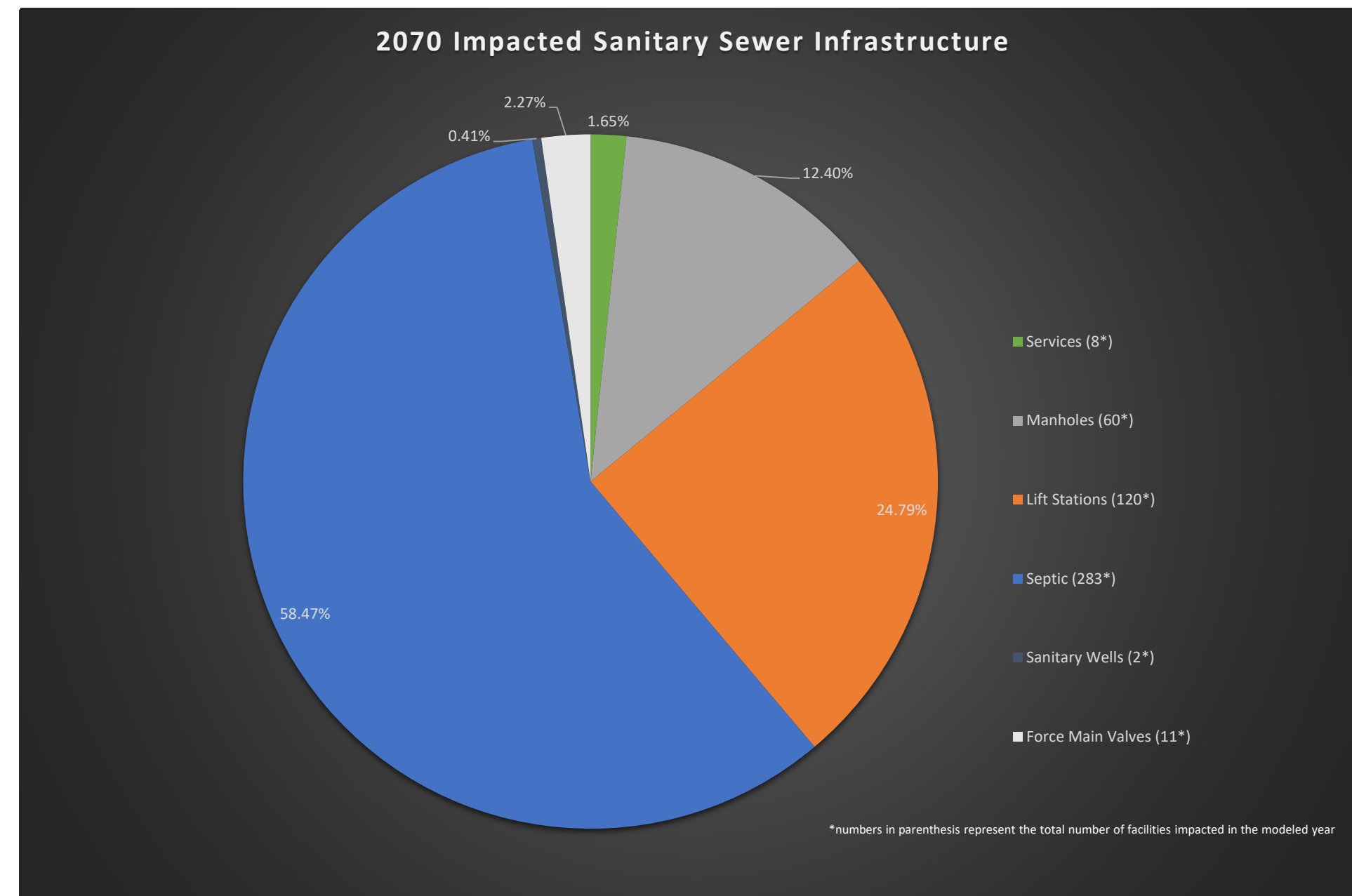
GENERAL INUNDATION



ROADS AND STORMWATER



POTABLE WATER AND SANITARY SEWER

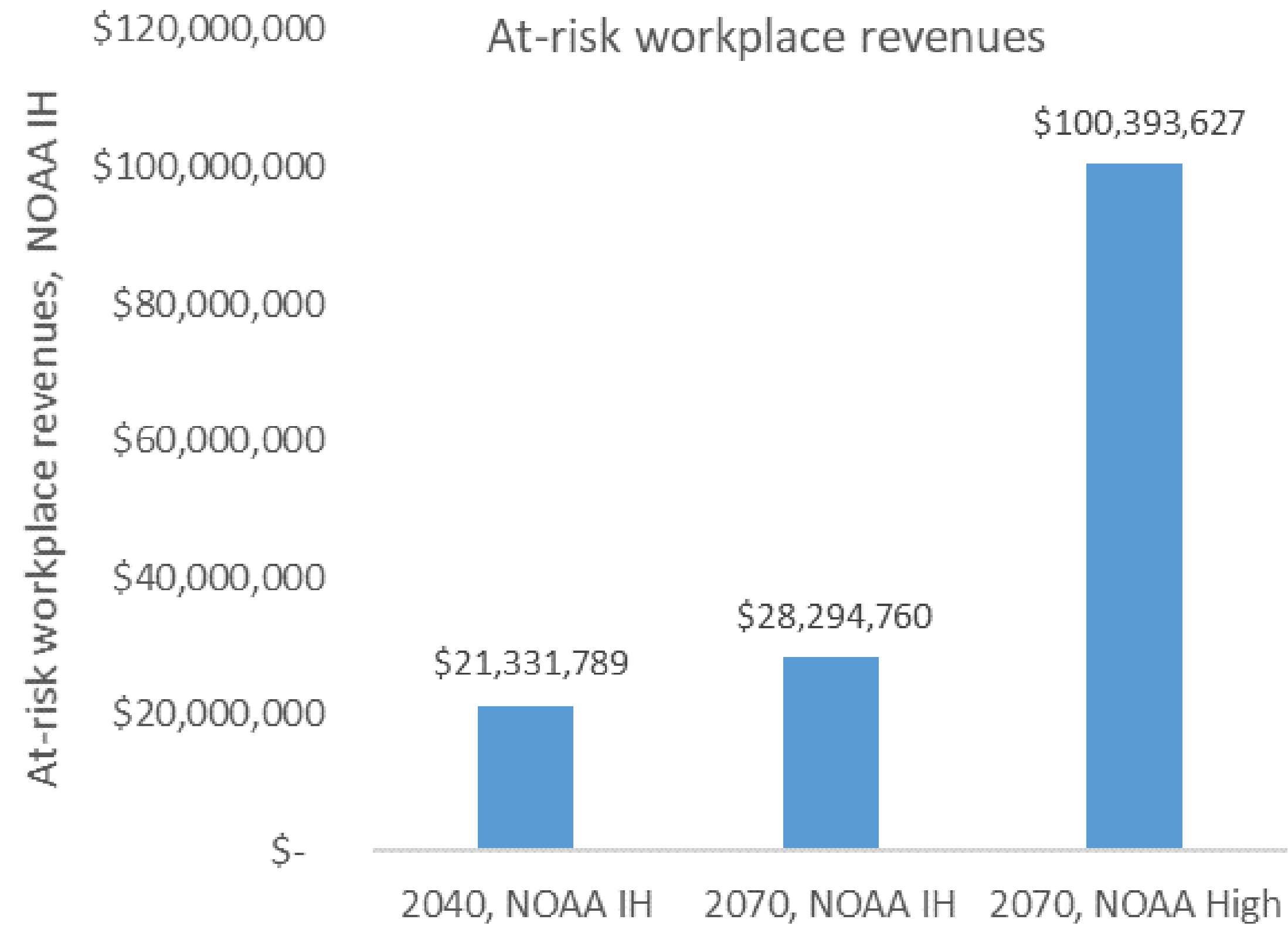


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ECONOMIC ANALYSIS

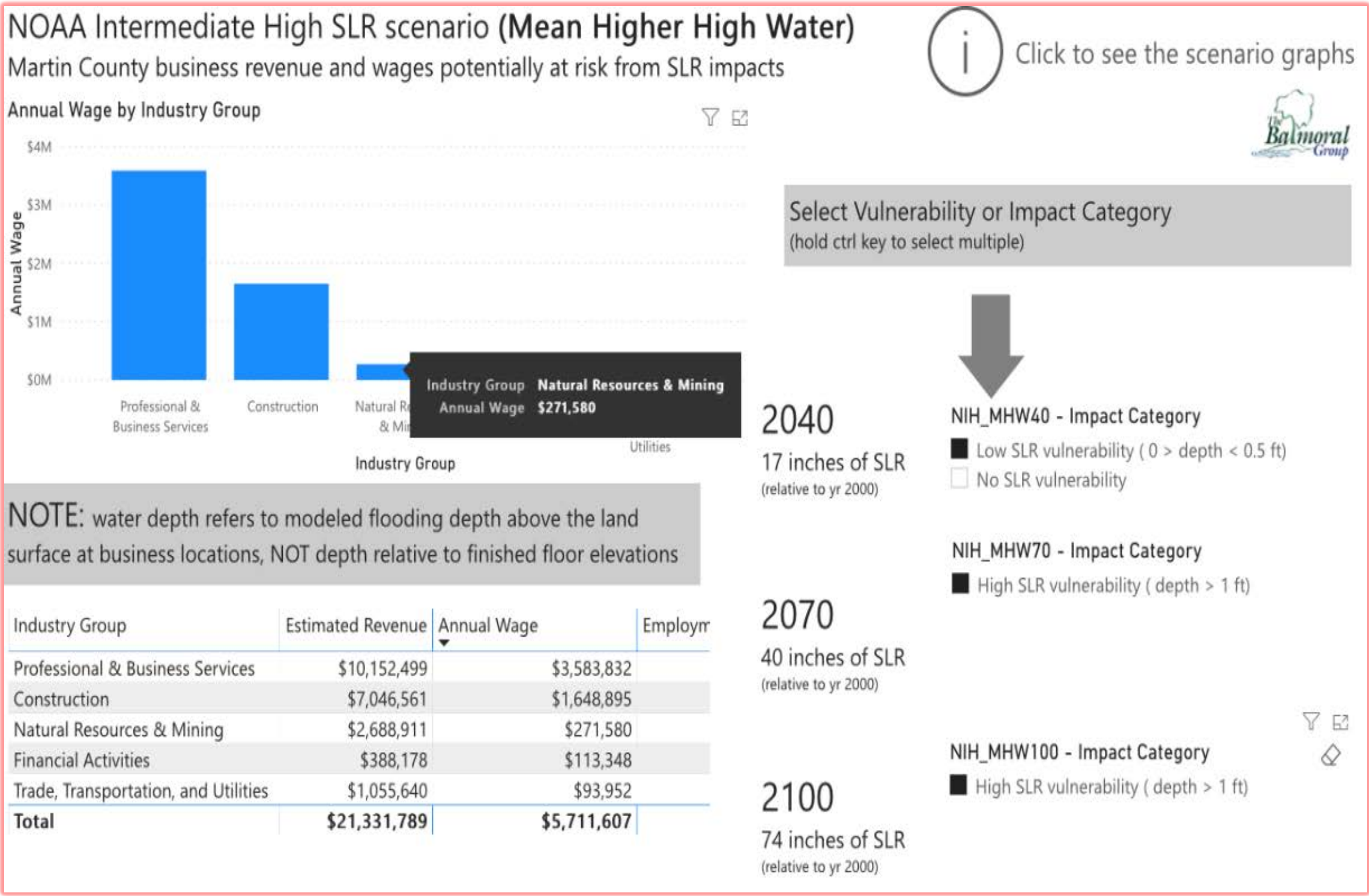


AT RISK REVENUES - 2040 AND 2070



ECONOMIC VULNERABILITY – RESILIENT MARTIN

DATA DASHBOARD: [MARTIN.FL.US/ECONVULNERABILITY](https://martin.fl.us/econvulnerability)



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HOW DO WE USE THIS INFORMATION?





DATA HELPS US CREATE PROJECTIONS

- Projections help us to create plans to protect existing infrastructure Investments
- Projections help us to prioritize future projects
- Projections help us target our emergency management strategies



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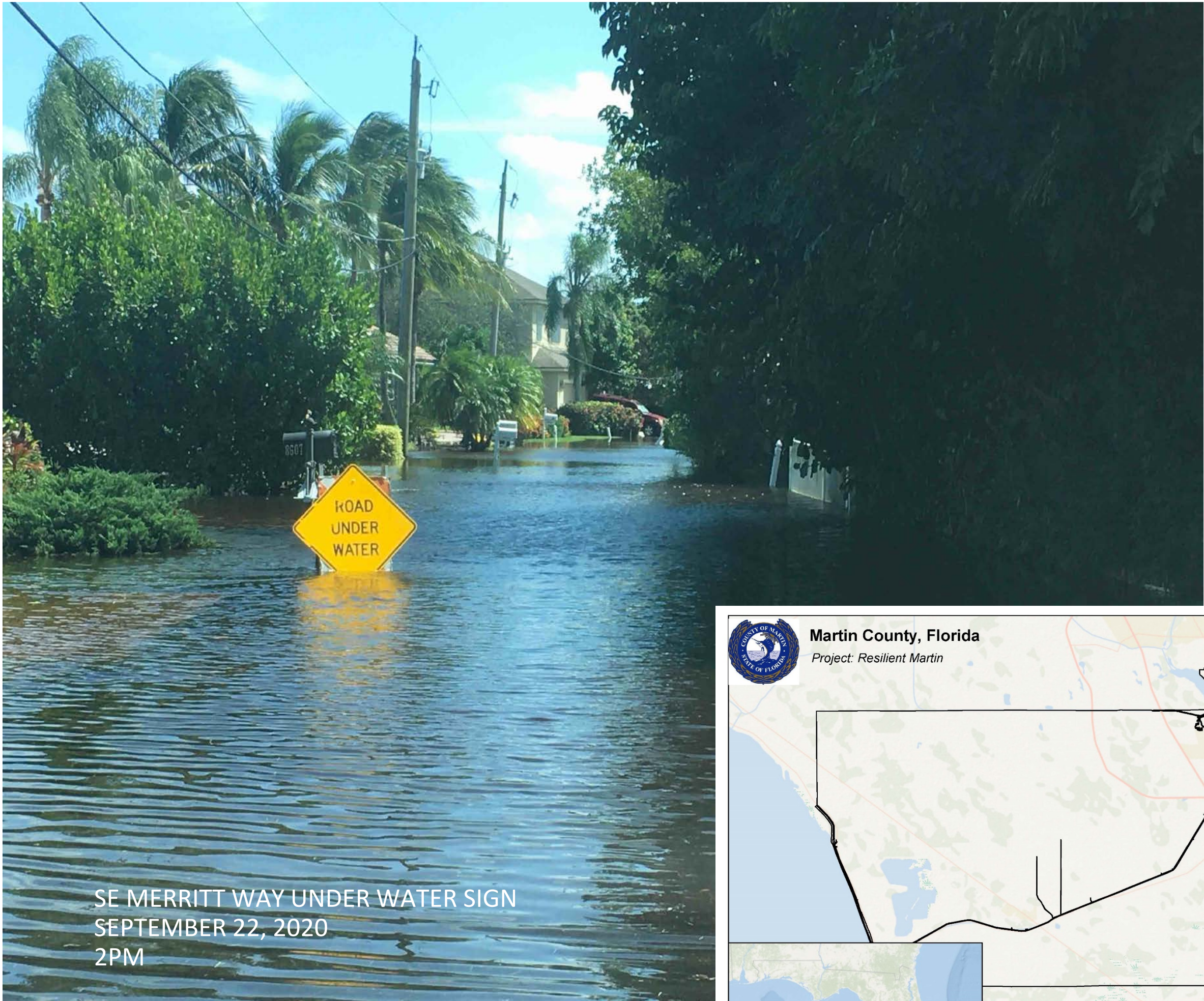
REAL WORLD EXAMPLES



SE MERRITT WAY - SEPTEMBER 2020 FLOODING



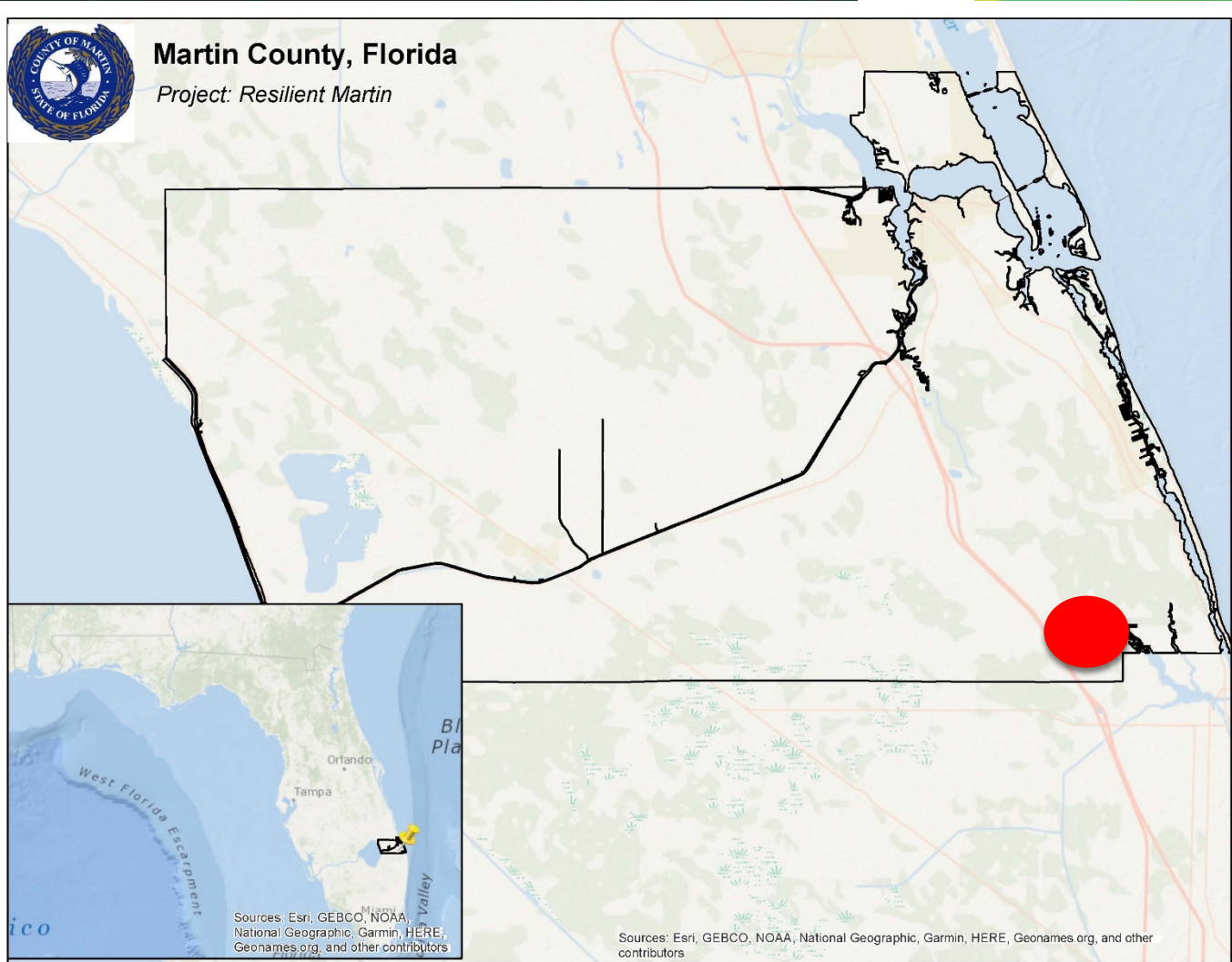
SE MERRITT WAY UNDER WATER SIGN
SEPTEMBER 21, 2020
3PM



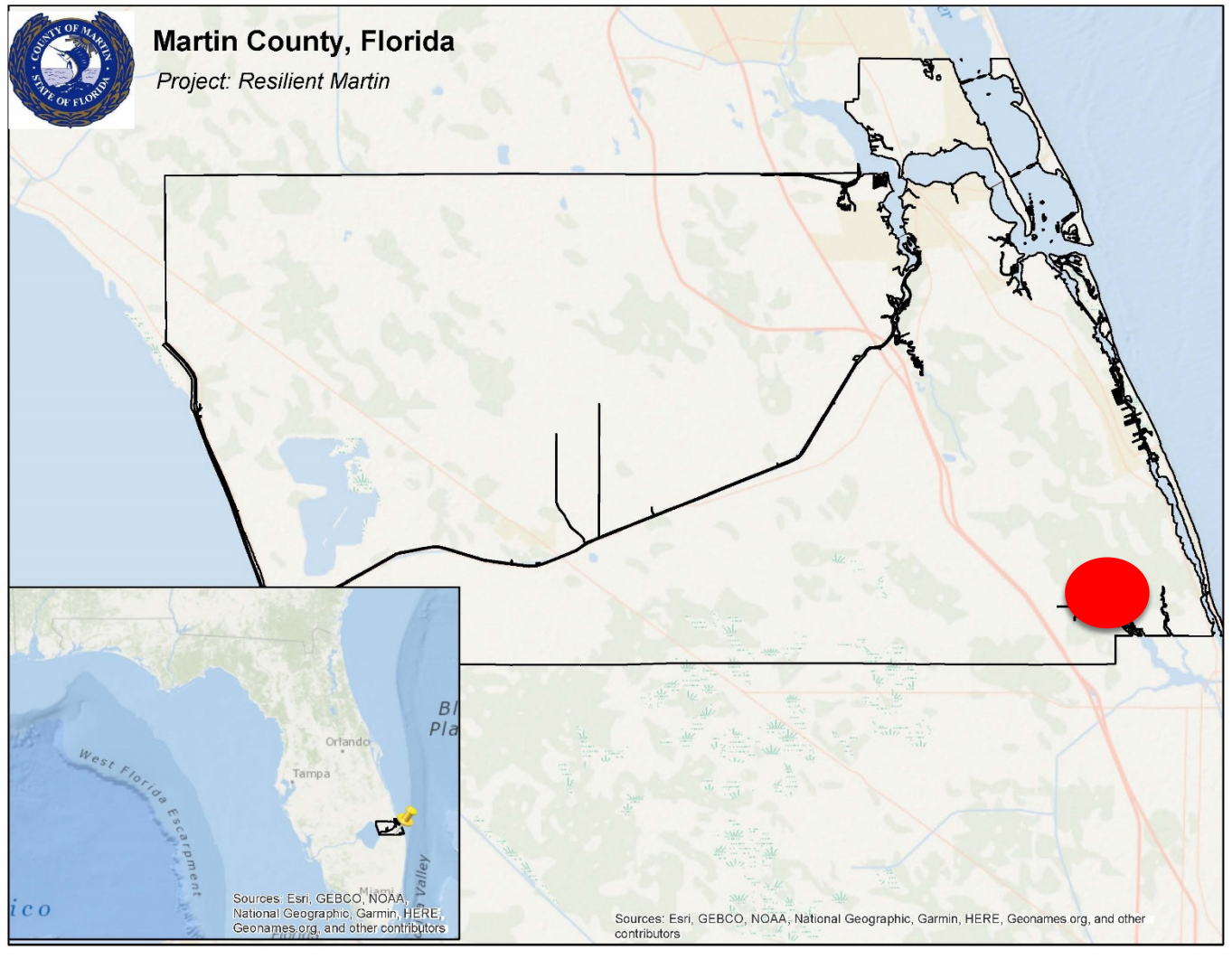
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SEPTEMBER 22, 2020
2PM



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SE COVE POINT SEPTEMBER 2020 FLOODING

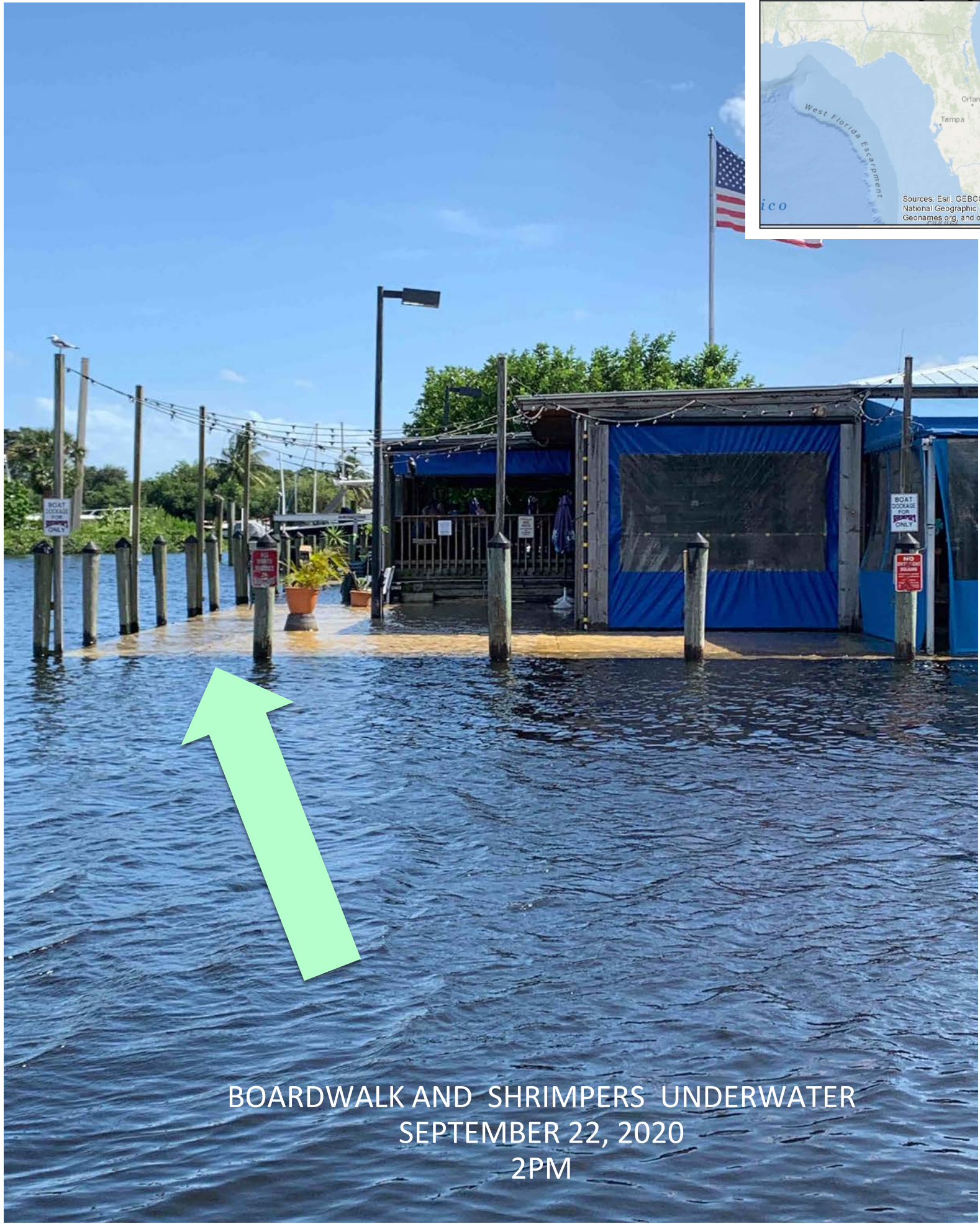
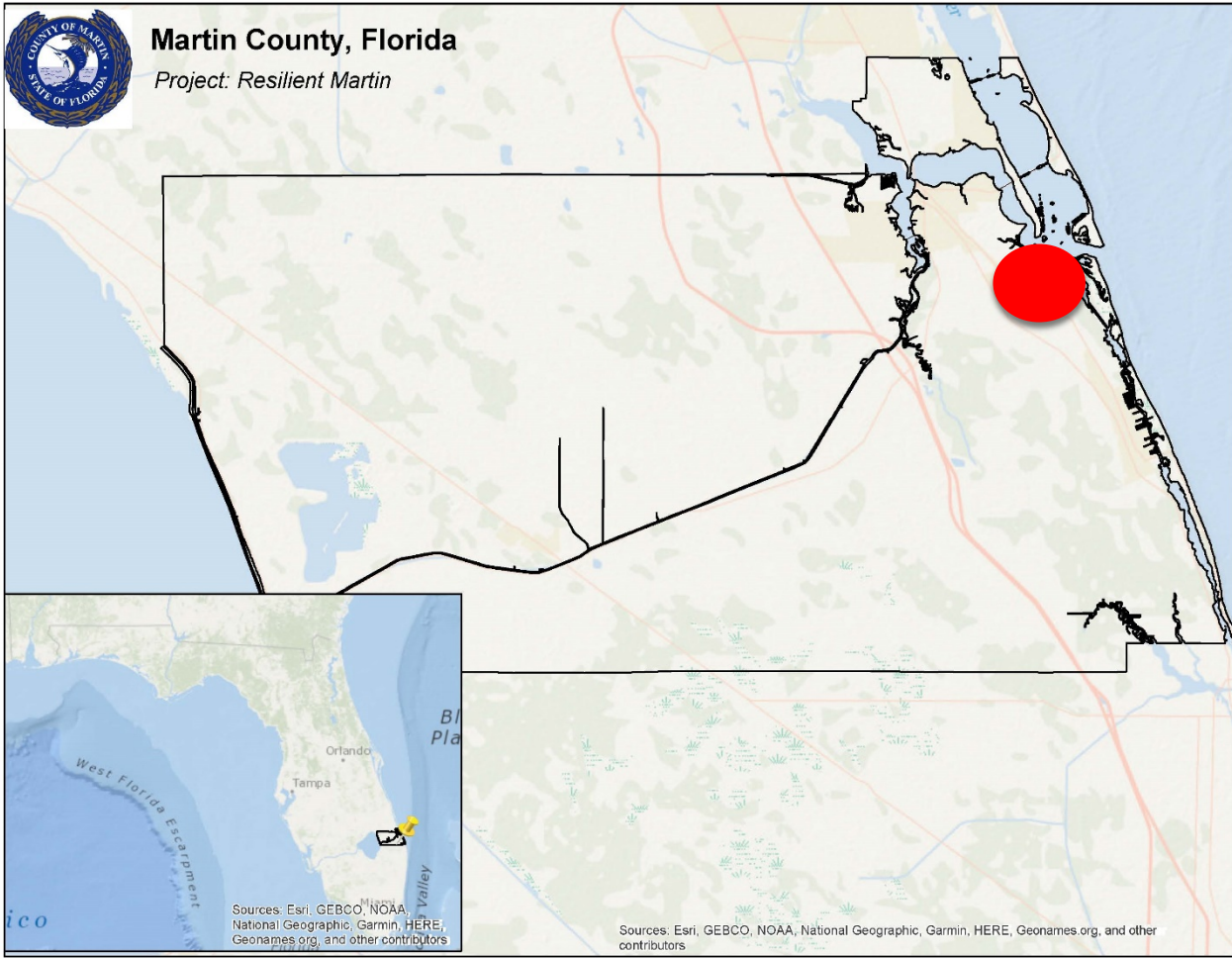


SEA WALL IS IN RED AND EDGE OF PAVEMENT IS YELLOW



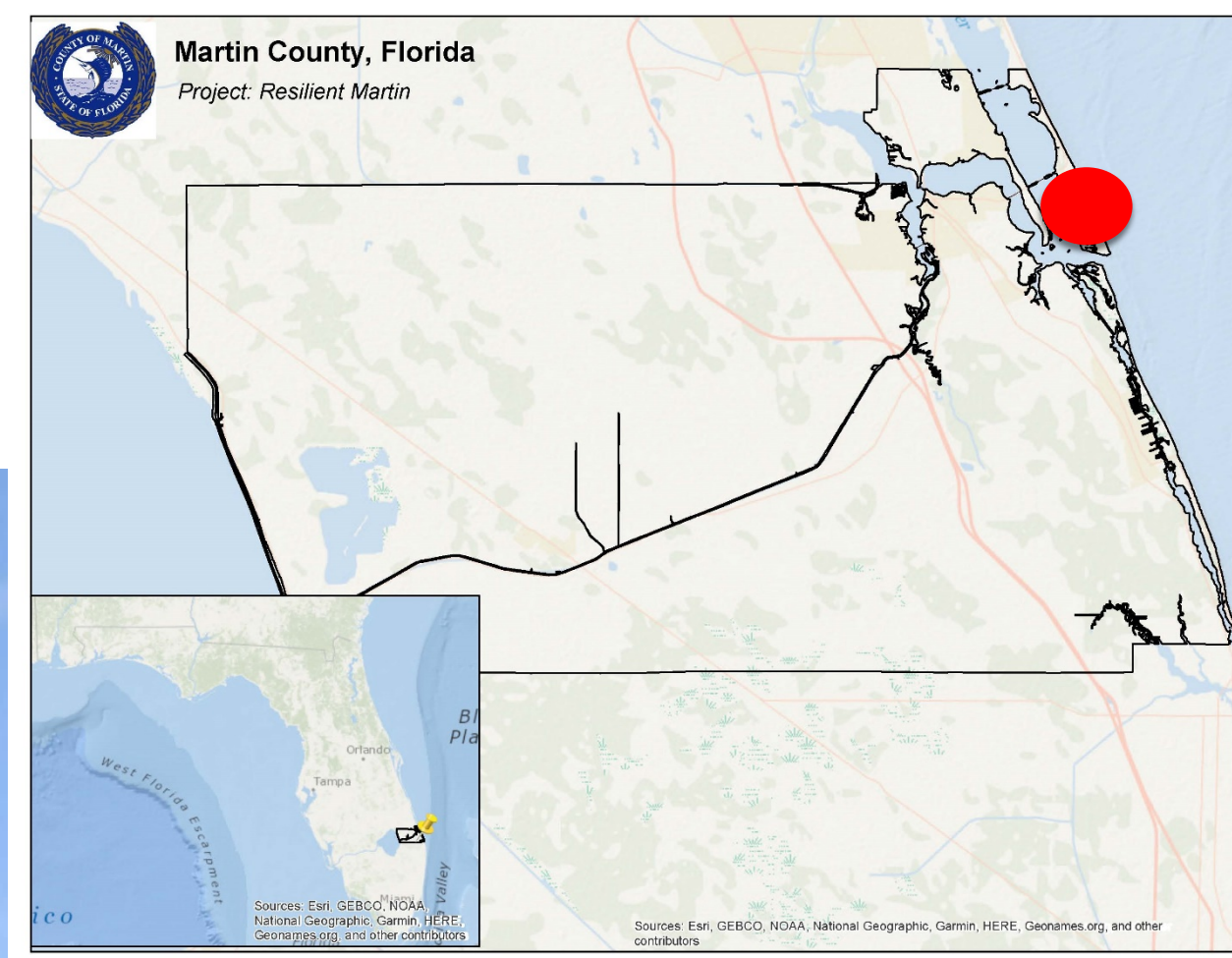
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PORT SALERNO - SEPTEMBER 2020 FLOODING

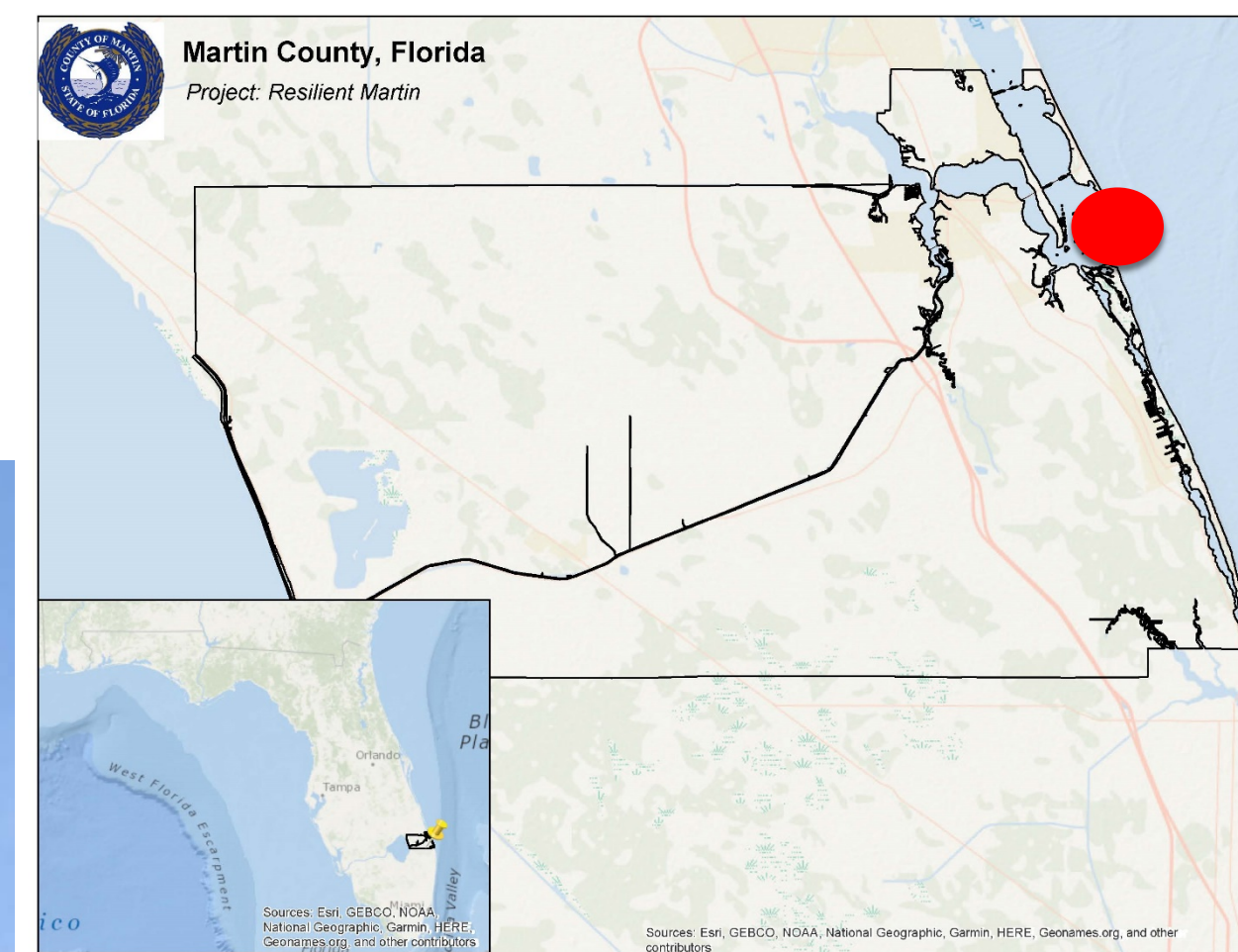


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CHASTAIN BEACH PARKING LOT - 2020 FLOODING



CHASTAIN BEACH PARKING LOT - 2020 FLOODING



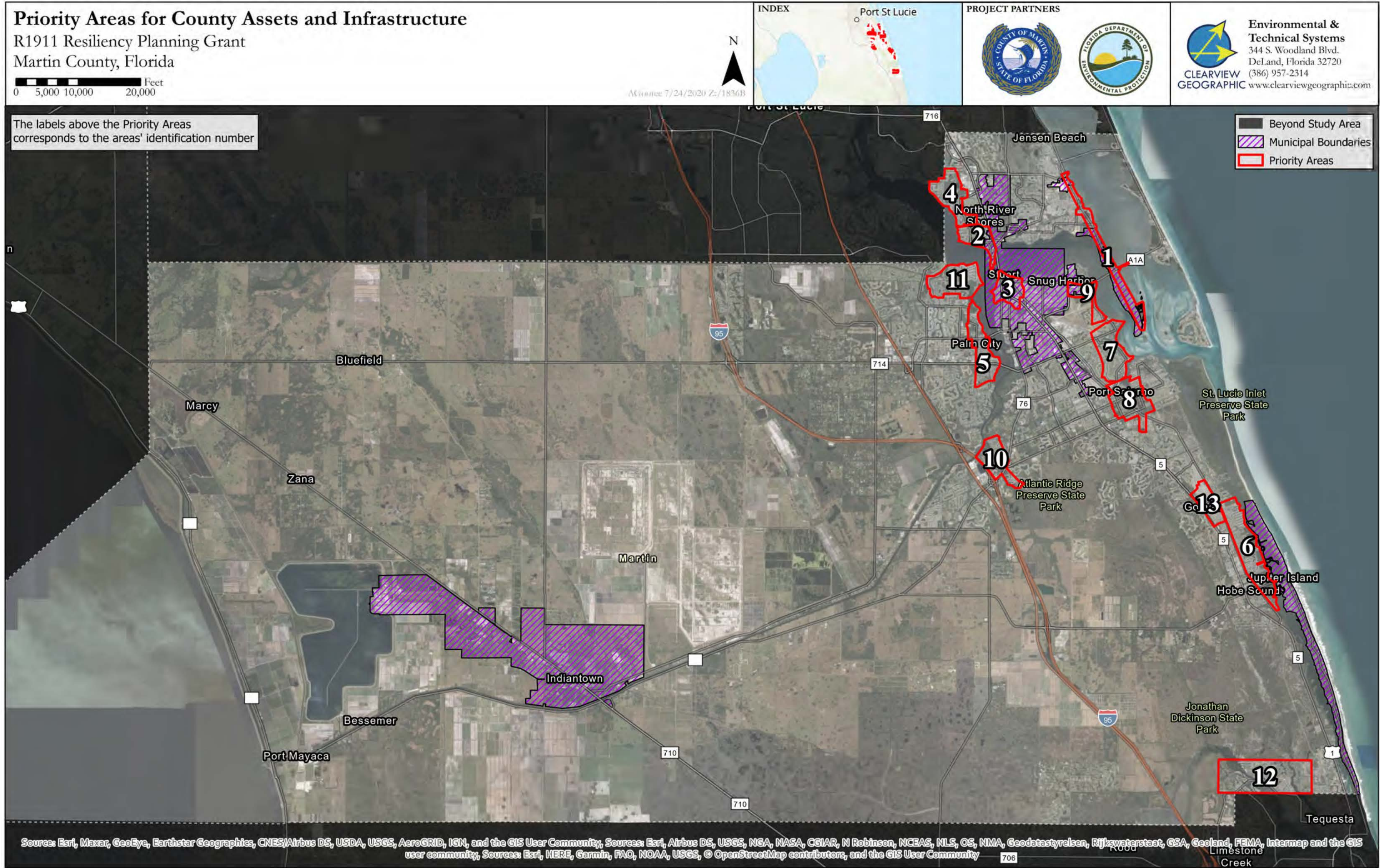
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PRIORITY LOCATIONS



PRIORITY AREAS FOR COUNTY ASSET AND INFRASTRUCTURE



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RECOMMENDED ACTIONS



RESILIENT MARTIN RECOMMENDED ACTIONS

The SLR Plan includes 48 recommendations grouped into 4 main areas:

1. County Assets & Infrastructure
2. Land Development
3. Natural Resources
4. Socioeconomic

The recommendations also indicate an implementation mechanism which may include the need for additional data or analyses.

Specific County procedures are identified where feasible.

A projected timeline is established:

- ▶ Short (1-5 years)
- ▶ Moderate (5-10 years)
- ▶ Long (10+ years)

| Martin County Sea Level Rise Plan Implementation Recommendations | |
|--|---|
| RECOMMENDATION | TIMELINE (Short:1-5yrs, Medium: 5-10yrs, Long: 10+yrs) |
| COUNTY ASSETS & INFRASTRUCTURE: TECHNICAL VULNERABILITY ANALYSIS | |
| 1. Add vulnerability or flood risk factor into capital projects. | Short |
| 2. Consider project life and relationship to sea level rise and flood risk in capital projects. | Short |
| 3. Expand overall vulnerability assessment to include erosion rates, shoreline elevation, impacted stormwater discharge and commercial area metrics. | Medium |
| 4. Make infrastructure retrofits and maintenance projects more resilient. | Short |
| 5. Improve stormwater vulnerability analysis to factor in more data about structures, drainage basins, storage capacity and rainfall. | Medium |
| 6. Enhance sea level rise modeling to link surge from hurricanes, precipitation and shorelines. | Long |
| 7. Undertake modeling that relates surface water, groundwater and impacts to septic tanks and water supply wells. | Medium |
| 8. Complete property level risk analysis with NFIP data. | Short |
| 9. Expand information and coordination on sea level risk impacts to transportation systems. | Short |
| 10. Use more detailed information related to elevations to determine road impacts from sea level rise. | Medium |
| 11. Analyze individual at-risk facilities and assets to prioritize adaptation measures. | Medium |
| 12. Incorporate property level building elevations into vulnerability analysis. | Short |
| 13. Use vulnerability information in emergency management planning and project priorities. | Short |
| 14. Collaborate with SFWMD to understand their coastal structure adaptation projects and relationship to County drainage. | Short |
| 15. Create complete dataset on hazardous materials use or storage impacts by future flood risk. | Medium |
| 16. Use "pilot" projects to help inform feasibility of adaptation measures. | Ongoing |
| 17. Link CRA stormwater planning with vulnerability information. | Short |
| 18. Determine if public open spaces can accommodate enhanced stormwater management benefits. | Short |
| 19. Link ongoing sanitary sewer conversions with sea level rise vulnerability analysis. | Short |
| COUNTY ASSETS & INFRASTRUCTURE: ECONOMIC ANALYSIS | |
| 20. Analyze future flood damage and economic impact to properties. | Short |
| 21. Update previous economic analysis related to adaptation strategies. | Short |
| 22. Determine costs and funding sources for adaptation. | Short |
| COUNTY ASSETS & INFRASTRUCTURE: POLICY DEVELOPMENT | |
| 23. Review Comprehensive Plan and Code for linkages with recommendations in the Resilient Martin Plan. | Short |
| 24. Integrate sea level rise projections into Comprehensive Plan and Design elements of Code. | Medium |



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MARTIN COUNTY AT WORK



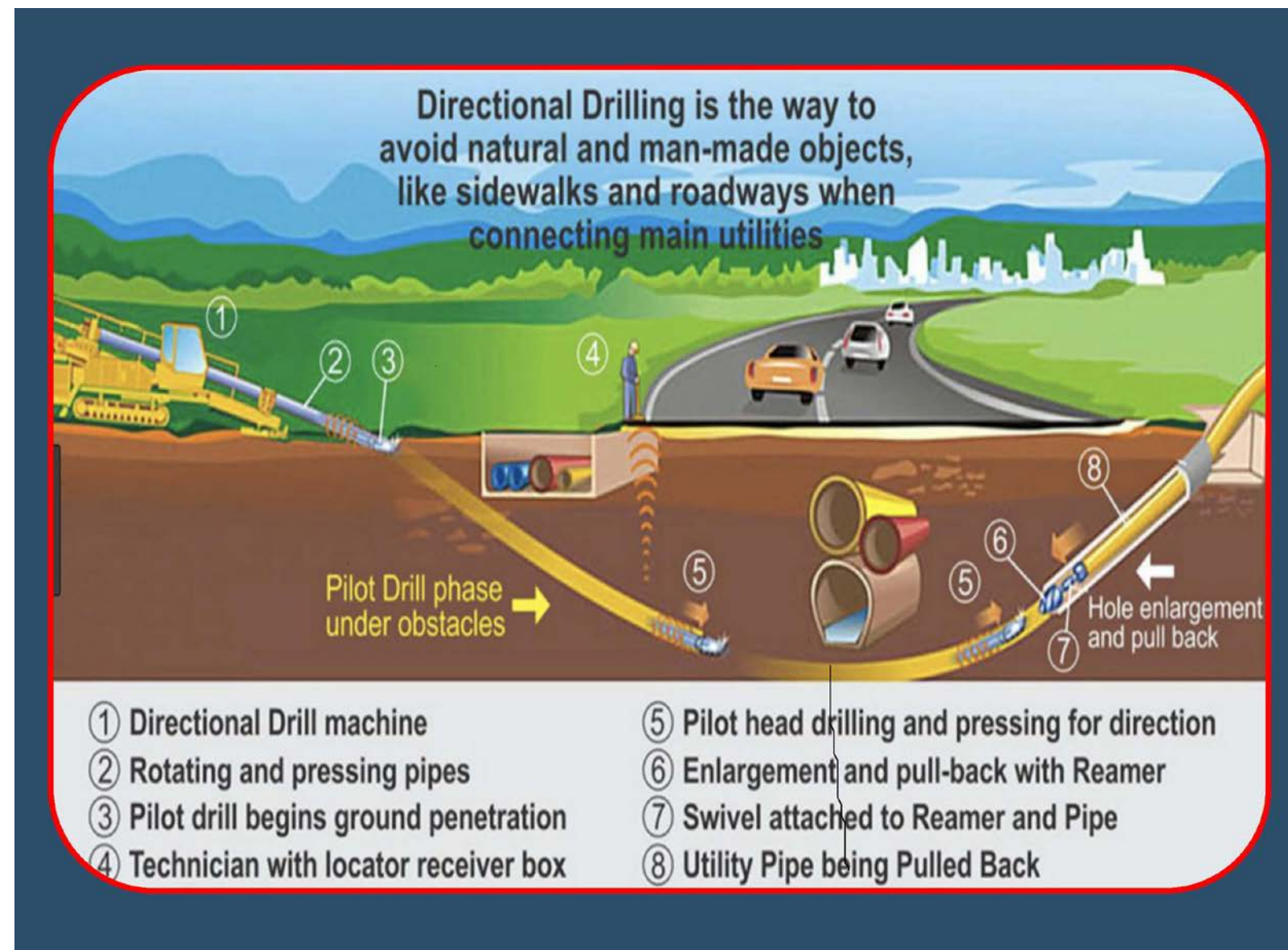
BEACH RESTORATION AND MAINTENANCE

RECONSTRUCTION PROJECT FOR CRITICAL STRETCH OF BEACH

Storm protection, ecosystem conservation, and preservation of a popular recreation destination all in one project.



CONNECT TO PROTECT PROGRAM



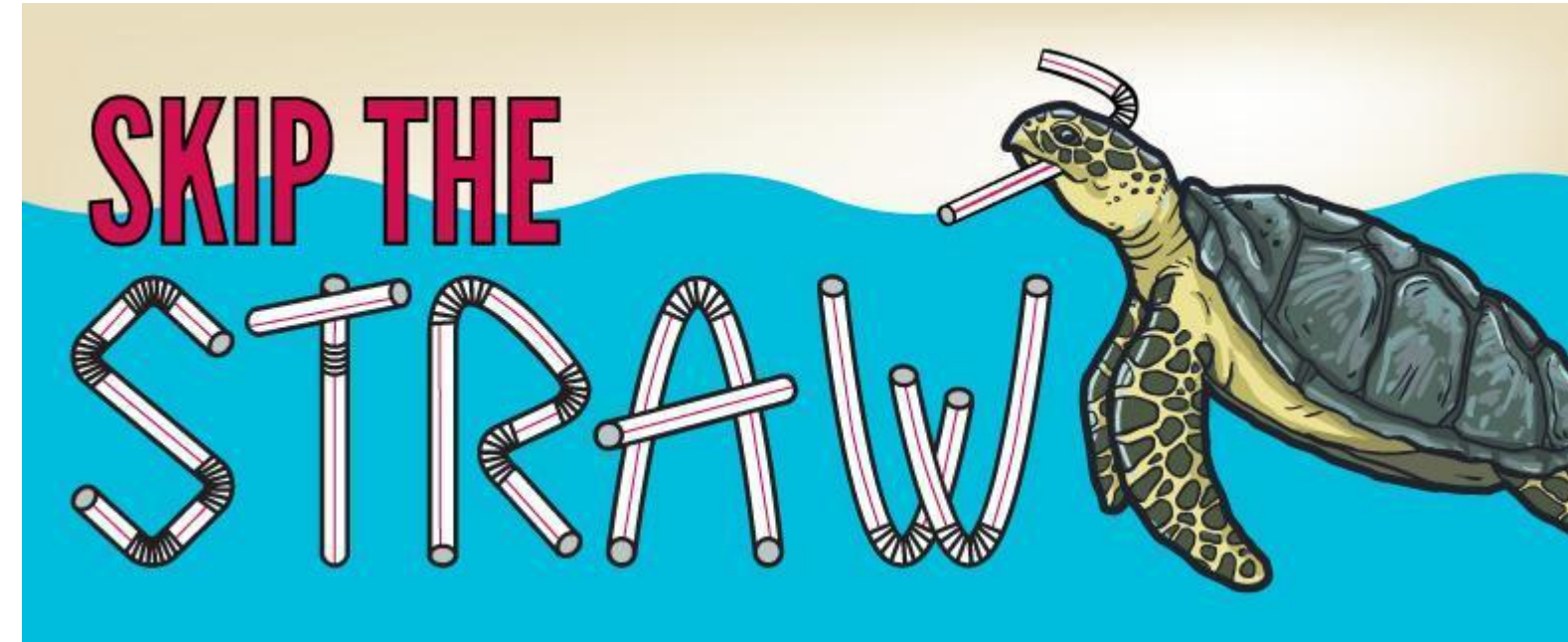
This program was created to assist homeowners in selected areas with converting their onsite sewage treatment and disposal systems, typically septic tanks with drain fields, to the Martin County Utilities (MCU) sanitary sewer system.



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SOURCE: THE BALMORAL GROUP

PROTECT OUR PARADISE



THE PROTECT OUR PARADISE WEBSITE

Serves as a portal for visitors and residents to learn more about environmental conditions, initiatives, and issues taking place in Martin County. The website, operated by the Martin County Office of Tourism & Marketing, includes various resources and points of focus



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SOURCE: THE BALMORAL GROUP

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WWW.MARTIN.FL.US/RESILIENCE

