



# TOWN OF JUNO BEACH VULNERABILITY ASSESSMENT

Final Presentation | January 28, 2026



# ACKNOWLEDGMENT

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*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

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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
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# 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*

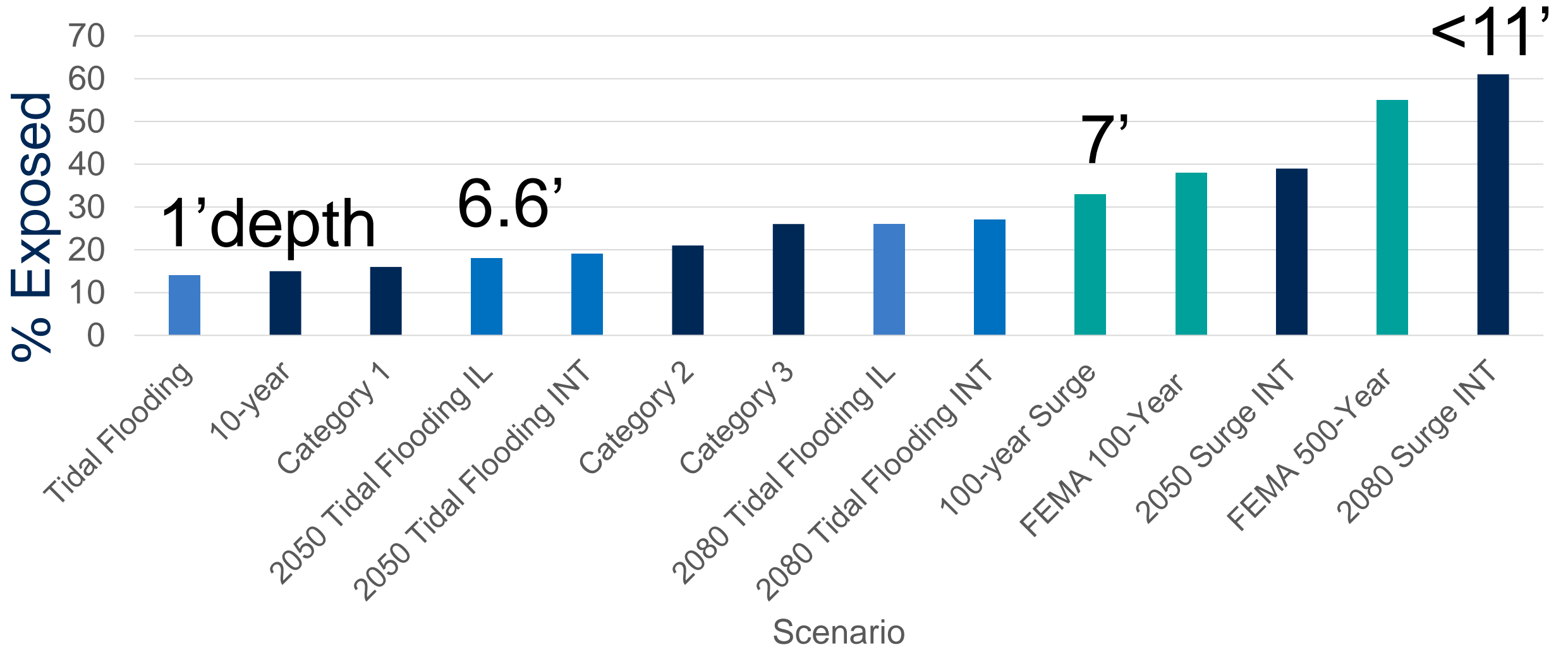


- **Ridge, beach, and dunes** protect against oceanfront **surge**



- **Rainfall** drains quickly in sandy soil

# SUMMARY OF FLOOD SCENARIOS

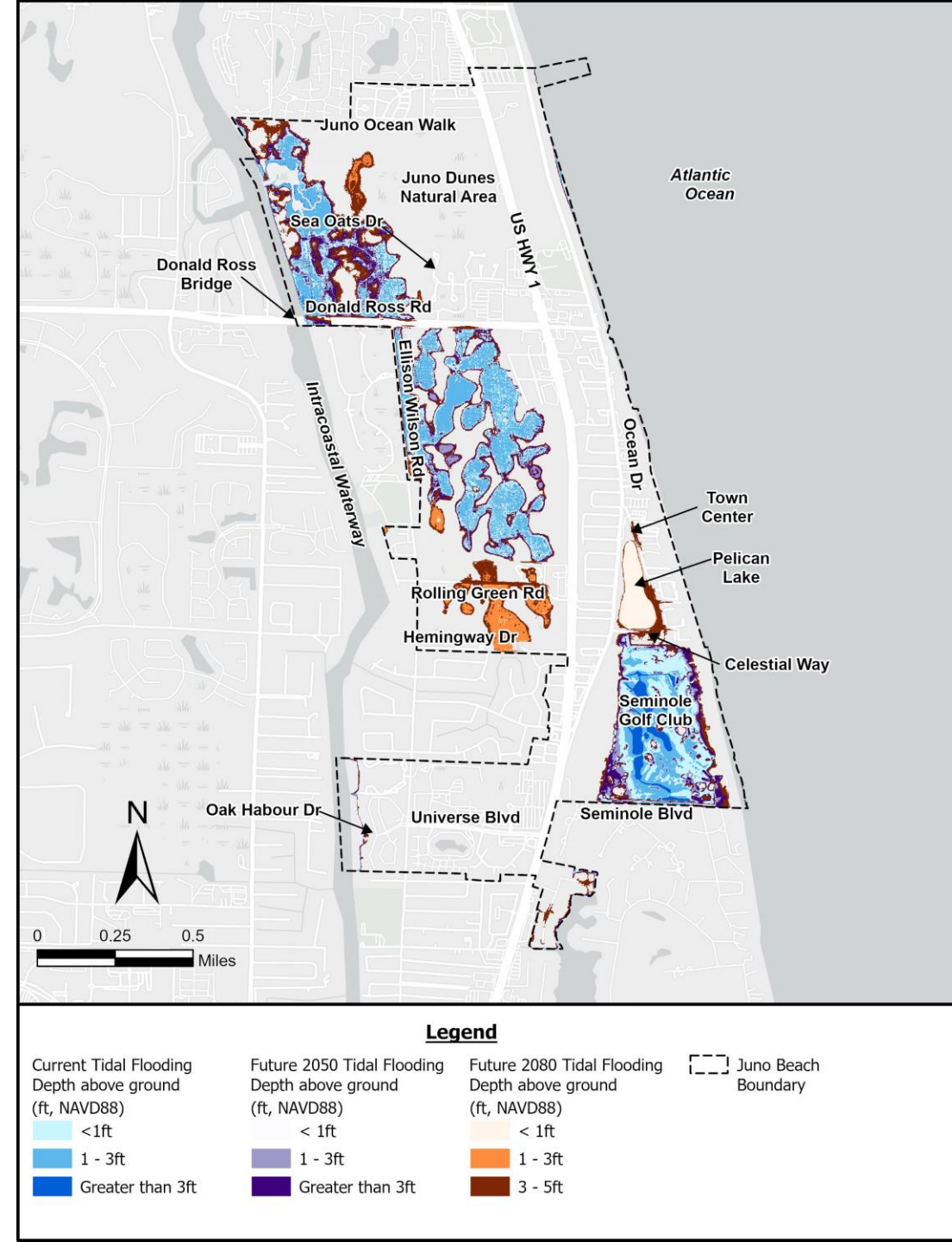




# EXPOSURE & SENSITIVITY

## TIDAL FLOODING

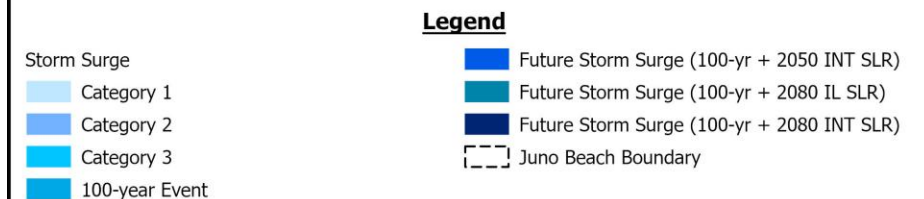
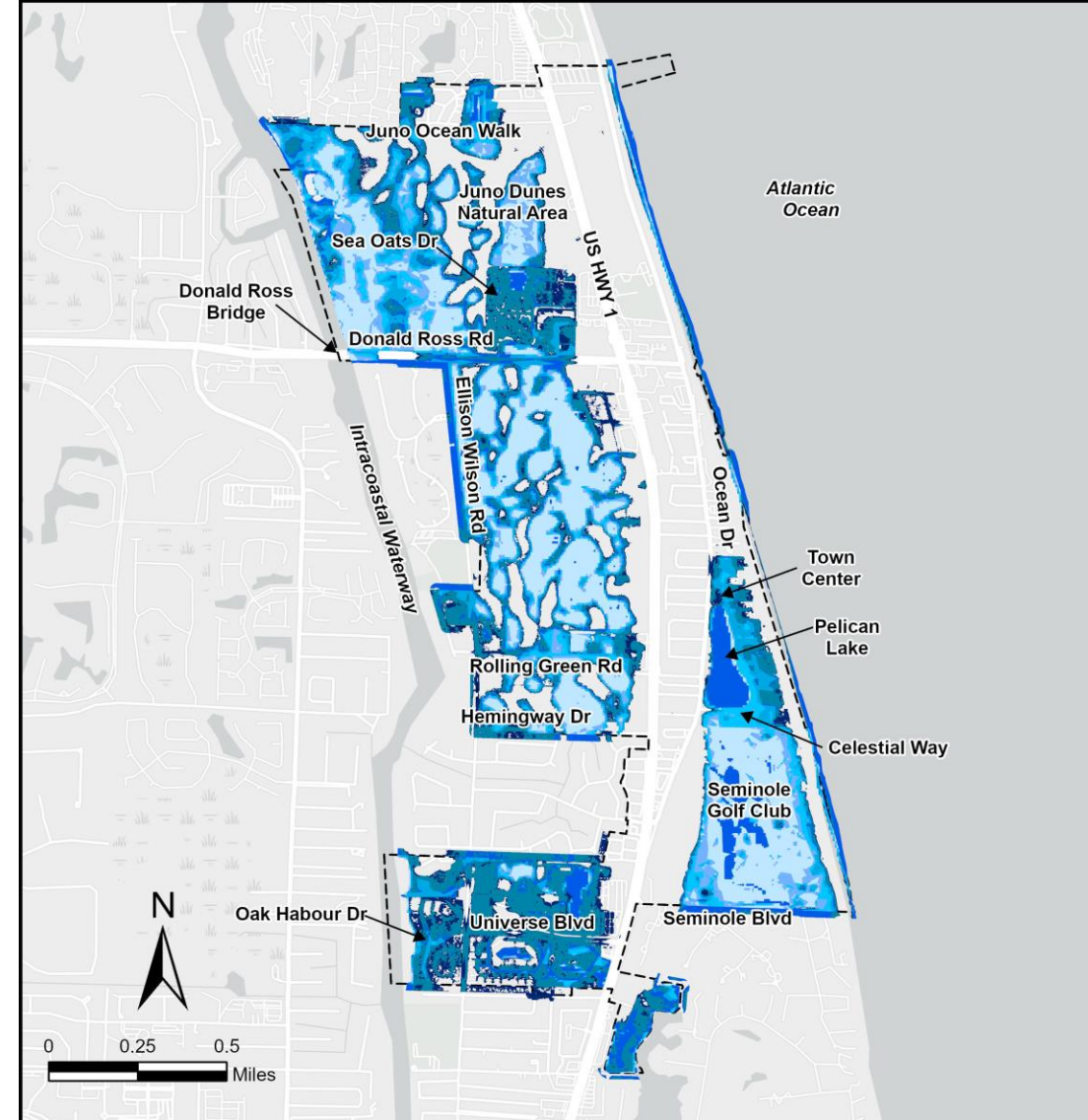
- **Current Tidal Flooding**
  - Depths of less than a foot along intracoastal
  - Inundate up to 8% of the Town
- **Future Tidal Flooding**
  - Inland seepage (groundwater rise) may slow drainage
  - By 2080, areas below 5 ft NAVD, this future condition may mean daily tidal inundation
- **Most exposed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





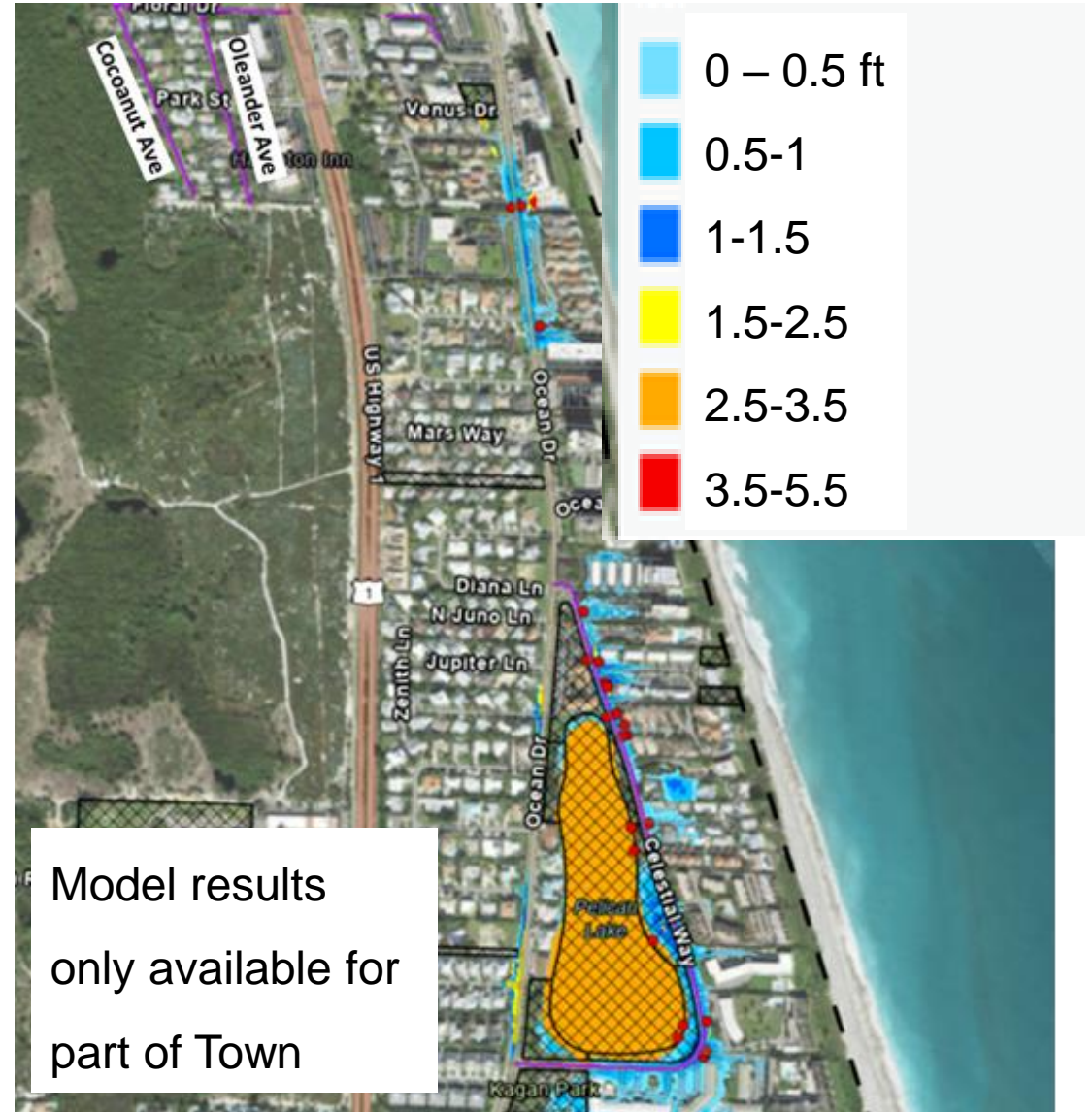
# EXPOSURE & SENSITIVITY

## 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

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## 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.

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# VULNERABLE TOWN MAINTAINED ROADS

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## 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

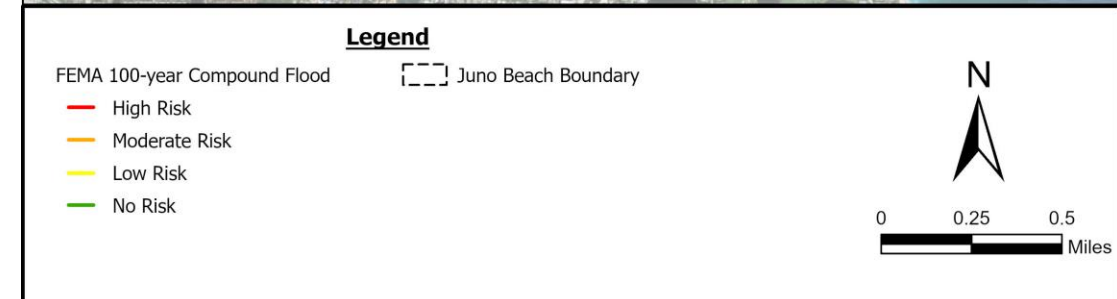
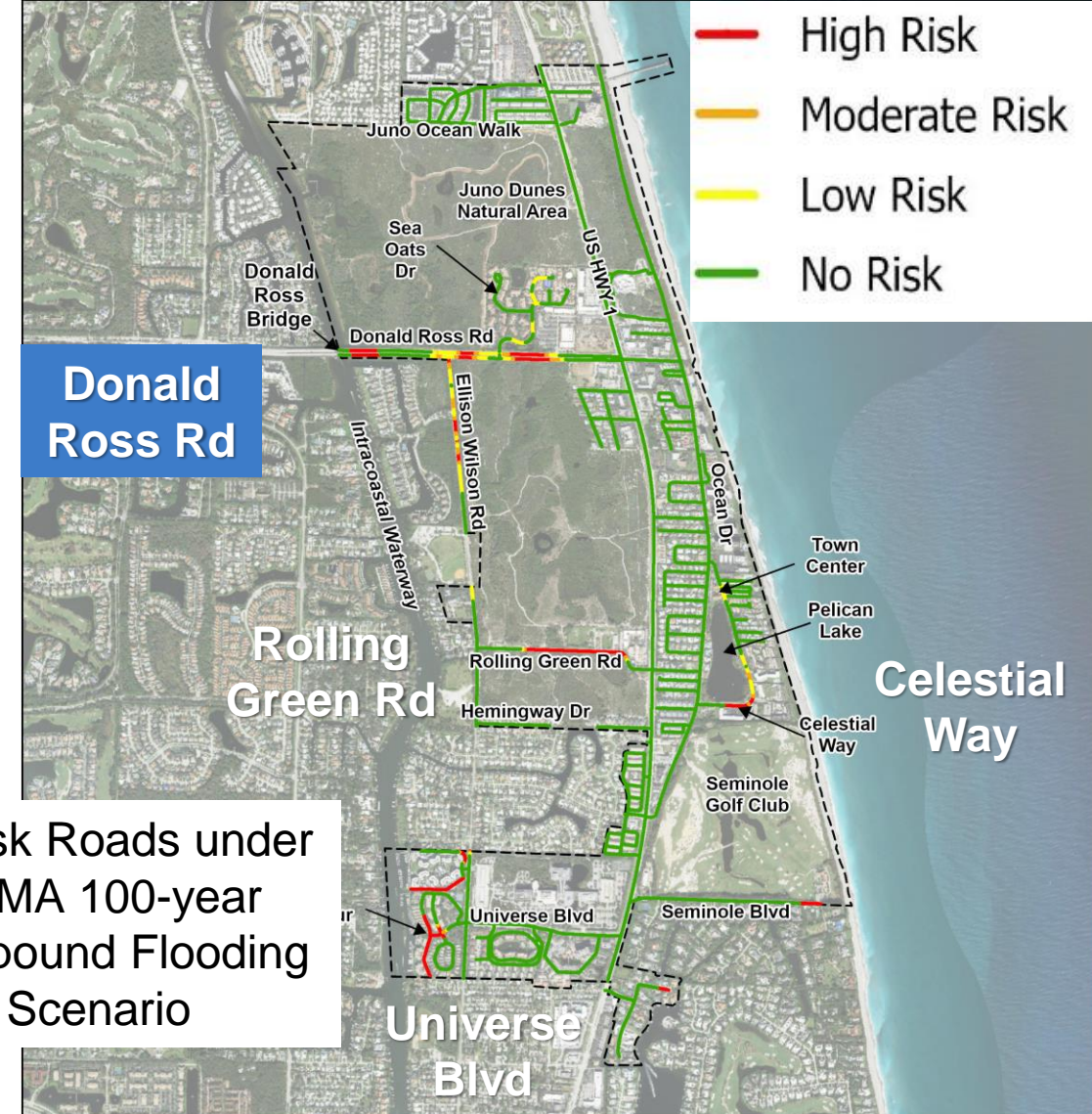
- Celestial Way: Low - High
- Rolling Green Road: High
- Universe Blvd: Low - High

## 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

Max Depth:  
**6 ft**

**16%**  
impacted



Lift Station

Depth:  
**3 ft**

**30%**  
impacted



Fire Hydrant

Depth:  
**4 ft**

**39%**  
impacted



Catch Basins

Depth:  
**3 ft**

**53%**  
impacted



Beach

Depth:  
**6 ft**

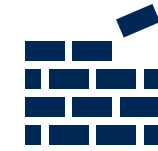
**69%**  
impacted



Park

Depth:  
**<1 ft**

**80%**  
impacted



Concrete Headwall

Depth:  
**6 ft**

**100%**  
impacted



Wetland

Depth:  
**6.5 ft**

**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
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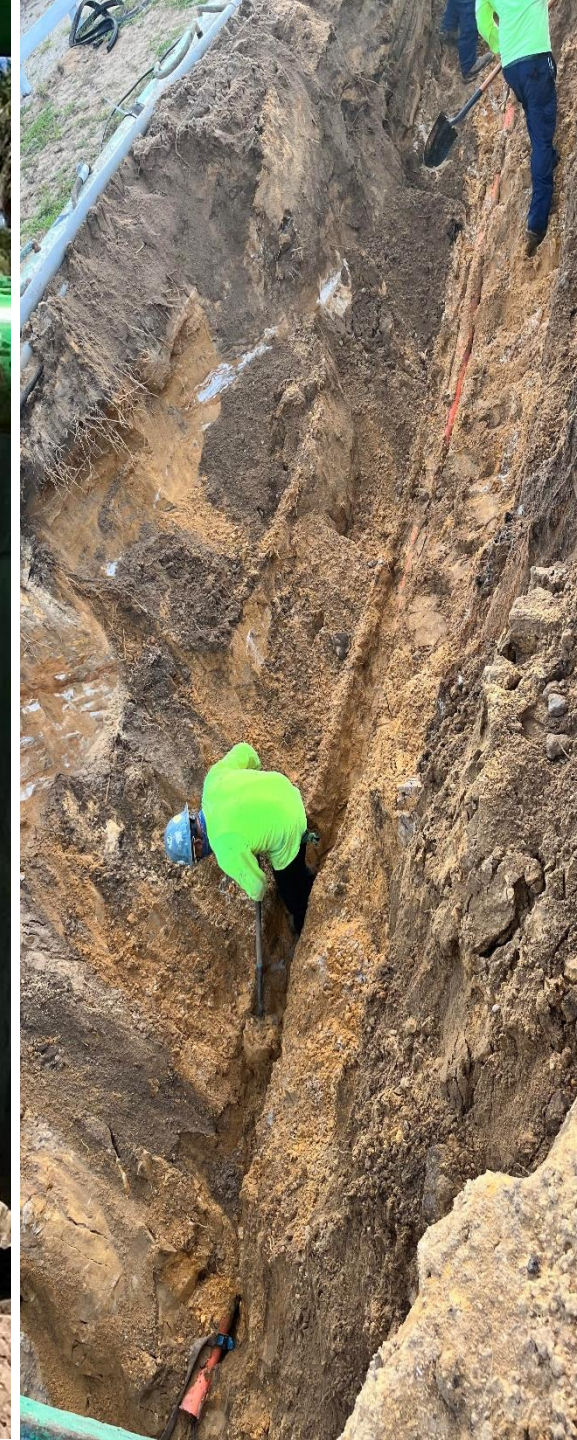




# RECENT PROJECTS

## Road Drainage

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



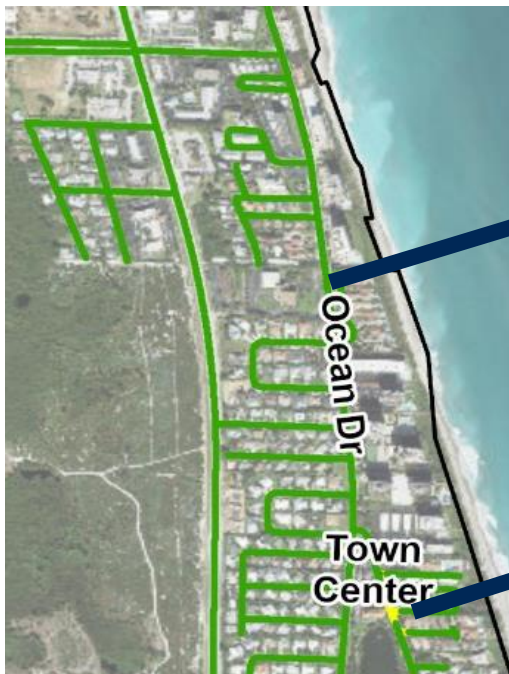


# PENDING PROJECT

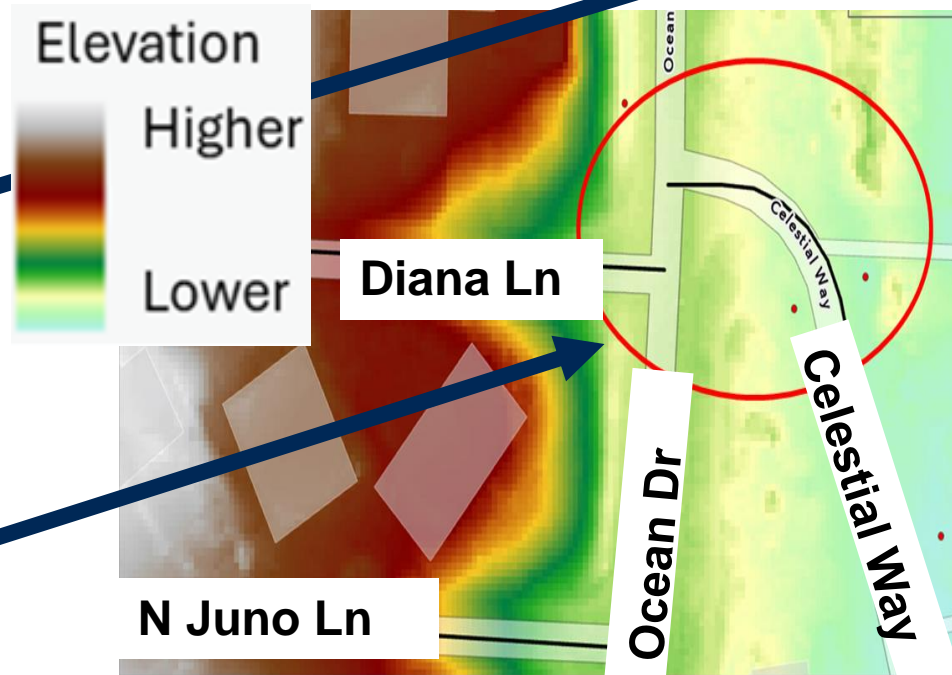
## Ocean Drive

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

Source: 2023  
County Analysis  
(3 Yr Storm)



Ocean Road @ Low Risk, 100 Yr Storm



Identified Dip in Road (Circle)



# PUBLIC FEEDBACK

## From Residents and Community

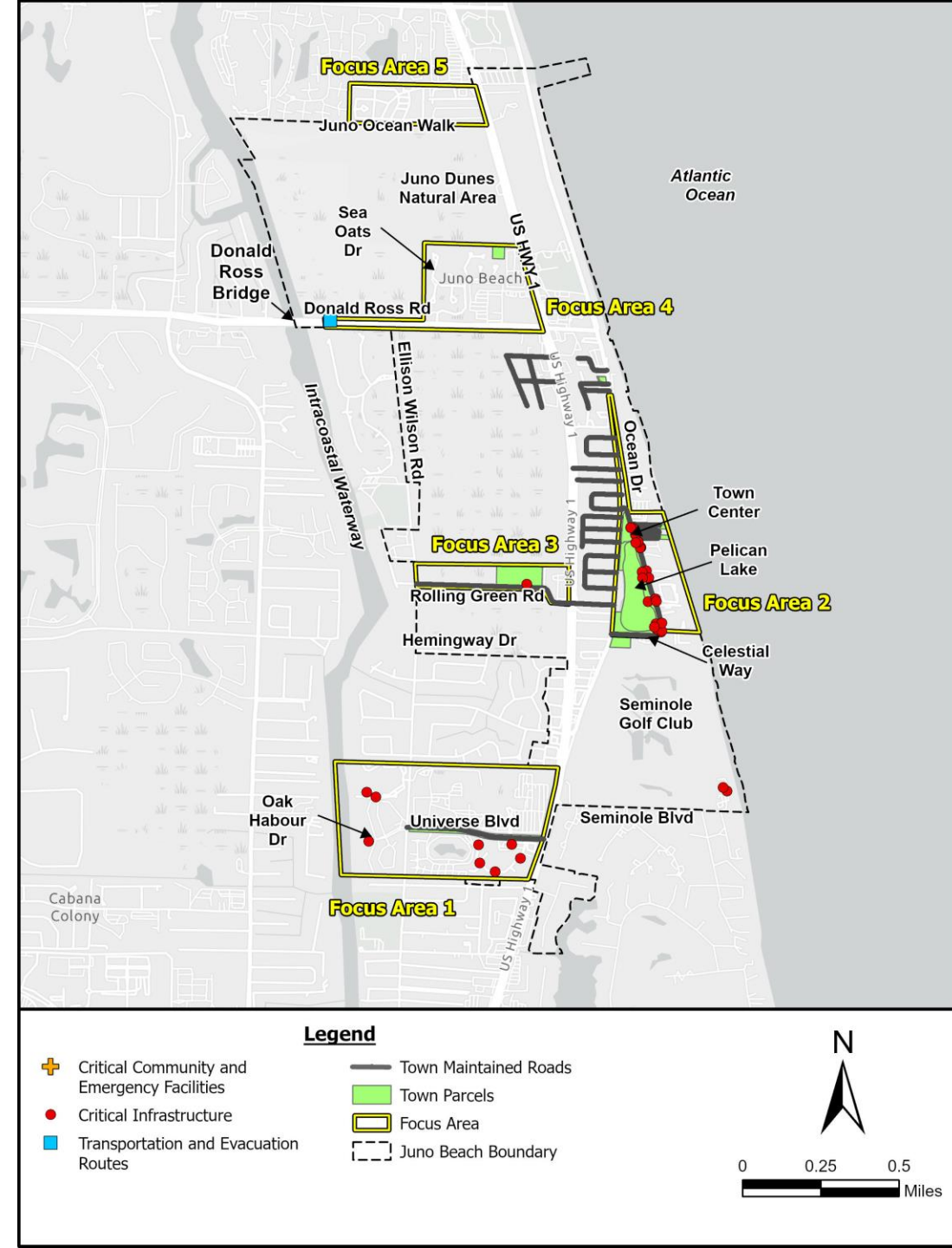
- **Celestial Way** prone to flooding → residual flooding present
- **Juno Ocean Walk RV Park**
  - Heavy rain and resulting floods affecting 225 properties
  - Need to be classified as vulnerable area → explore drainage design solutions (currently a non-functional drain in US-1 near Shell Station)
- 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

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## 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



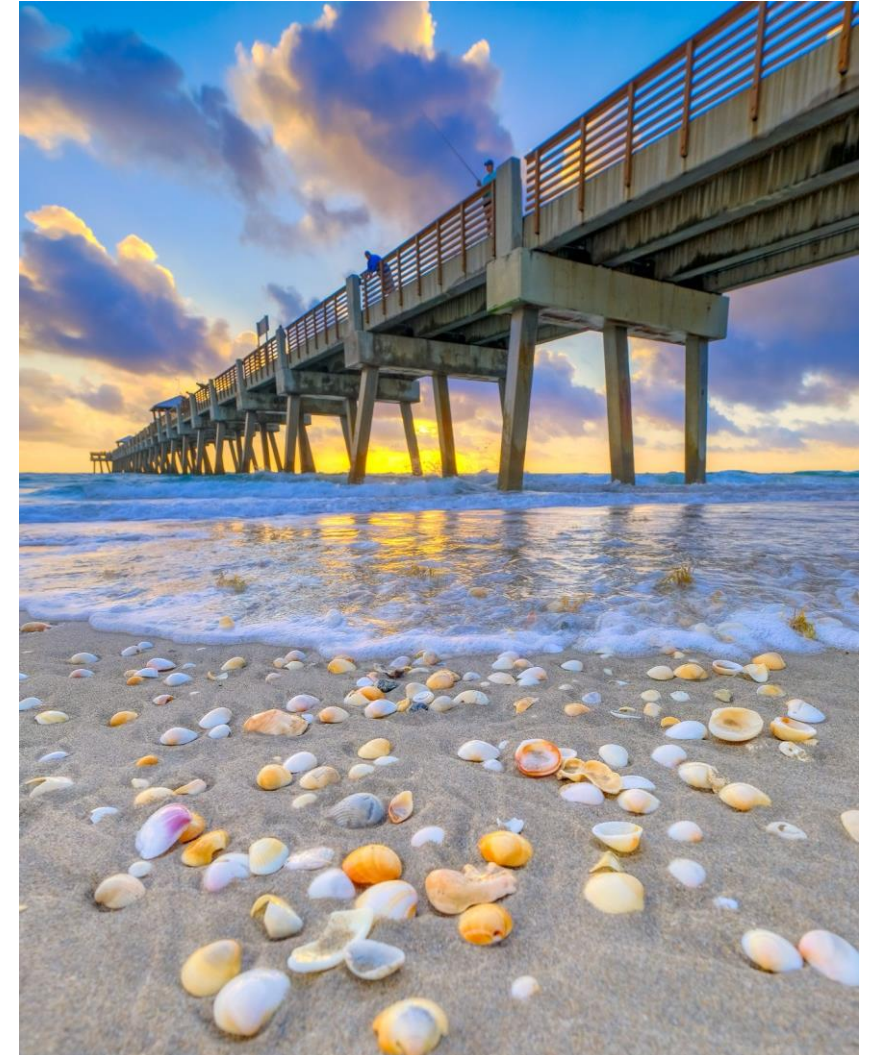


# POTENTIAL PROJECTS

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## Operations

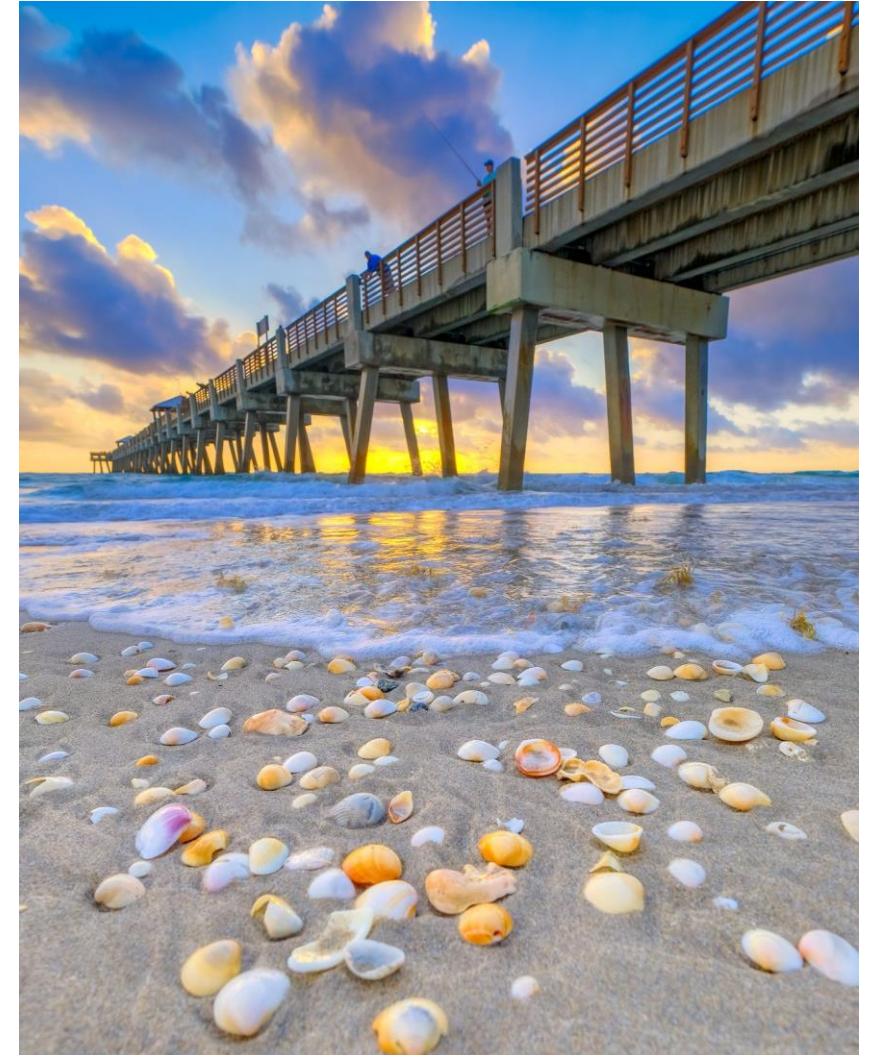
- Evaluate performance of **A1A** proposed improvements
  - Monitor for **infiltration** and seal / maintain pipes
  - **Post-King Tide inspections** near areas marked for flooding → photos, depth logs, duration notes
  - Evaluate need for portable pump and develop protocol for deployment (consider **Juno 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
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# 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

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- 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
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# NEXT STEPS

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## *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
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# QUESTIONS

## **Andrea Dobbins**

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**Expect the Extraordinary.**