



TOWN OF JUNO BEACH VULNERABILITY ASSESSMENT

Final Presentation | January 28, 2026



ACKNOWLEDGMENT

***Thank you for your input,
support, and collaboration!***



Town Council Members

- Mayor Peggy Wheeler
- Vice Mayor John Callaghan
- Vice Mayor Pro Tem Diana Davis
- Councilmember DD Halpern
- Councilmember Marianne Hosta
- Town Staff
- Juno Beach Residents

AGENDA

1. State of Resilience
2. Summary of Flood Scenarios
3. Most Vulnerable Assets
4. Focus Areas
5. Potential Projects
6. Takeaways
7. Next Steps
8. Questions



VULNERABILITY ASSESSMENT APPROACH



Data Collection

- Town infrastructure data
- State critical asset inventory
- Flood and non-flood hazard scenarios
- #1 Public Outreach Meeting



Exposure Analysis

- 10+ Scenarios
- % of assets exposed
- % of land area exposed
- Flood depth by scenario at each asset



Sensitivity Analysis

- Rank assets based on consequence of failure (CoF) of those assets and their depth threshold (dt)
- Identify focus areas



Review of Priority Vulnerable Assets

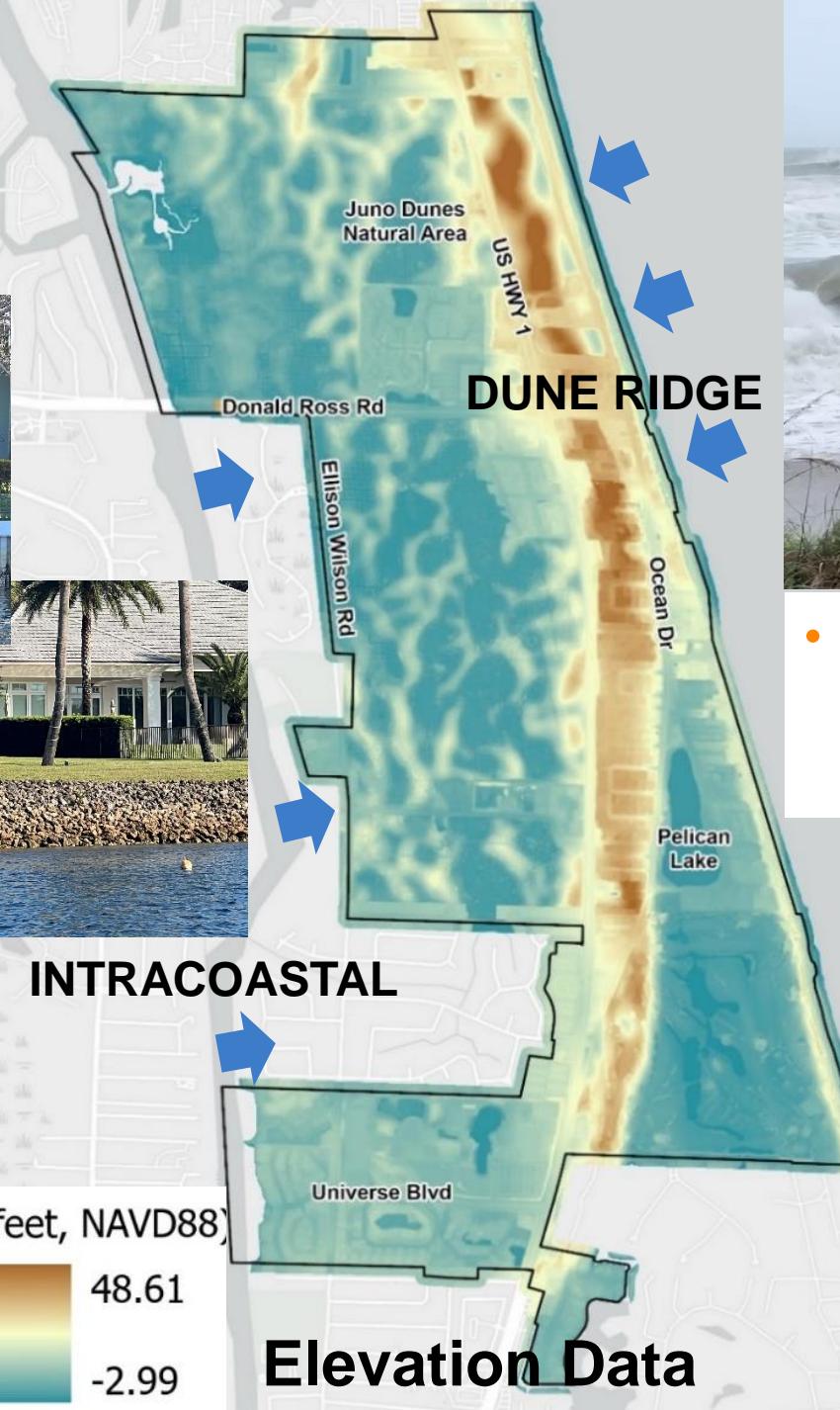
- Prioritization
- Potential Adaptation Strategies
- Focus Areas

STATE OF RESILIENCE

- **Intracoastal shorelines** higher than current high tides and typical annual storm surge



Photos at low tide, show +2-3 feet capacity

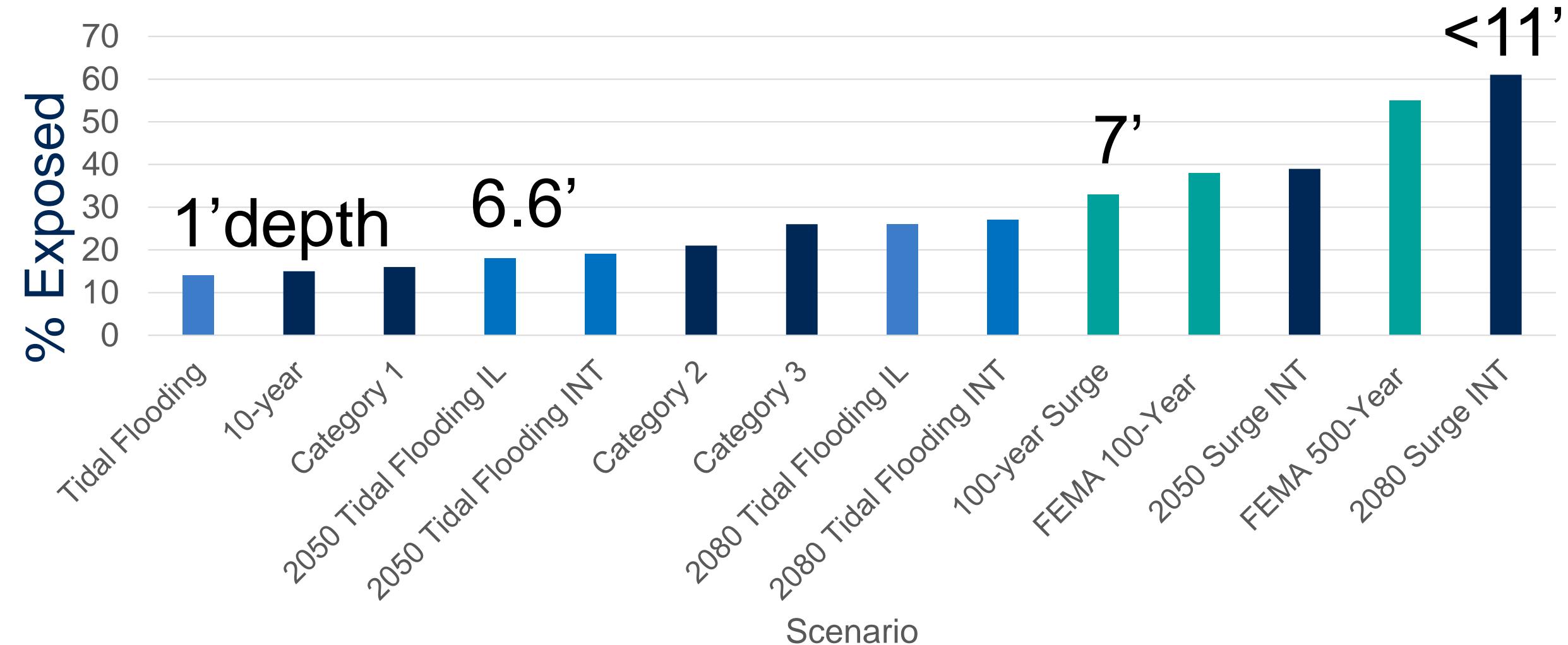


- **Ridge, beach, and dunes** protect against oceanfront **surge**



- **Rainfall** drains quickly in sandy soil

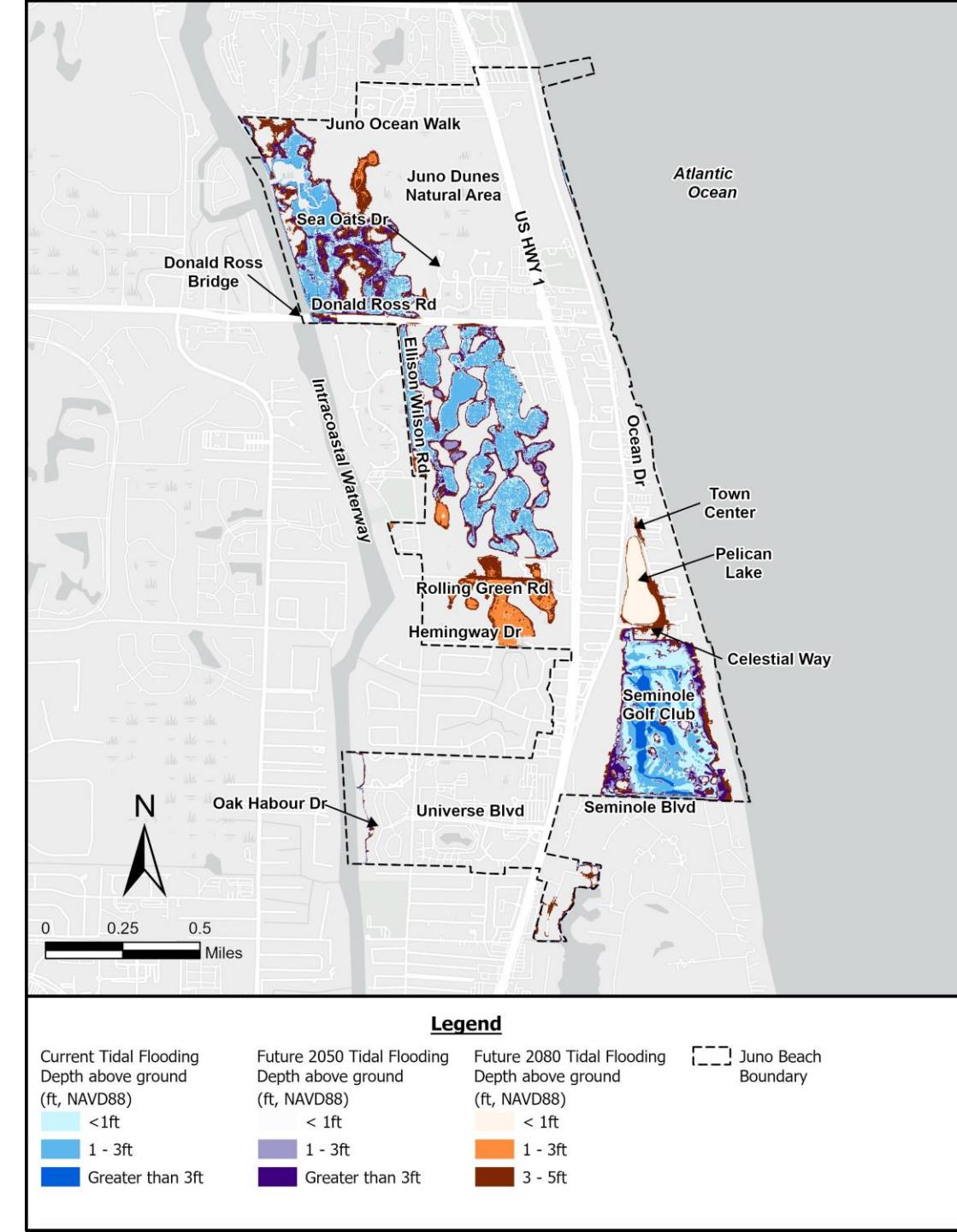
SUMMARY OF FLOOD SCENARIOS



EXPOSURE & SENSITIVITY

TIDAL FLOODING

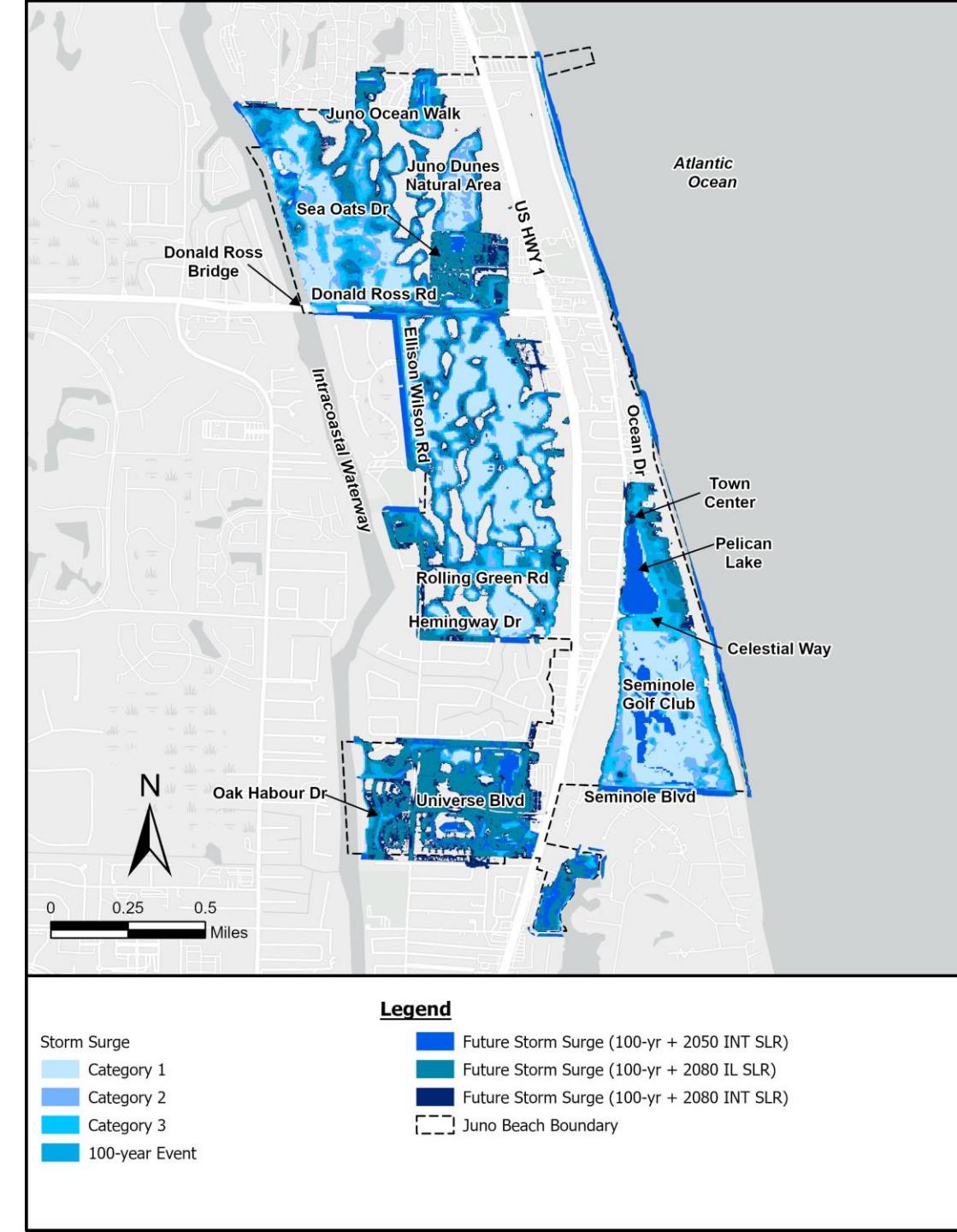
- **Current Tidal Flooding**
 - Depths of less than a foot along intracoastal
 - Inundate up to 8% of the Town
- **Future Tidal Flooding**
 - Inland seepage (groundwater rise) may slow drainage
 - By 2080, areas below 5 ft NAVD, this future condition may mean daily tidal inundation
- **Most exposed assets**
 - Privately-owned shorelines and County-owned wetlands
 - Stormwater facilities



EXPOSURE & SENSITIVITY

STORM SURGE

- **Current Storm Surge Flooding**
 - Inundating 33% of the Town
 - Inundating 24% of critical assets
 - Max flood depths of 6 feet
- **Future Storm Surge Flooding**
 - Maximum flood depth:
 - ~7 ft in 2050; ~9 ft in 2080
- **Town-Owned High Vulnerability Zones**
 - Area around Pelican Lake, including Celestial Way
 - Area around Universe Blvd



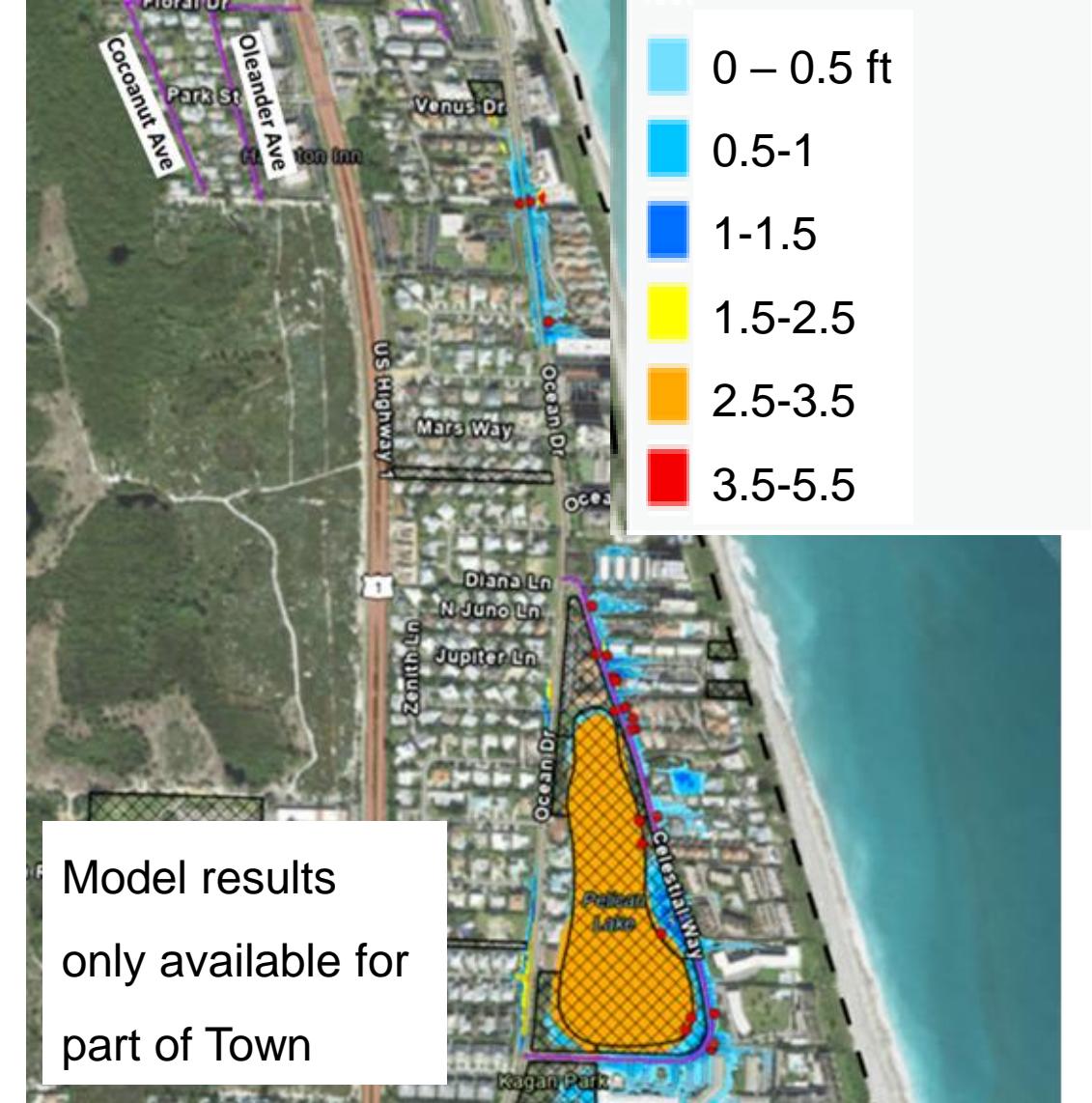
EXPOSURE & SENSITIVITY

RAINFALL

25-Year, 24-Hour Rainfall Scenario: Assets Sensitive to Rainfall Flooding

- Headwalls along Celestial Way and nearby catch basins → greatest flood depth due to low elevations (feet)
- Pelican Lake → limited freeboard and outfall capacity / aging Town Hall drainage system
- Privately owned systems including lift stations, fire hydrants, and catch basins

25-Year, 24 hour Rain



MOST VULNERABLE ASSETS



SW Infrastructure
Around Pelican Lake
Includes concrete headwalls, catch basins, lift stations, etc.



Celestial Way
Town-Owned Roadway,
3 ft under 100-year Storm
Surge



Rolling Green
Road
>2.5 ft under 100-
year and Compound
Flooding



Universe
Boulevard Area
Cluster of
roadways, fire
hydrants, catch
basins, etc.

VULNERABLE TOWN MAINTAINED ROADS



Celestial Way
Rainfall and future sea level rise seepage



Mercury Rd
100-year rainfall and future sea level rise seepage



Rolling Green Rd
100-year rainfall and future sea level rise seepage



Universe Blvd
500-year Compound Flooding

ROAD SENSITIVITY

Town Owned Roads

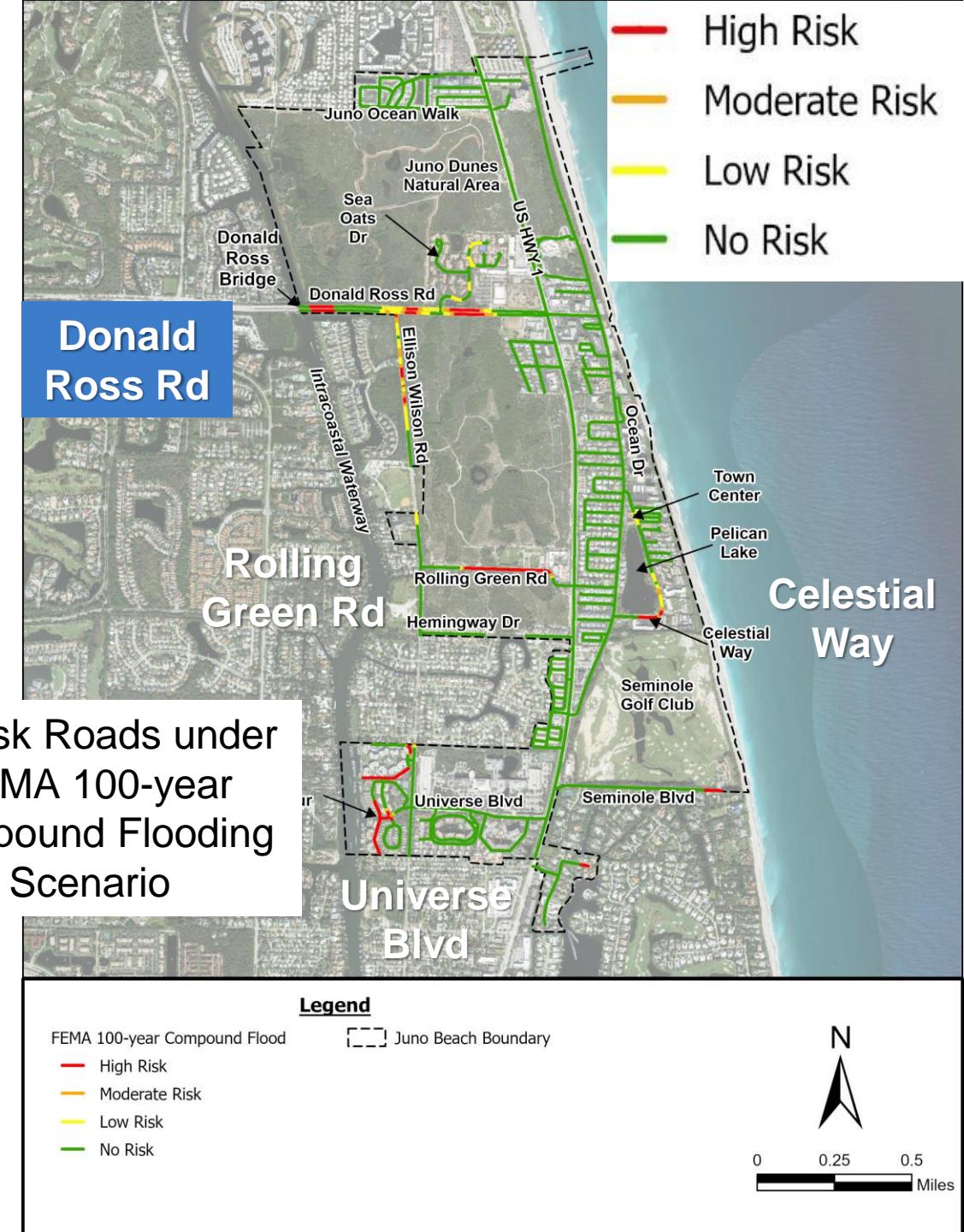
- **Celestial Way:** Low - High
- **Rolling Green Road:** High
- **Universe Blvd:** Low - High

County Road

- **Ellison Wilson Road:** Low - High
- **Ocean Dr:** Low
- **Donald Ross Rd:** Low - High

Private Roads

- **Sea Oats Drive:** Low
- **Seminole Blvd:** Low (High @ dip)



ASSETS AT RISK

100-YEAR SURGE SCENARIO



Roads



Lift
Station



Fire
Hydrant



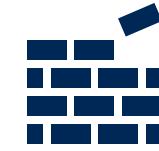
Catch
Basins



Beach



Park



Concrete
Headwall



Wetland

Max Depth:

6 ft

Depth:

3 ft

Depth:

4 ft

Depth:

3 ft

Depth:

6 ft

Depth:

<1 ft

Depth:

6 ft

Depth:

6.5 ft

16%
impacted

30%
impacted

39%
impacted

53%
impacted

69%
impacted

80%
impacted

100%
impacted

100%
impacted

RESILIENT ASSETS

No Flood Risk

- **Critical Community and Emergency Facilities (Town Hall, Police Department, Fire Stations, Hospitals and Shelters)** protected across most events
- **Town-owned and residential parcels, parks, and wetlands** face minimal risk
- **Bridges (2)** projected to be safe under almost all scenarios
- **Some critical infrastructure and majority of roadways** face little or no risk at all



RECENT PROJECTS

Road Drainage

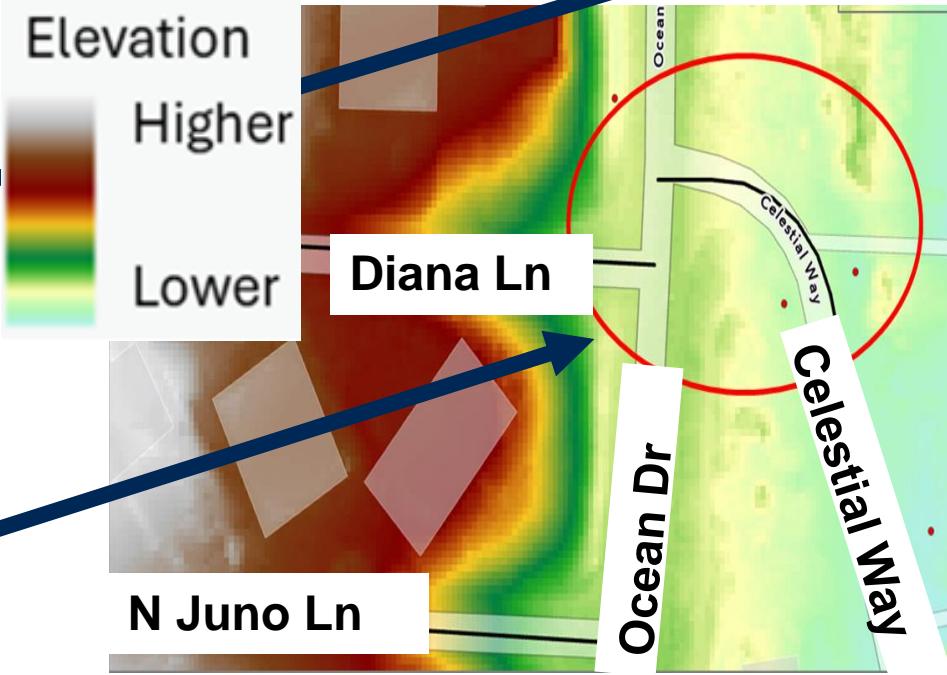
- Celestial Way
 - *Swales, permeable pavers*
- Universe Blvd (photos)
 - *Pipes, catch basins, manholes*



PENDING PROJECT

Ocean Drive

- Pending Palm Beach County Project, 2026
 - *Pipes, catch basins, swales*



PUBLIC FEEDBACK

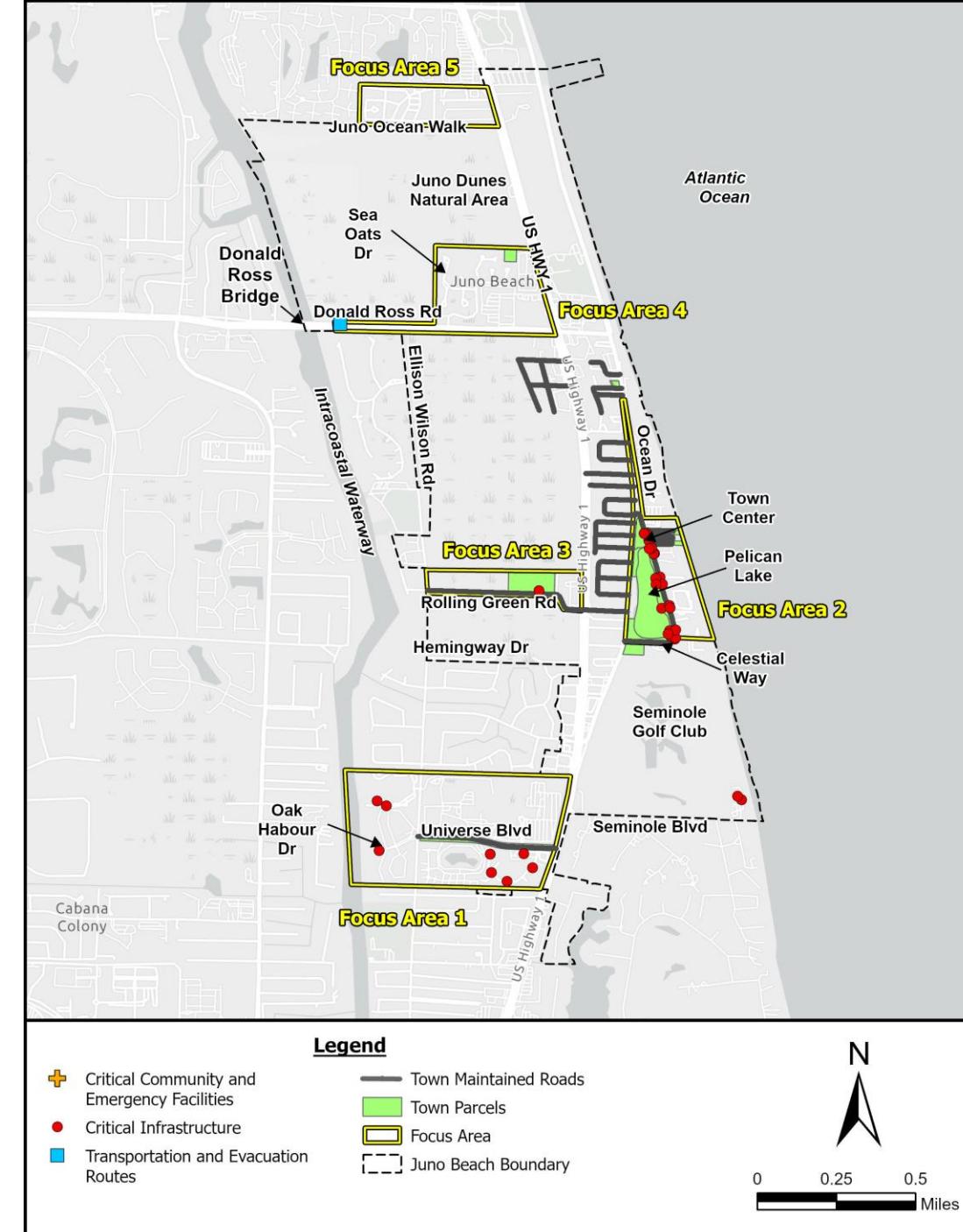
From Residents and Community

- **Celestial Way** prone to flooding → residual flooding present
- **Juno Ocean Walk RV Park**
 - Heavy rain and resulting floods affecting 225 properties
 - Need to be classified as vulnerable area → explore drainage design solutions (currently a non-functional drain in US-1 near Shell Station)
- Flooding occurs around **Uno Lago**, SW runoff into nearby lagoon
- Interest in improvement of overall drainage and water systems (especially **Pelican Lake**)



FOCUS AREAS

- **1:** Top ranked assets → cluster of fire protection infrastructure, transportation routes, SW and wastewater facilities, and natural features
- **2:** 34 assets in Town-wide top 100, includes SW infrastructure, transportation corridors, wastewater facilities, residential parcels, and emergency operations infrastructure; SW assets show highest ranking → especially catch basins along **Celestial Way** and outfall structures around **Pelican Lake**
- **3:** Parts of **Rolling Green Road** in Town's top 100 list, overall lower concentration of high sensitivity assets and few high-ranked assets
- **4:** Parts of **Donald Ross Road** (County-owned) subject to flooding, 2 assets in top 100
- **5:** Highest ranked assets → **Lift Station LS 111**, **Ocean Breeze Drive**, and Lake Feature



POTENTIAL PROJECTS

Infrastructure

- Inlet rehabilitation / capacity increases near **Pelican Lake, Celestial Way, and Universe Blvd** → regrade gutter lines, add / resize inlets at sag points, add “double inlets” at chronic ponding locations
- Stem wall near **Rolling Green public works site** to protection onsite critical infrastructure
- Lengthen exfiltration trenches as needed



POTENTIAL PROJECTS

Operations

- Evaluate performance of **A1A** proposed improvements
- Monitor for **infiltration** and seal / maintain pipes
- **Post-King Tide inspections** near areas marked for flooding → photos, depth logs, duration notes
- Evaluate need for portable pump and develop protocol for deployment (consider **Juno Ocean Walk** use)
- Review **level of service** for roads and drainage as tidal flooding or rainfall conditions evolve; provide relevant design standards for private owners



POTENTIAL PROJECTS

Planning

- Right of way easement needs for stormwater **storage** cells upstream of zones where backflow may occur
- **Bioswales** in areas of high heat
- Evaluate submittal of LOMR to FEMA using updated topography and hydraulics near **Pelican Lake**
- Advocate to raise road points and add drains → **Donald Doss Rd, Ellison Wilson Rd**, and other private roads)
- Advocate for County-led mangrove **wetland adaptation**
- Encourage private tidal adaptation near Bay Colony Dr S
- Identify beneficial use for stormwater near **Juno Ocean Walk** if intracoastal discharge prohibited
- H&H **model** update inclusive of recent projects
- Maintain **grant readiness** assessment for projects
- Consider underwater fire **hydrants** in emergency planning or tabletop exercises



KEY TAKEAWAYS

- Town has **low to moderate** exposure to flood hazards
→ exposure to high-frequency, lower-impact events is minimal, but infrequent extreme events could flood **55%** of town
- High Vulnerability Roads → area around **Pelican Lake / Celestial Way, SW quadrant** bounded by US-1, Pleasant Dr, Ardley Rd, and Intracoastal Waterway (with **Universe Blvd** in the center), **Juno Ocean Walk, Ellison Wilson Rd, Rolling Green Rd, Seminole Blvd**
- **Natural, Cultural, and Historical Resources** most exposed asset class to extreme storm events
- **Relatively moderate** wildfire risk



NEXT STEPS

January 2026

- Presentation of Draft Report to Council
- Council Review of Report



February 2026

- Final Report Delivered to Staff

March 2026

- State Submittal, Eligible for Resilient Florida Implementation Funding





QUESTIONS

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Expect the Extraordinary.