

Vulnerability Analysis Mapping

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**SOUTHEAST FLORIDA
REGIONAL COMPACT**

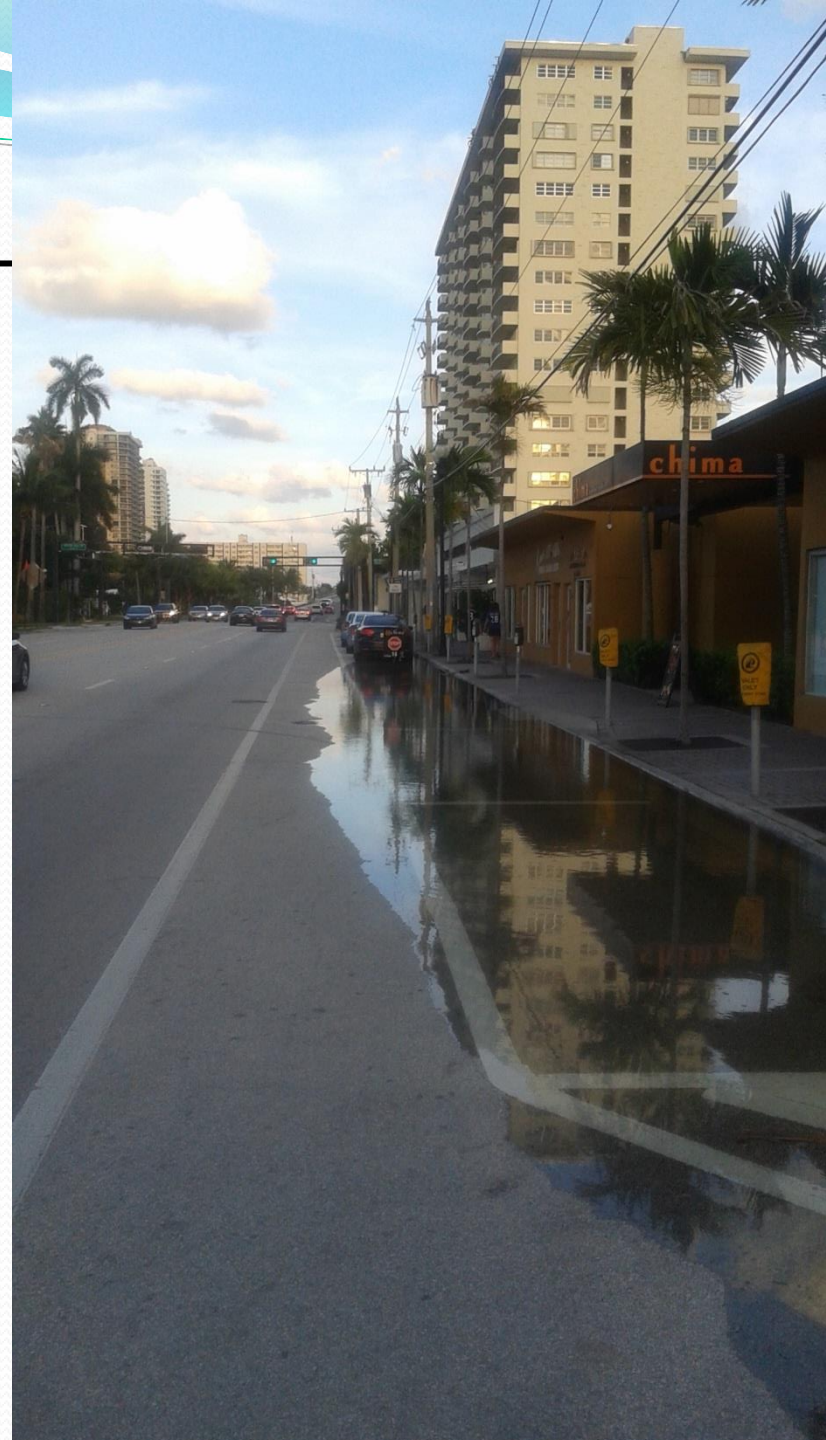
**CLIMATE
CHANGE**



**Regional Impacts of Climate Change and Issues for
Stormwater Management (WS-12, PO-10)**

Objectives

- Regional SLR Scenario Maps
- Assessing Risk at the Regional, County and Local Levels
- Vulnerability Tools for Planning



Assessing Vulnerability to Sea Level Rise

- **Inundation Mapping**
 - **Regional** digital elevation model
 - 1, 2, and 3 foot scenarios
 - Common way to express potential risk
- **Vulnerability Analysis**
 - Prioritized **regional** infrastructure for analysis
 - Tested geospatial analytical methods

Analysis of the Vulnerability of Southeast Florida to Sea Level Rise

Southeast Florida Regional Climate Change Compact
Inundation Mapping and Vulnerability Assessment
Work Group

August 2012



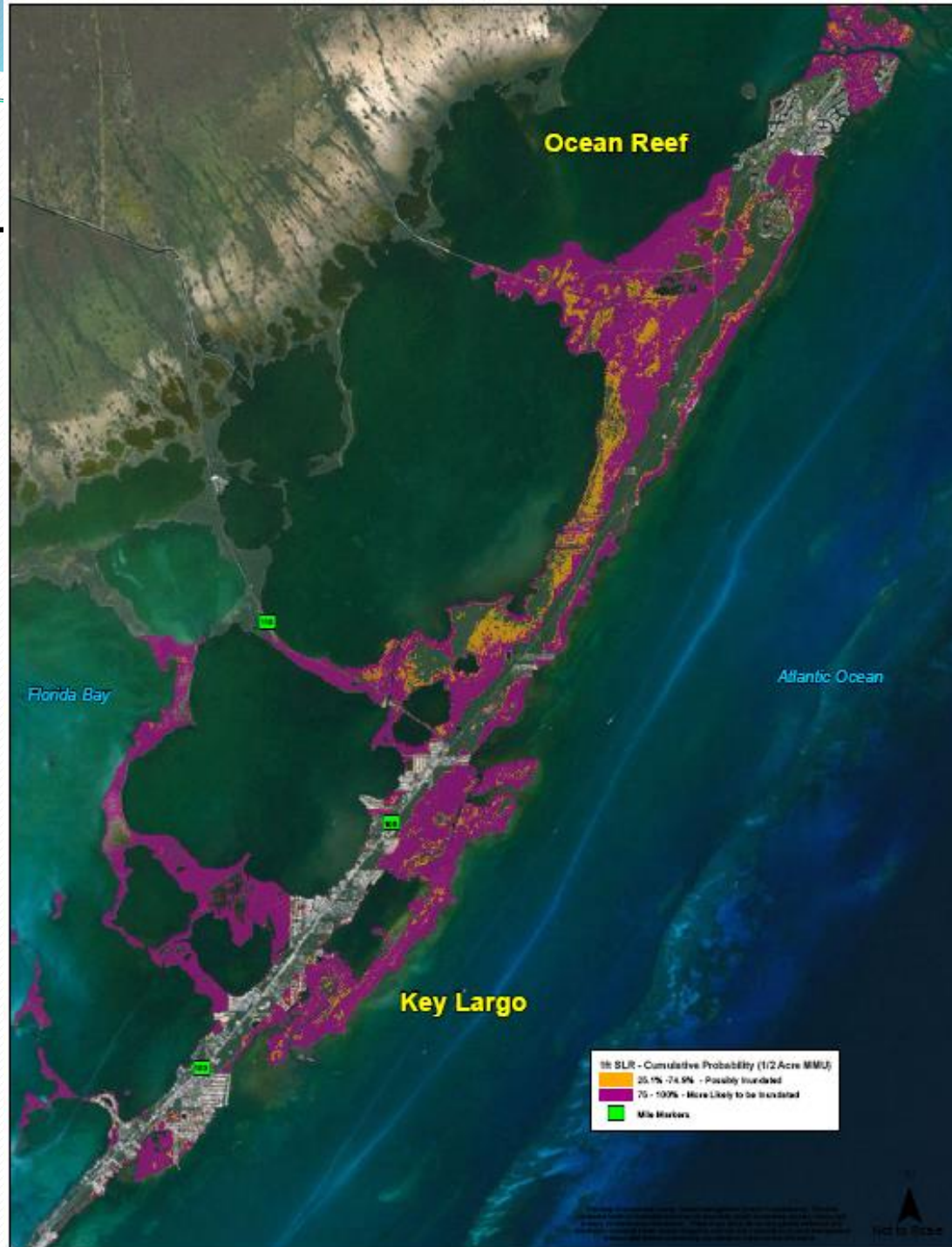
● Monroe County

1-Foot Sea Level Rise – Ocean Reef -- Key Largo

LEGEND

Inundation

-  Possible
-  More likely



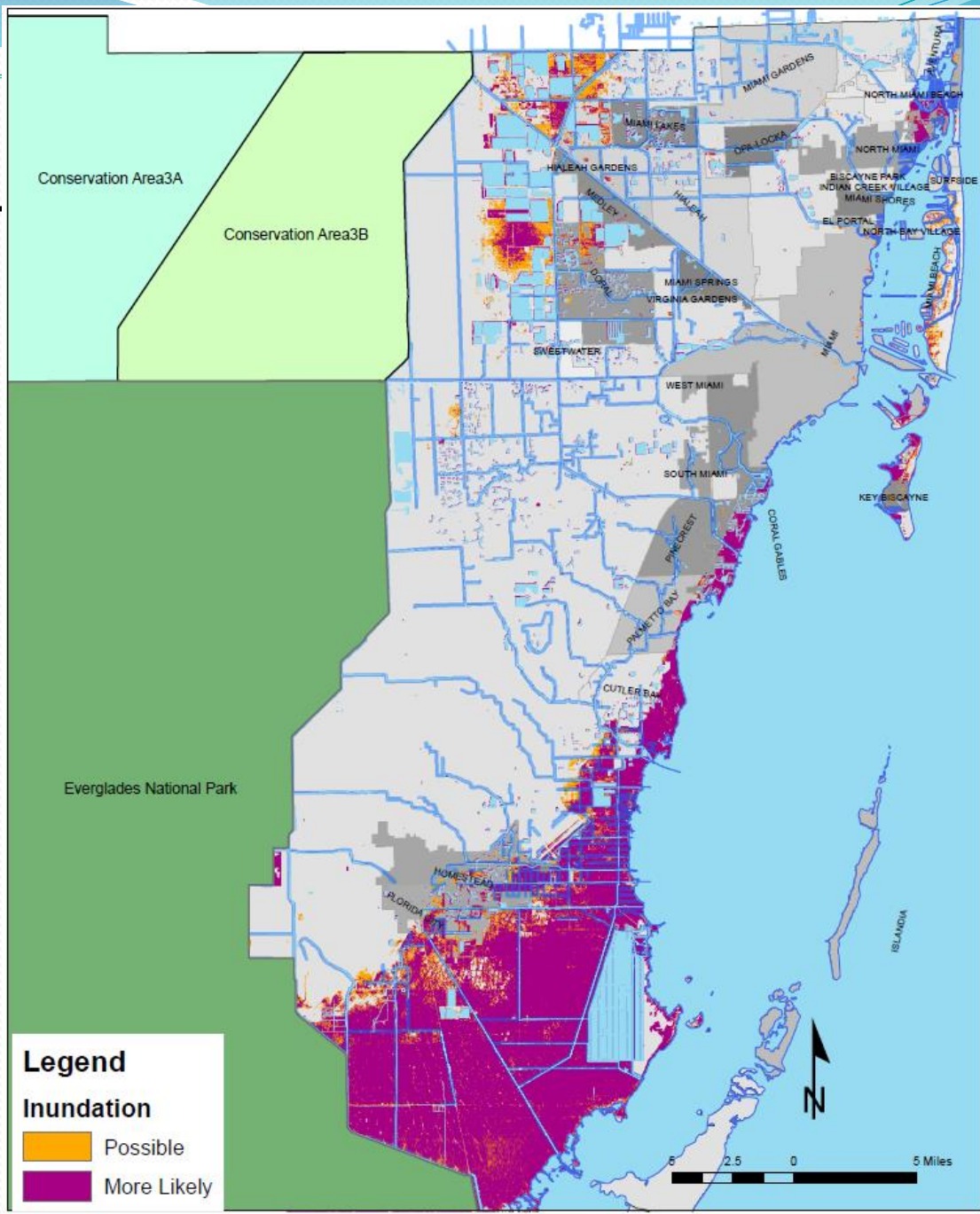
• Miami-Dade County

2-Foot Sea Level Rise – Miami-Dade

LEGEND

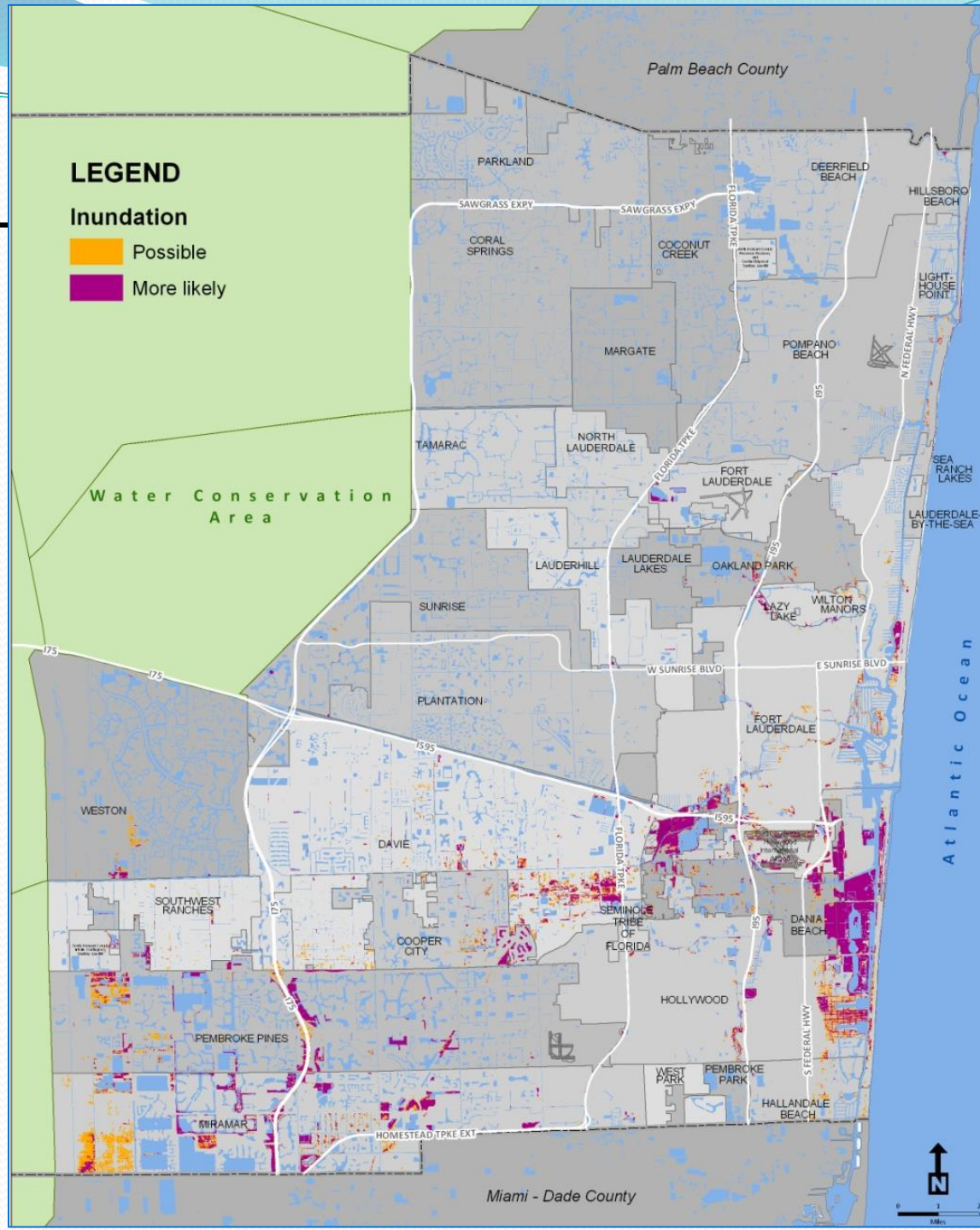
Inundation

- Possible
- More likely



• Broward County

2-Foot Sea Level Rise – Broward County



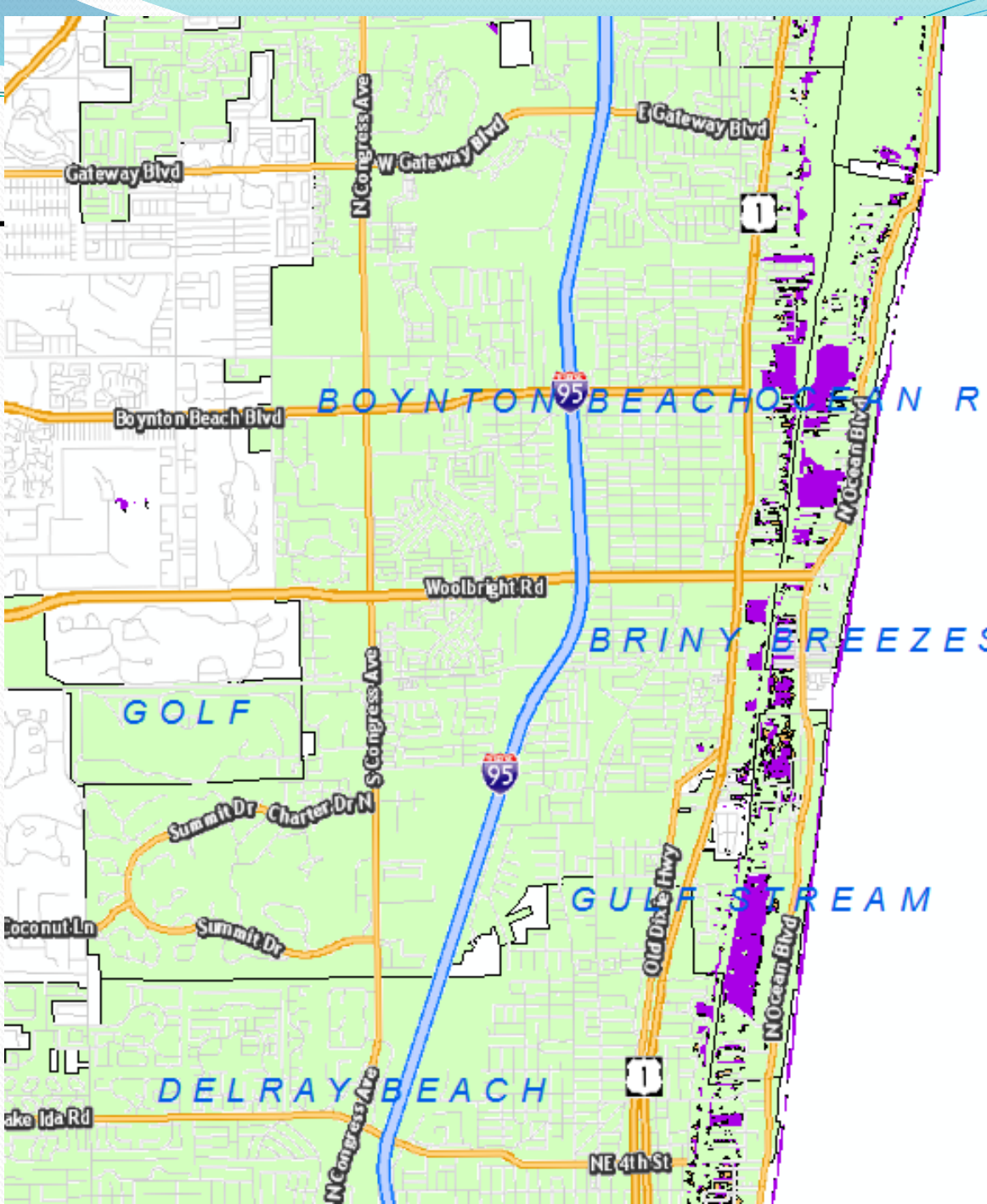
• Palm Beach County

2-Foot Sea Level Rise –
Boynton Beach Area

LEGEND

Inundation

- Possible
- More likely



Regionally Vulnerable Assessment

Physical Features

Ports and Airports

Power Plants

Railroads

Water and Wastewater

Treatment Plants

Landfills

Hospitals

Emergency Shelters

Schools

Evacuation Route

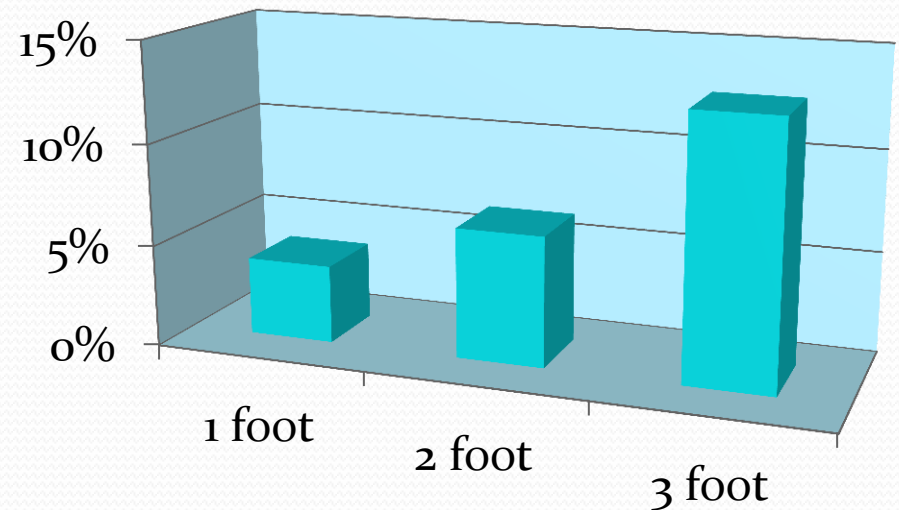
Marinas

Results of Analysis

Taxable Value of Property

Acres of Future Land Use

**SE FL Hospitals with Property below
Sea Level**



County Vulnerability Analysis

Parks

Fire Rescue

Police Stations

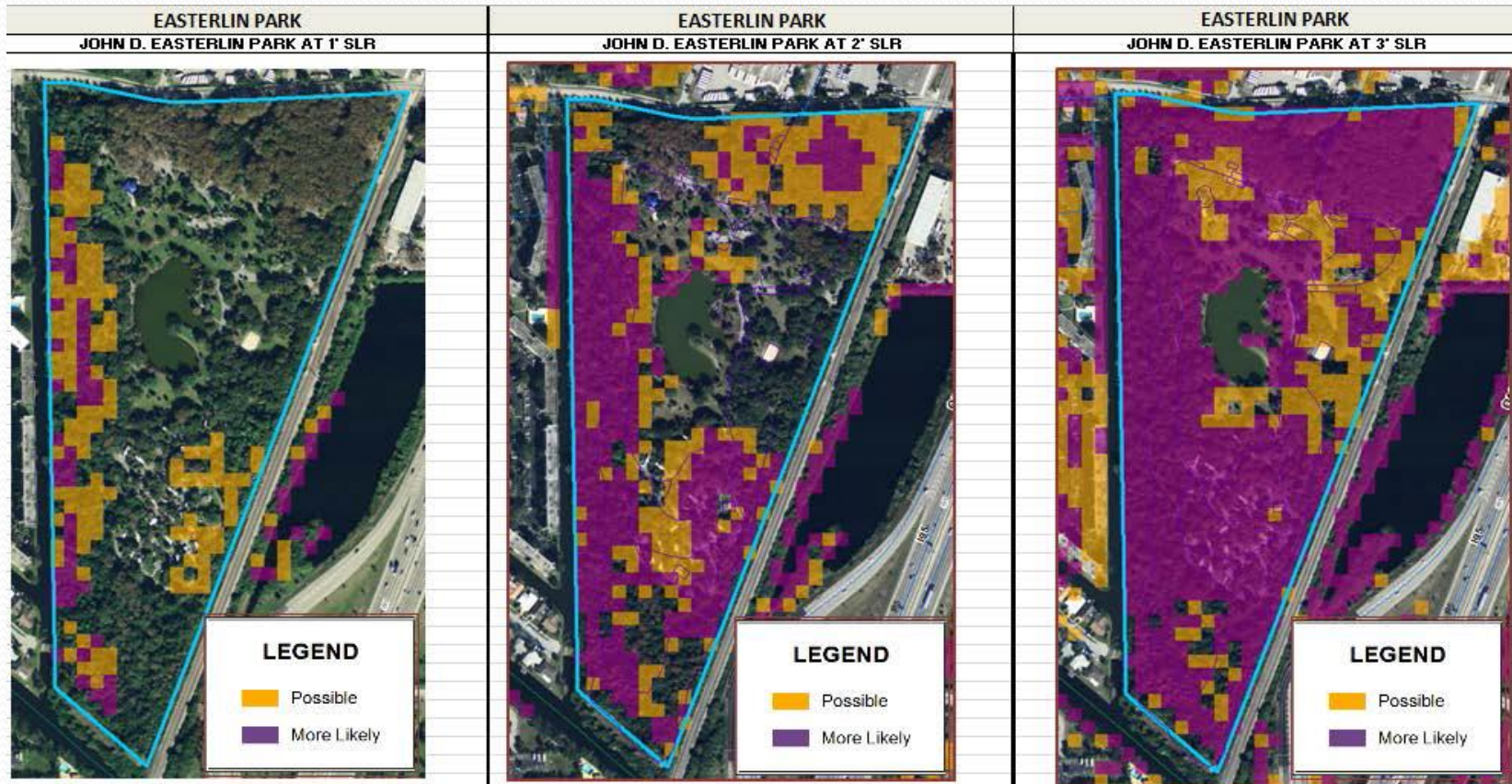
Libraries

Roads

County Facilities

CRA

Water and Wastewater

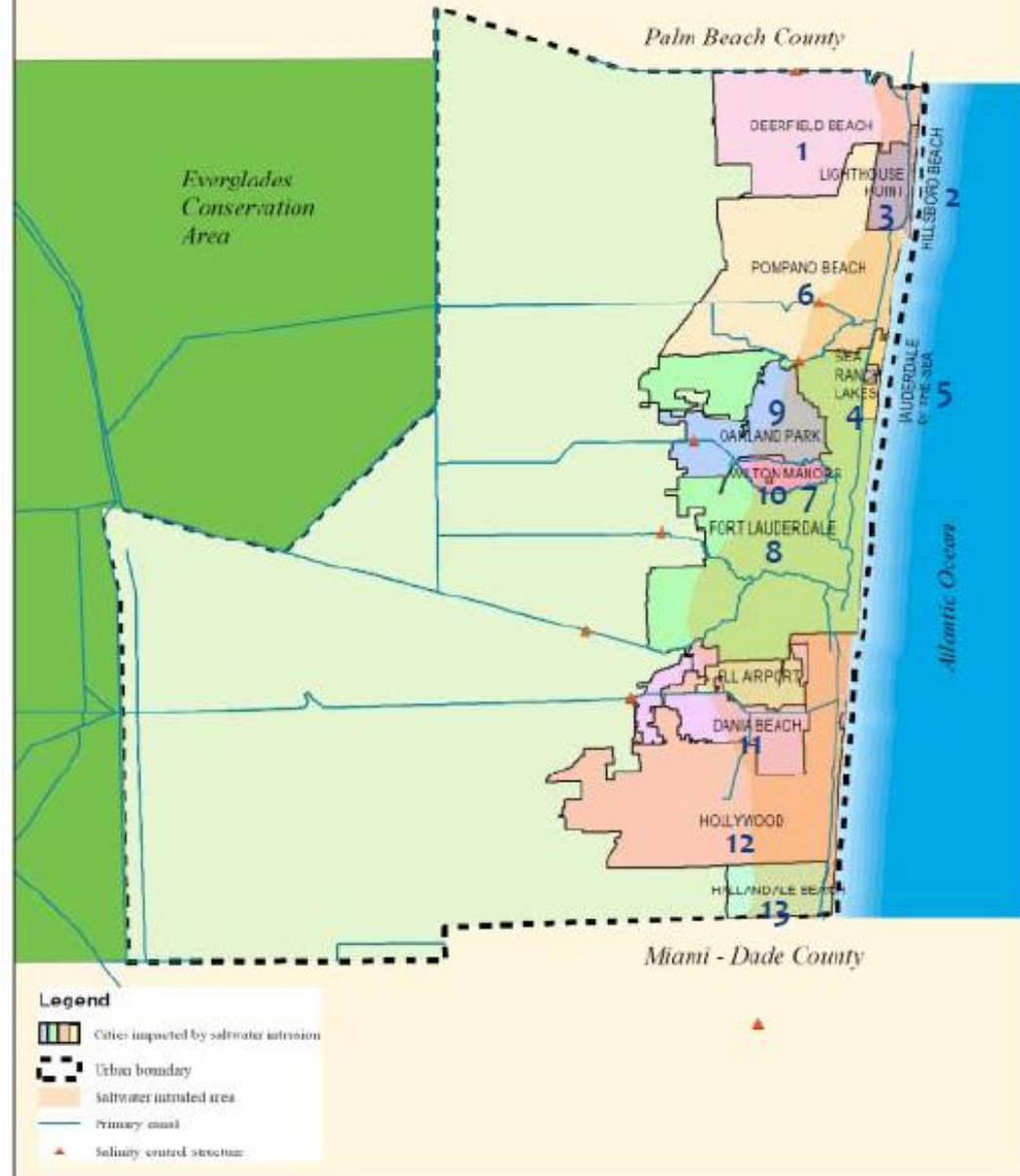




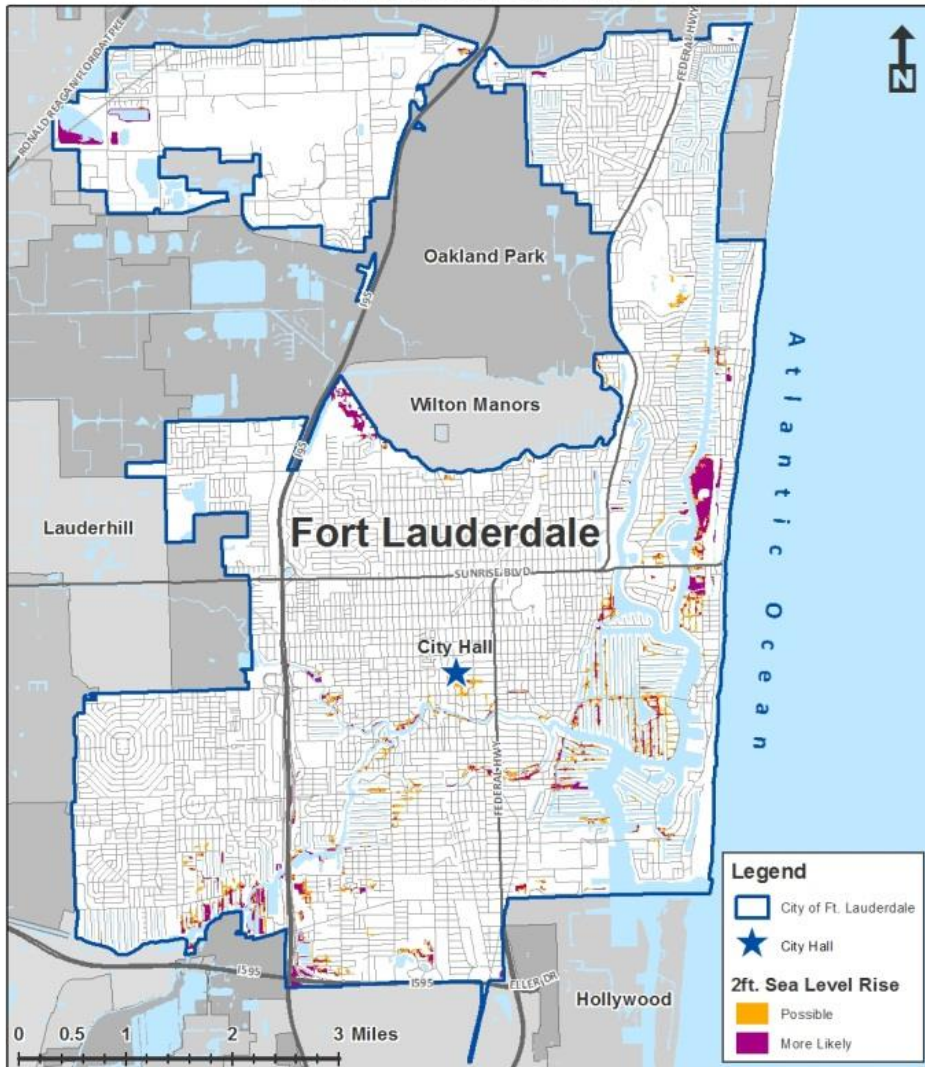
Scope of Florida Coastal Zone Management Grant

- Thirteen tidally influenced communities East of salinity control structures.

- | | |
|--------------------------|----------------------|
| 1. Deerfield Beach | 7. Wilton Manors |
| 2. Hillsboro Beach | 8. Fort Lauderdale |
| 3. Lighthouse Point | 9. Oakland Park |
| 4. Sea Ranch Lakes | 10. Lazy Lake |
| 5. Lauderdale-by-the-Sea | 11. Dania Beach |
| 6. Pompano Beach | 12. Hollywood |
| | 13. Hallandale Beach |



Municipal Scale Inundation Map
Two Foot Sea Level Rise



This map is for conceptual purposes only and should not be used for legal boundary determinations.

Fort Lauderdale Sea Level Rise Vulnerability Assessment

- * Airports
- * Bridges
- * City Arterial Roads
- * City Hall
- * City Parks
- * Community Re-development Areas (CRA)
- * County Parks
- * Evacuation Routes
- * Fire Rescue Stations
- * Hospitals
- * Law Enforcement Assets
- * Schools
- * WTP/WWTP
- * Wave
- * Regional Activity Centers (RAC)



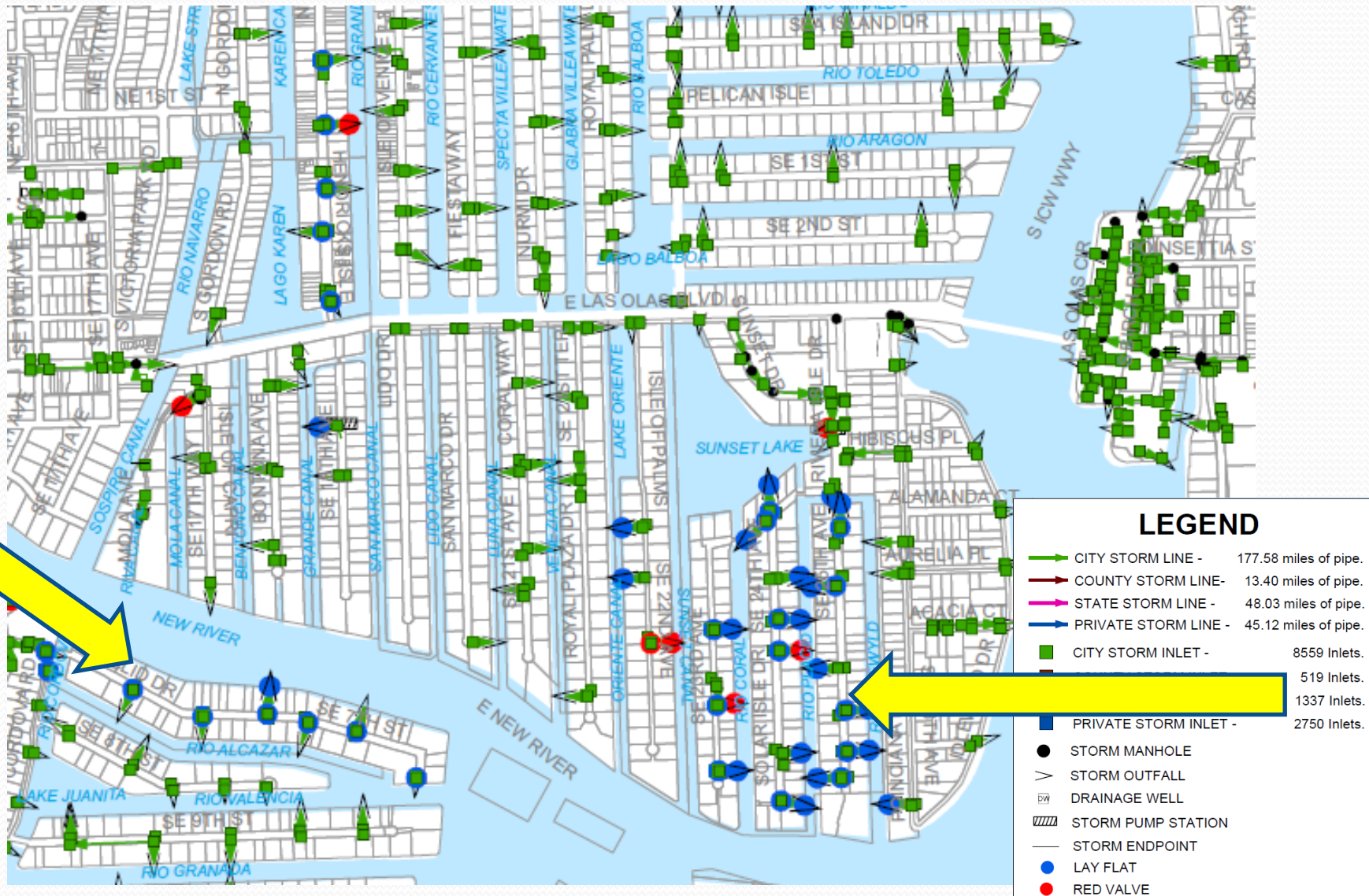


Las Olas Isles





Tidal Valves in Blue



TideFlex - Tidal Control Valves



Other Tools for Assessing Vulnerability to Sea Level Rise

- **Surging Seas**



- **NOAA Digital Coast**

Surging Seas

Sea level rise analysis by CLIMATE CENTRAL

- [Risk Finder](#)
- [Maps](#)
- [Basics](#)
- [Research](#)
- [Responses](#)
- [News](#)

Sea Level Rise & Flood Threats in Florida



Jump to Another State ▼

Surging Seas Version 1: All States



[> Research Report](#) [> Click on tiles below to access tool](#)

RELATED RESILIENCY RESOURCES

- [Southeast Florida Regional Compact Climate Change](#)
- [The Southeast Florida Regional Partnership \(SFRP\)](#)
- [Broward County: Climate Change Action Plan](#)
- [Miami-Dade County: Miami-Dade Greenprint](#)
- [FL Department of Economic Opportunity: State of Florida Community Resiliency Project](#)
- [The Florida Center for Environmental Studies \(CES\)](#)
- [The Nature Conservancy: Coastal Resilience - Gulf](#)
- [NOAA: Sea Level Rise, Coastal Flooding Impacts Viewer](#)

WHERE



WHEN



WHAT



COMPARE



Category ▼

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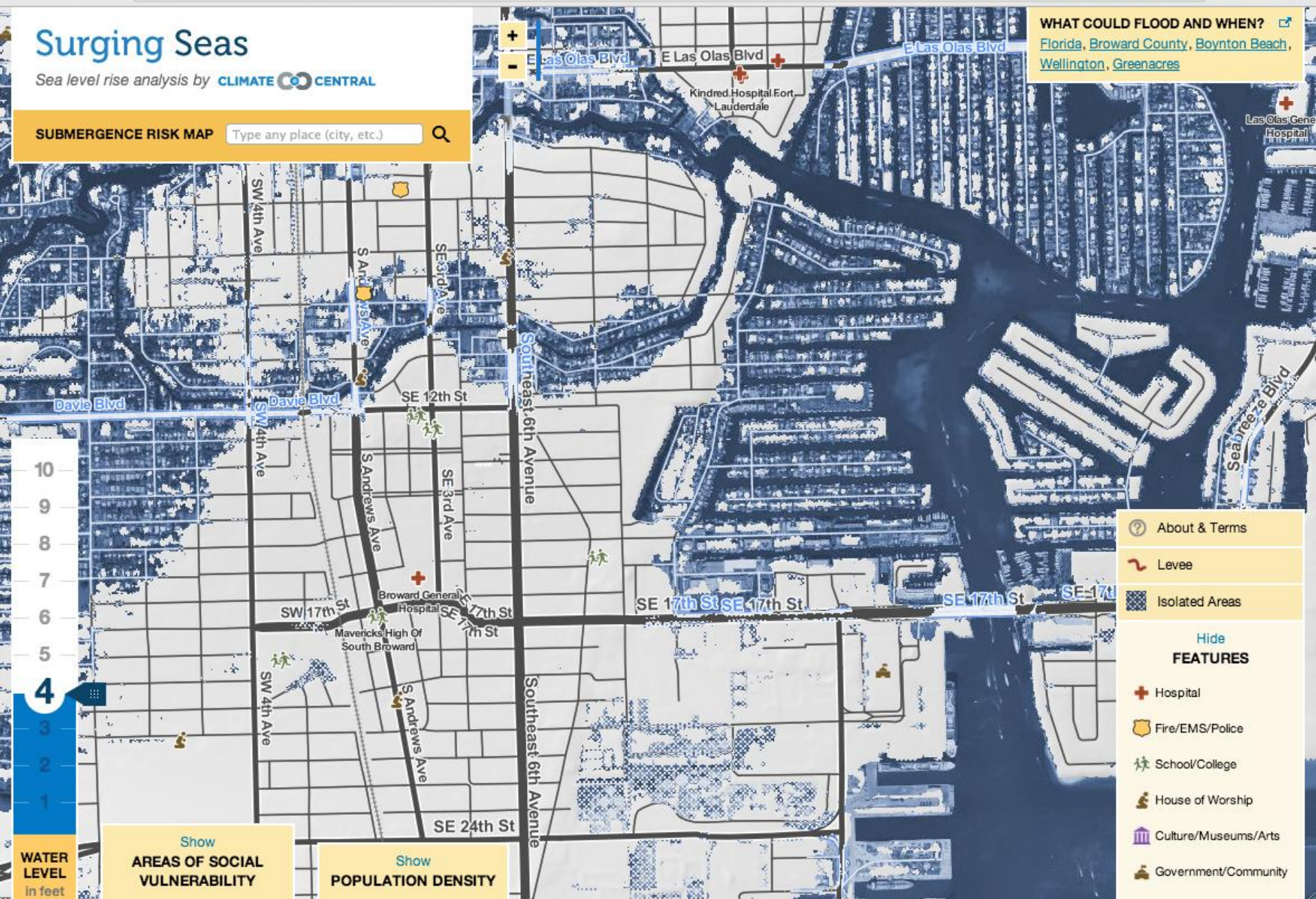
Surging Seas

Sea level rise analysis by CLIMATE CENTRAL

SUBMERGENCE RISK MAP

Type any place (city, etc.)

WHAT COULD FLOOD AND WHEN?
Florida, Broward County, Boynton Beach, Wellington, Greenacres



- About & Terms
- Levee
- Isolated Areas
- Hide FEATURES
- Hospital
- Fire/EMS/Police
- School/College
- House of Worship
- Culture/Museums/Arts
- Government/Community

Show AREAS OF SOCIAL VULNERABILITY

Show POPULATION DENSITY

WATER LEVEL in feet



RISK FINDER: FLORIDA

Type Any Place (City etc)

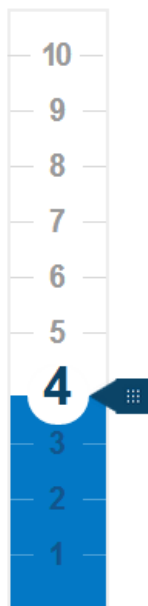


Sea level rise and coastal flood risk for Broward County, Florida

CHOOSE WATER LEVEL AND IMPACT CATEGORY TO SEE SUBMERGENCE THREATS

WATER LEVEL

From combined sea level rise, storm surge, and tide (any year)



Feet above local high tide

[Risk by decade »](#)

LOCATION

Broward County

Population: 1,655,598



Show at-risk Area Map

Full screen map »

IMPACT TYPE

Socioeconomy

Population

- Buildings

Critical

Education, culture & religion

Government & community

+ Infrastructure

WHAT COULD SUBMERGE

Broward County exposed buildings on land below 2 feet.

Percent | Total

Homes



14% of homes
below 4 feet

Fire and EMS stations



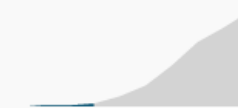
7% of stations
below 4 feet

Hospitals



4% of hospitals
below 4 feet

Police stations



3% of stations
below 4 feet

Public Schools



3% of schools
below 4 feet

Libraries



12% of libraries
below 4 feet

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Sea Level Rise Viewer

Contributing Partners: NOAA Office for Coastal Management

- Overview
- In Action
- Support
- Get It Now

[Launch Viewer](#)

Select a geography and use the slider bar to simulate various sea level rise scenarios (from one to six feet above the average highest tides) and the corresponding areas that would be impacted by flooding. Click the camera icons for pictures that depict how local landmarks could be affected. Additional tabs provide information about marsh impacts, nuisance flood frequency, and social and economic data.

Maps are not currently available for Alaska and Louisiana due to the accuracy of existing elevation data, the hydraulic complexity of the coast, and gaps in vertical datum transformation.

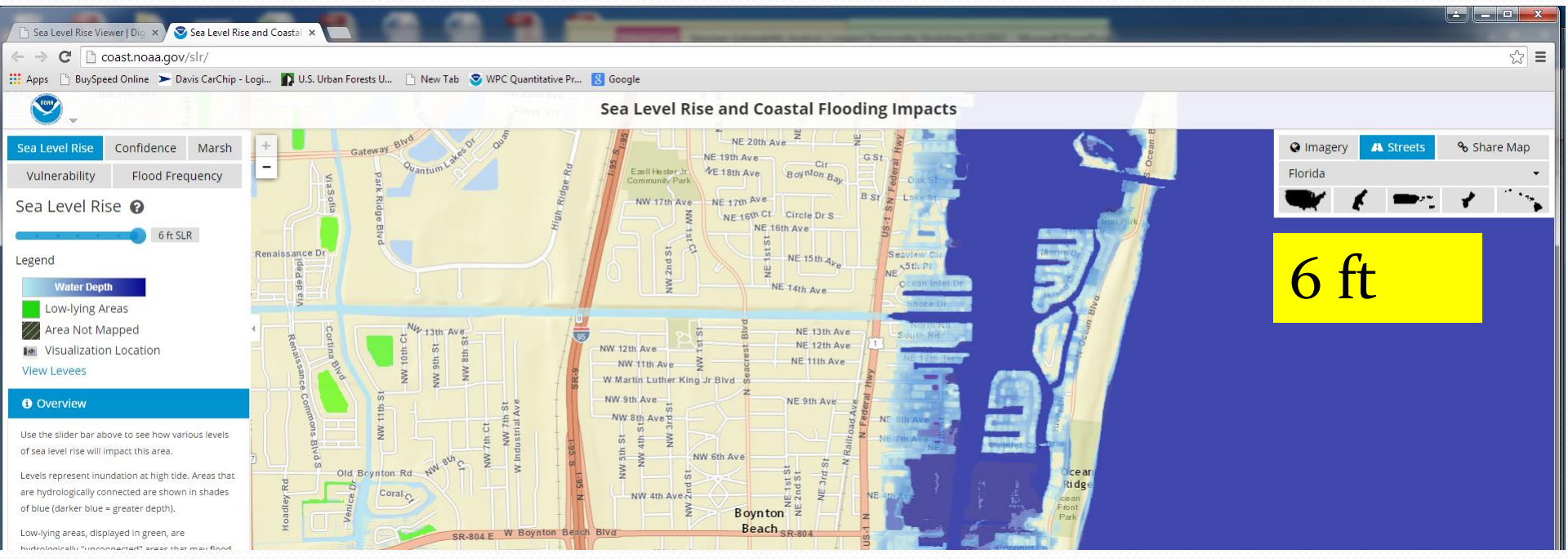
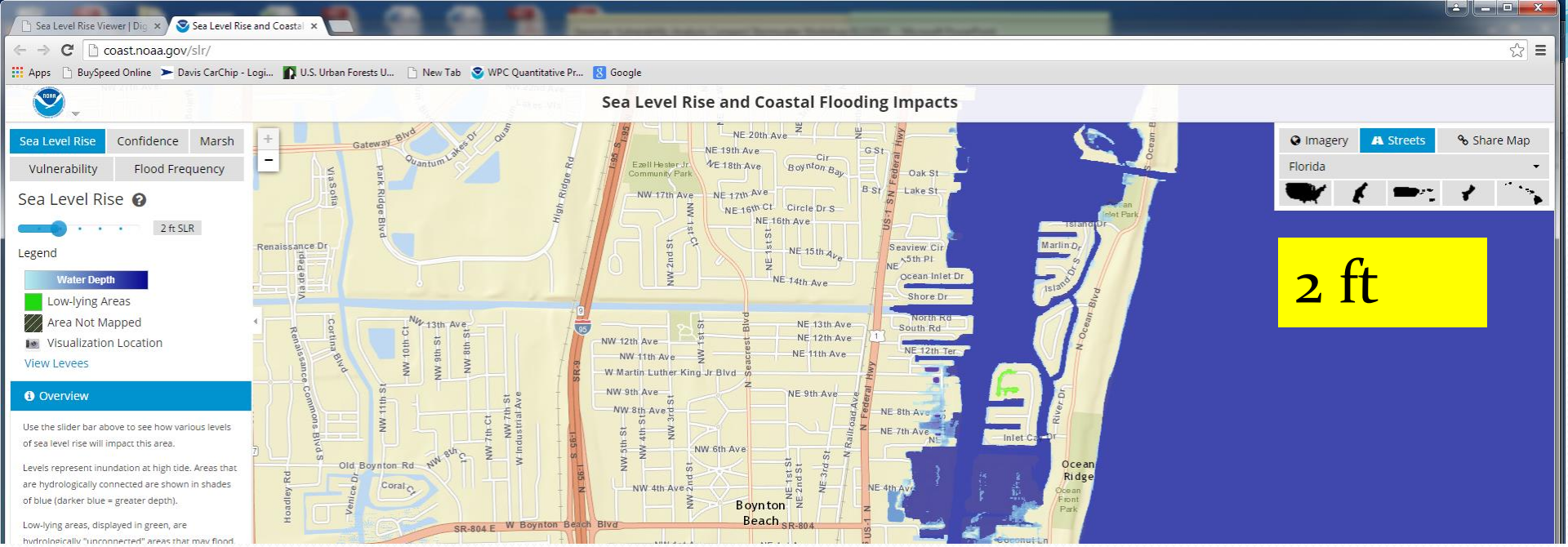
Features

- **Models** potential marsh migration due to sea level rise
- **Examines** how tidal flooding will become more frequent with sea level rise
- **Enables** access through mobile devices
- **Produces** shortened URLs for easy map sharing through email and social media
- **Provides** access to Web map services and underlying geospatial data
- **Offers** supporting documents and information on sea level rise mapping

Acknowledgments

The NOAA Office for Coastal Management acknowledges the [many organizations](#) that helped guide the development of this tool.







Sea Level Rise Viewer

Contributing Partners: NOAA Office for Coastal Management

Sea Level Rise and Coastal Flooding Impacts

Sea Level Rise | Confidence | Marsh

Vulnerability | Flood Frequency

Socioeconomic Vulnerability



Legend

- Water Depth
- Unconnected Areas
- Area Not Mapped
- Social Vulnerability: High, Med, Low

Social | Economic

Overview

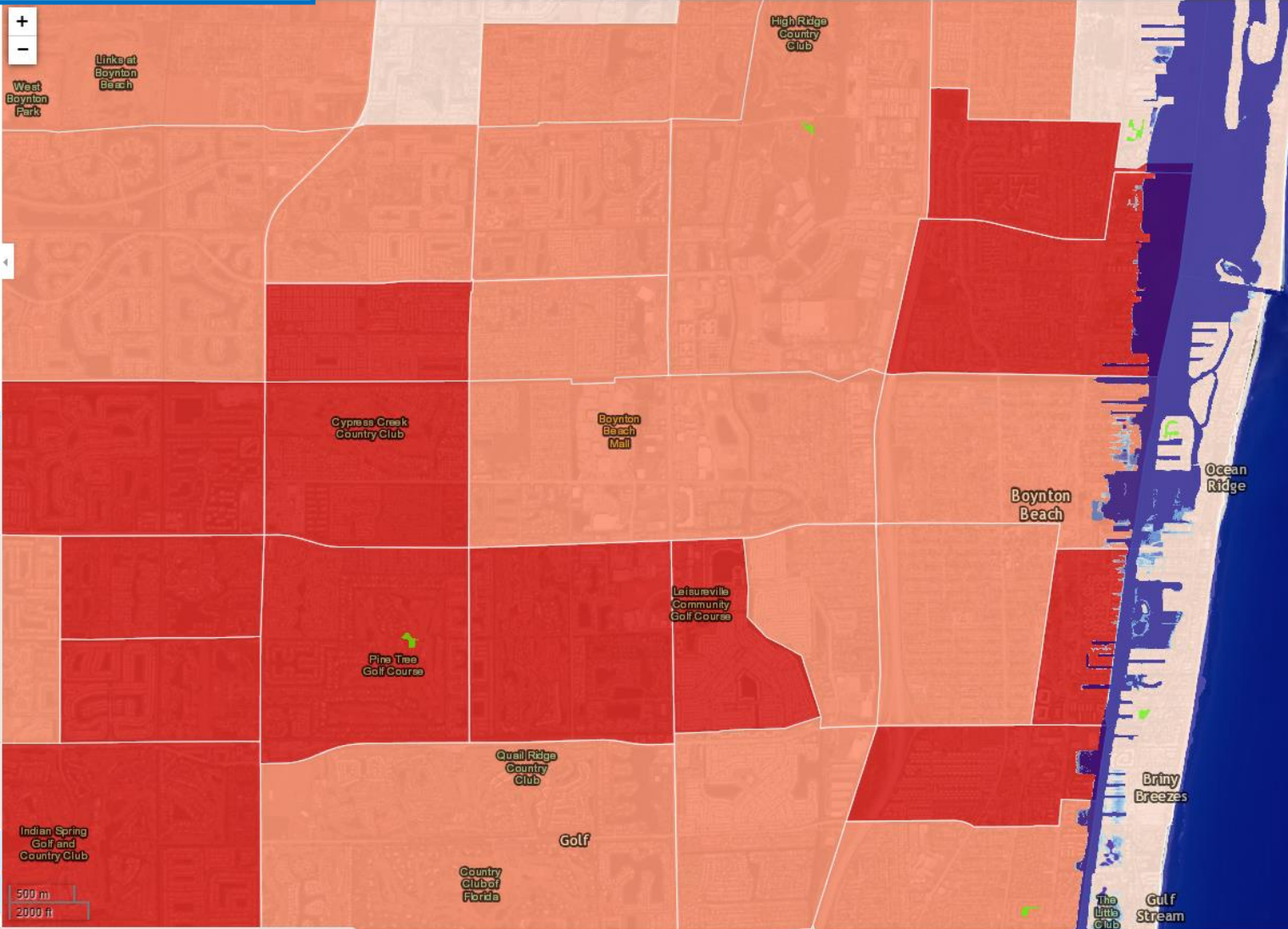
By overlaying social and economic data on a map that depicts sea level rise, a community can see the potential impact that sea level rise can have on vulnerable people and businesses.

The Social Vulnerability Index, which shows areas of high human vulnerability to hazards, is based on population attributes (e.g., age and poverty) and the built environment. By looking at the intersection of potential sea level rise and vulnerable block groups, one can get an idea of how vulnerable populations might be affected by sea level rise.

Dark red indicates block groups having a high vulnerability, and the lighter reds indicate decreasing vulnerability.

Understanding The Map

Additional Information



Questions?