

Regional Collaboration to Enhance Water Resource Resilience

FWEA WR3 Spring Seminar, Orlando
March 20, 2025



About the Presenter



Jason Bird, CFM

Resilience Market Solutions Leader
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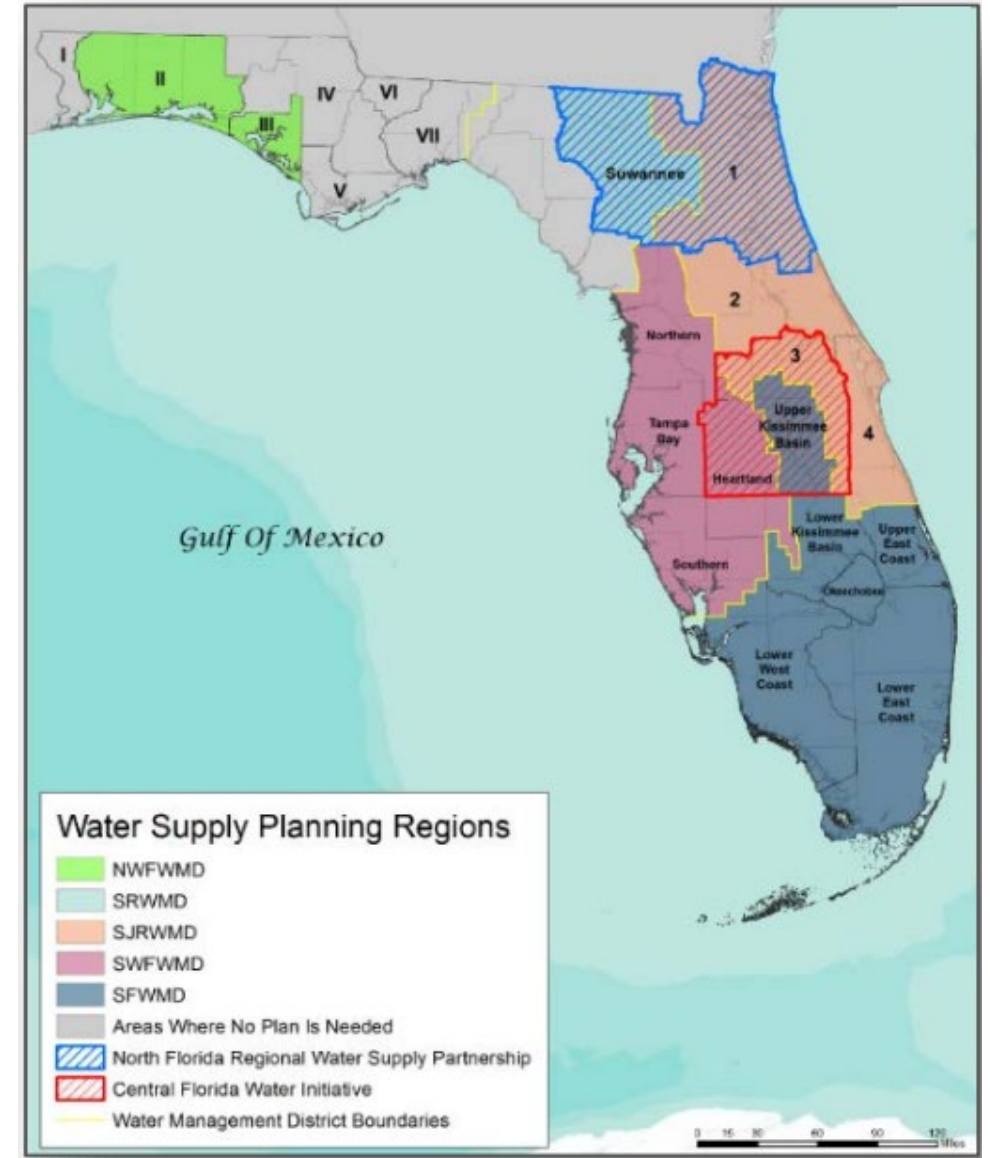
- 24-years experience in civil engineering, land development, sustainable & resilient infrastructure
- Focus on water resources, built and natural infrastructure
- Natural hazard mitigation and Climate adaptation expertise
- Former Chair of U.N. ARISE US Network

Jacobs

Challenging today.
Reinventing tomorrow.

Agenda

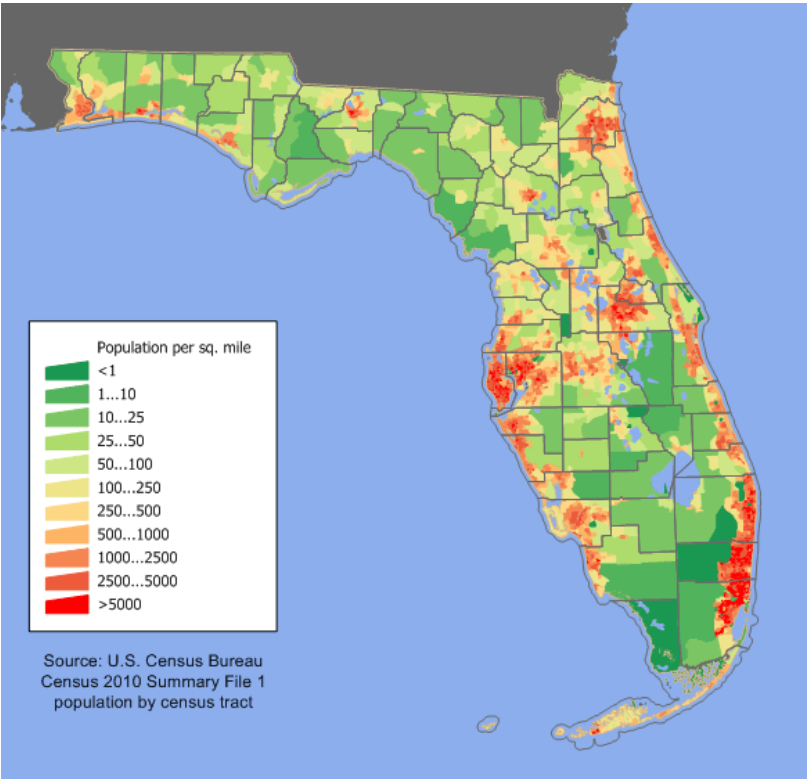
- Water Resources in Florida Overview
- Water Utility case study (JEA)
- Regional Approach case studies (MIRR)
- Summary of Opportunities



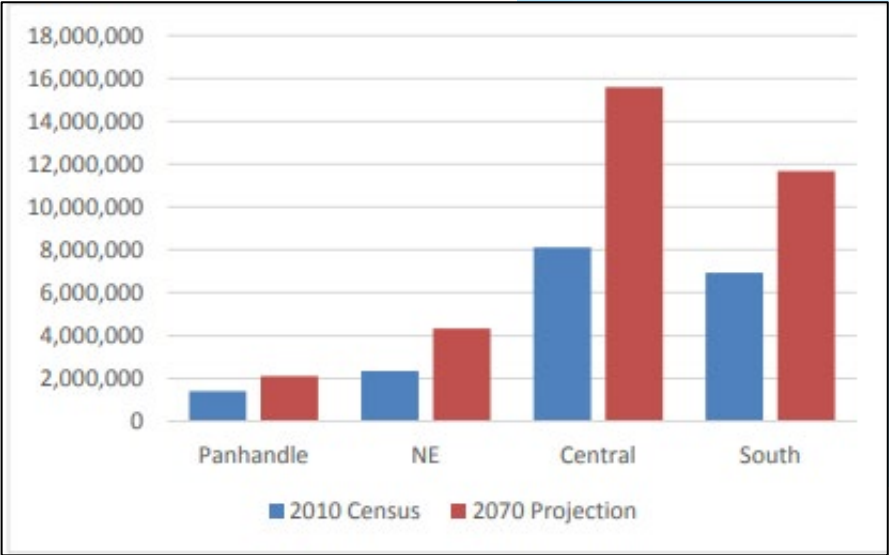
Regional Water Supply Planning Areas & Initiatives

Source: [FDEP Regional Water Supply 2016 Annual Report](#)

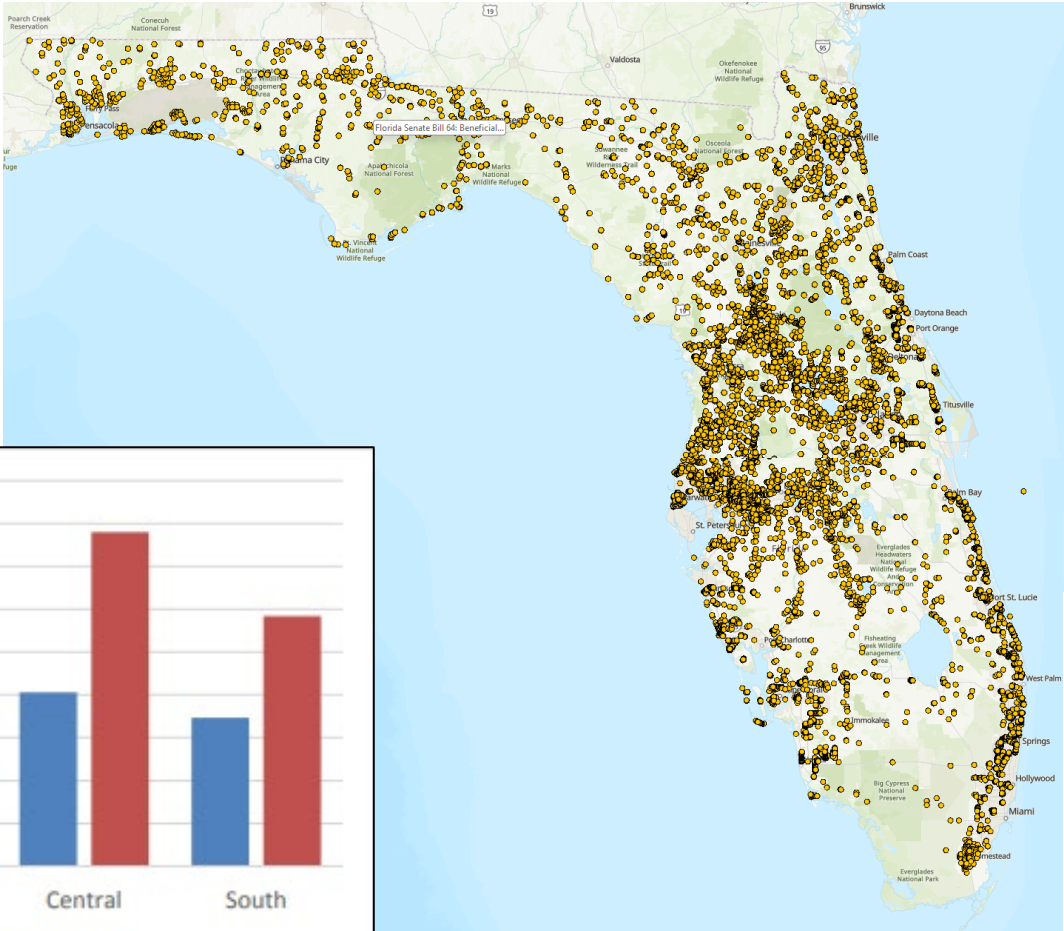
FL Water Resource Stressors – Growing Populations and Demands



Population Density (2010 Census)
Source: US Census Bureau

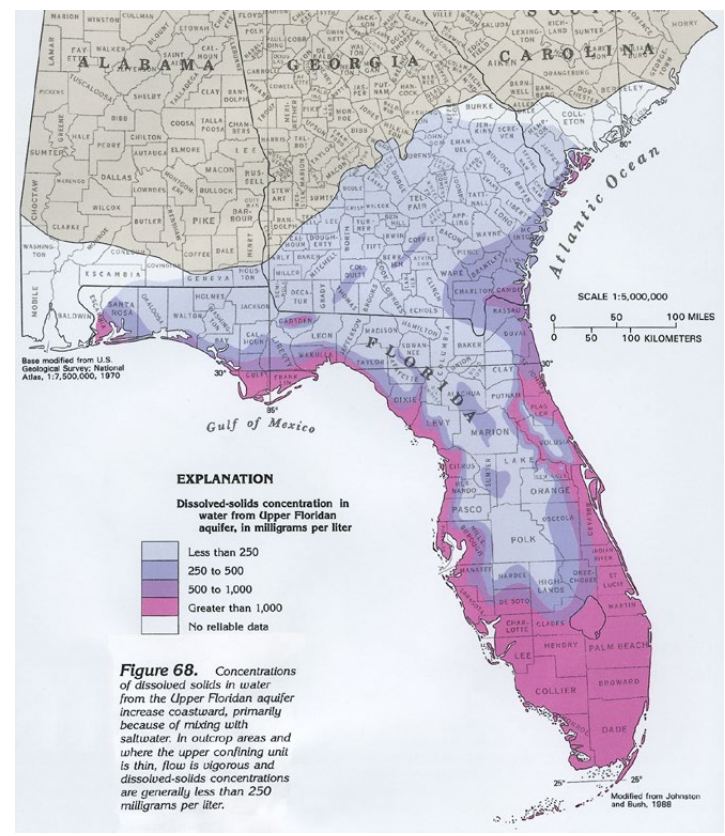


Population Projections by FL region
Source: Florida 2070, 1000 Friends of Florida & UF

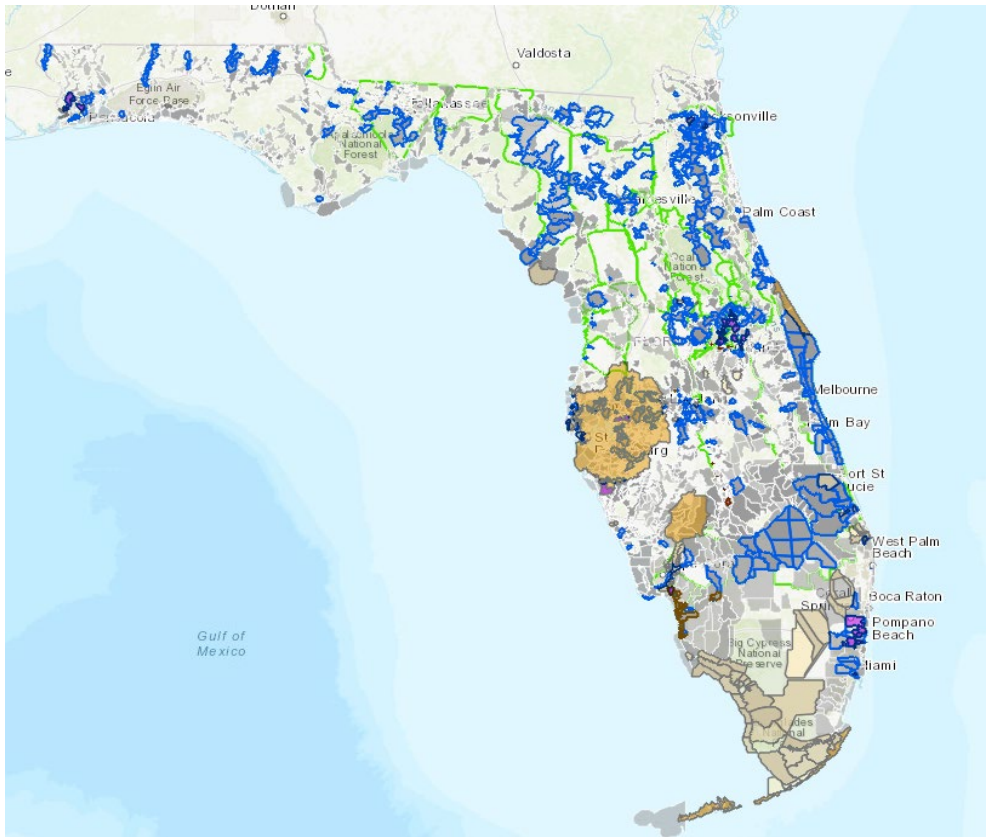


Public Water Supply (Extraction Wells)
Source: FDEP DWRM data mapper

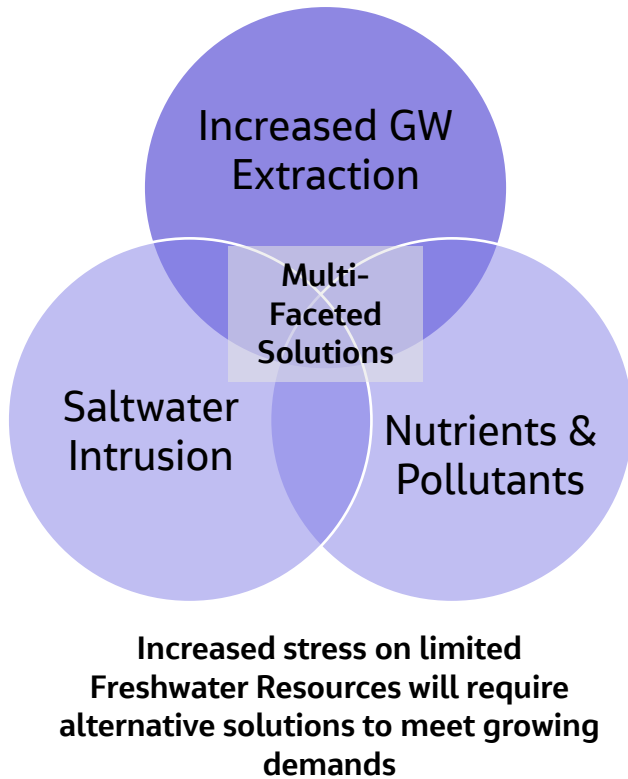
FL Water Resource Stressors – Water Quality & Environmental Factors



Aquifer Water Quality (Dissolved Solids/Salinity)
Source: USGS Groundwater Atlas of US



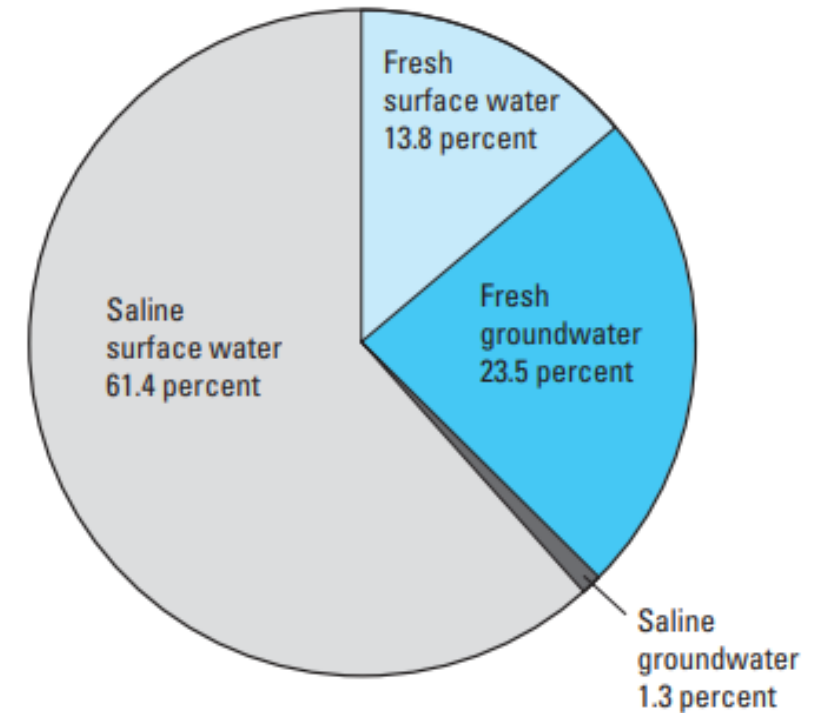
Impaired Waters, TMDLs and Basin Management Action Plans
Source: FDEP webmap viewer



Florida Water Resources Overview

- FDEP/WMDs are supporting regional water supply projects
 - [Central Florida Water Initiative \(CFWI\)](#)
 - [North Florida Regional Water Supply Partnership \(NFRWSP\)](#)
- State is mandating reuse as a key strategy to meet these needs. SB-64 (WW utilities eliminate non-beneficial surface water discharges by Jan. 2032).
- However, most of the funding for these projects rests on the local W & WW utilities, and local utility fees are insufficient to meet the need.

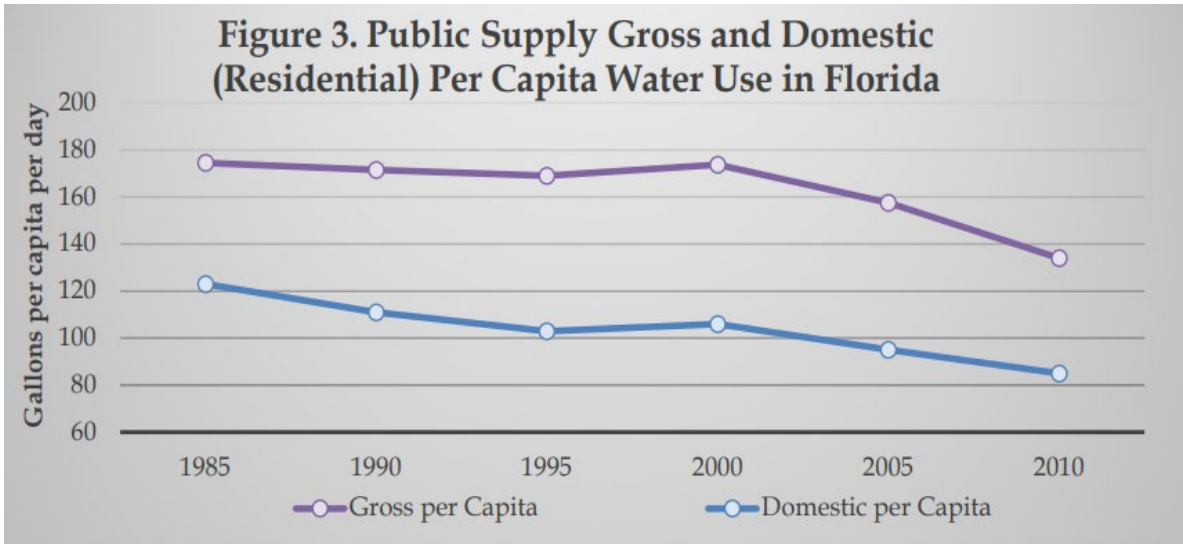
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Total Water Withdrawals in Florida (2015)

Source: USGS Scientific Investigations Report 2019-5147

Water Conservation & Projections

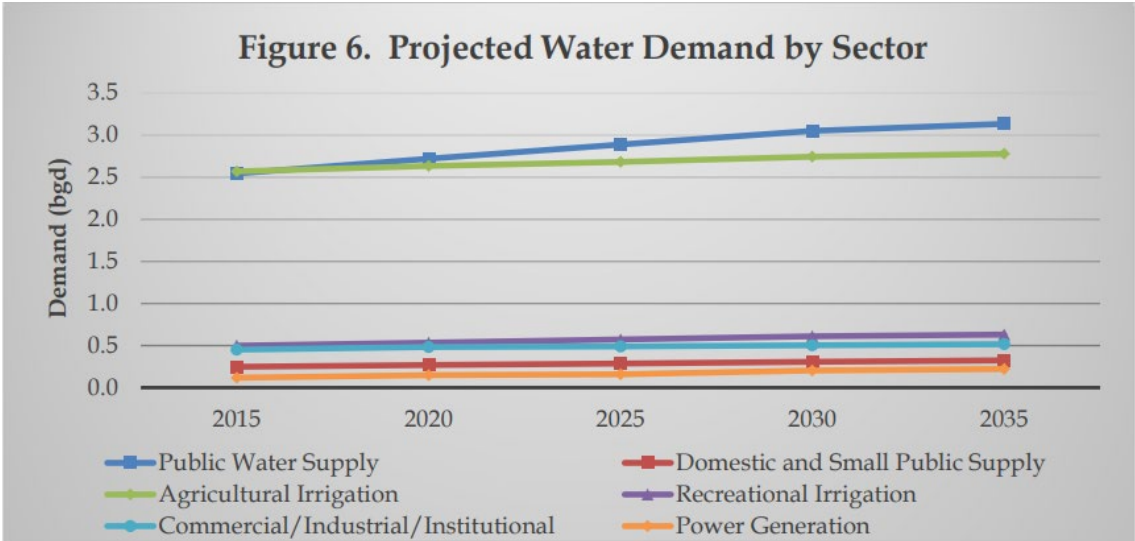
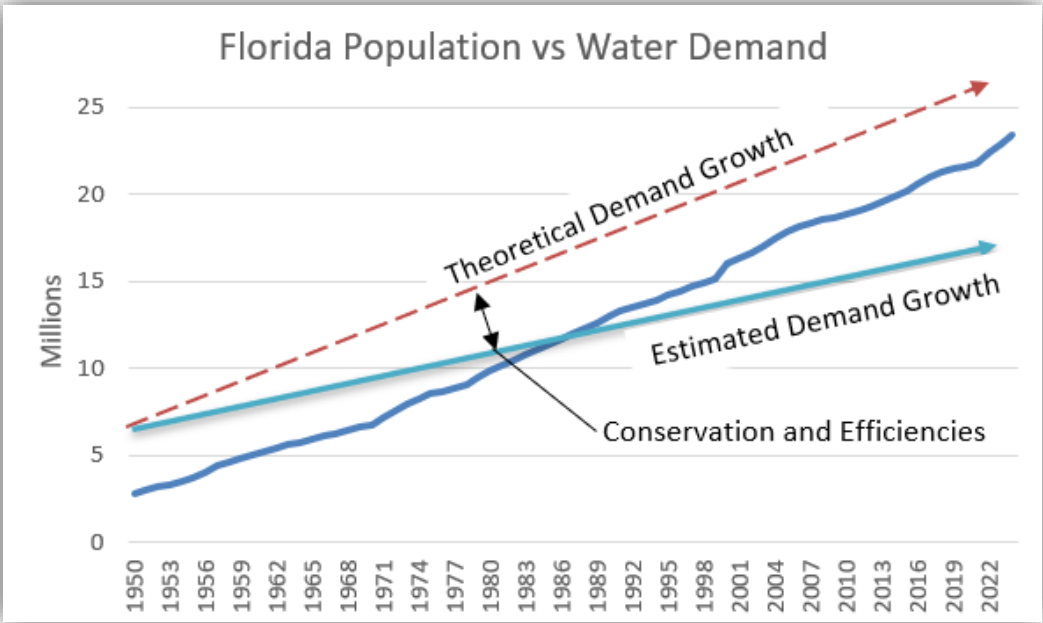


Water Consumption Per Capita (1985-2010)
Source: FDEP Water Supply Planning 2016 Annual Report

84 gallons per capita/day

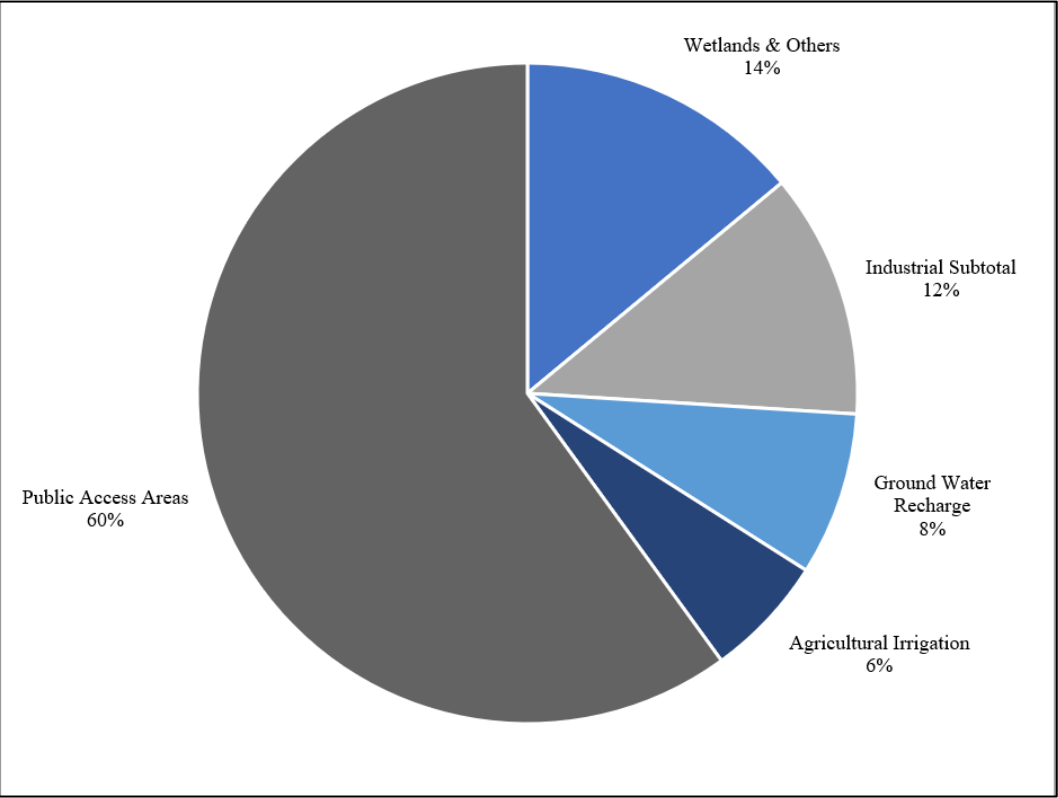
- Residential per capita water use in Florida has fallen 31% since 1985 to 84 gpcd.
- Gross per capita water use is down 24% since 1985 to 134 gpcd.

Reference: California “Make Conservation a Way of Life” state policy for water suppliers to reduce 2026 water use by 70% by 2040.

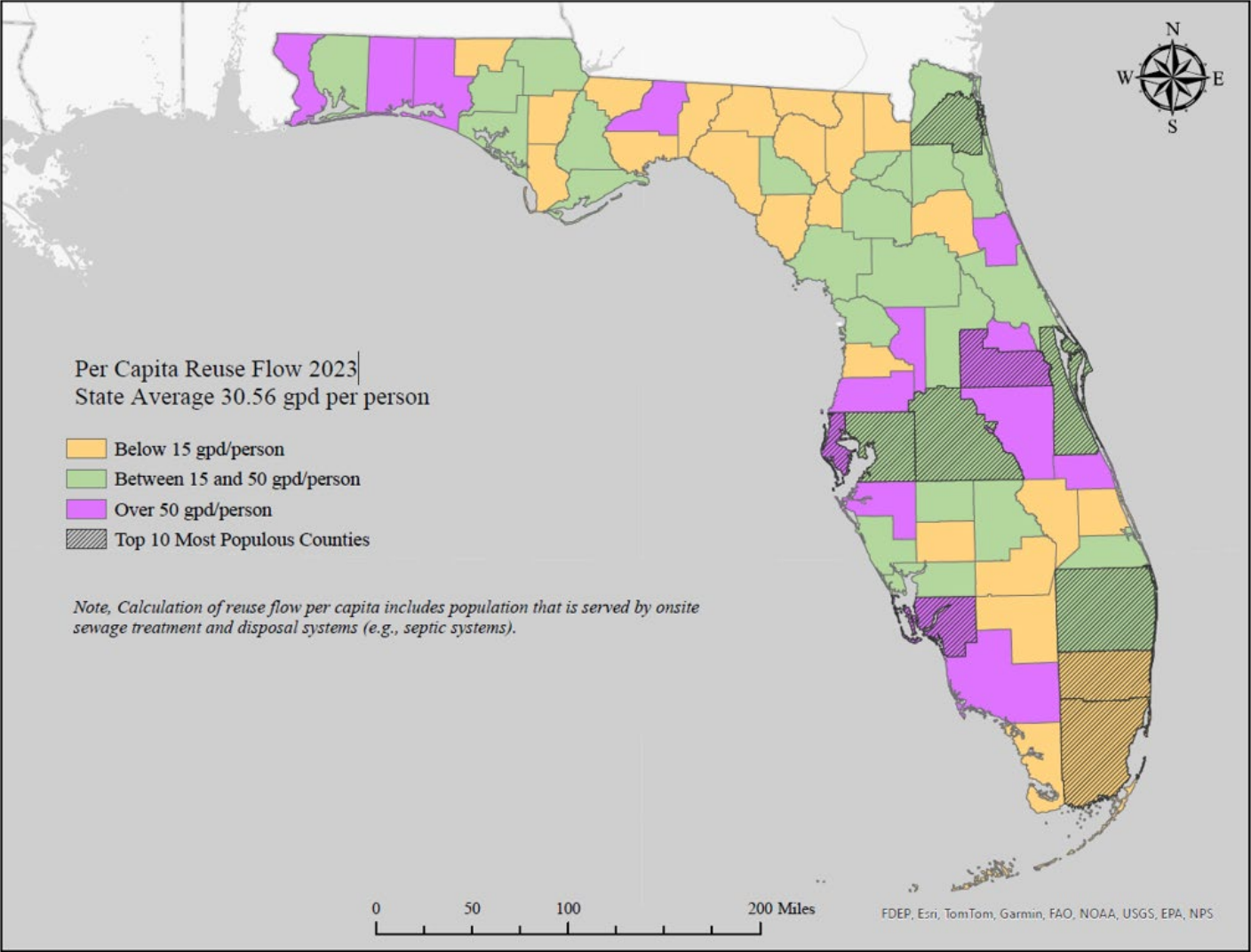


Water Demand Projections (2015-2035)
Source: FDEP Water Supply Planning 2016 Annual Report

Florida Water Reuse

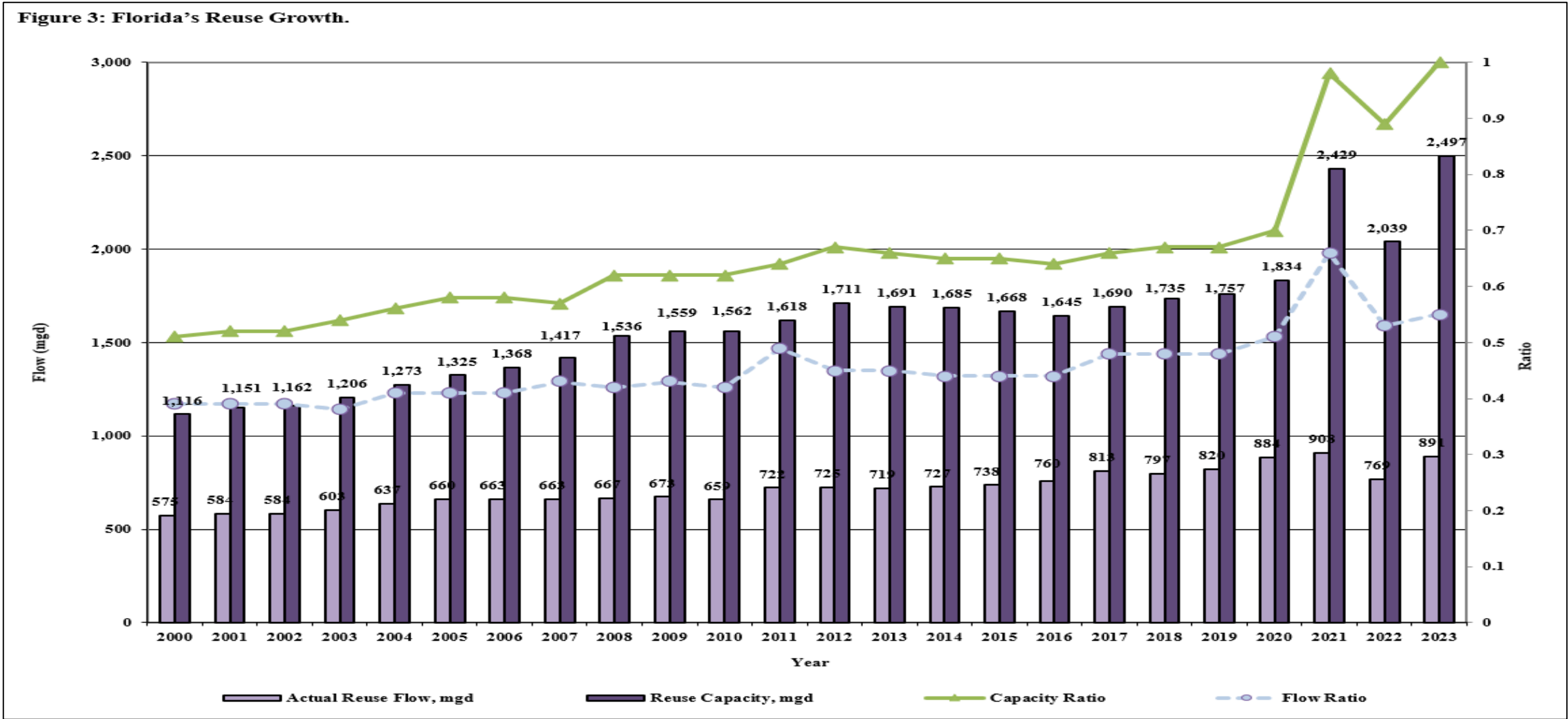


Reclaimed Water Utilization by Flow
Source: FDEP Water Reuse Inventory Report (2023)

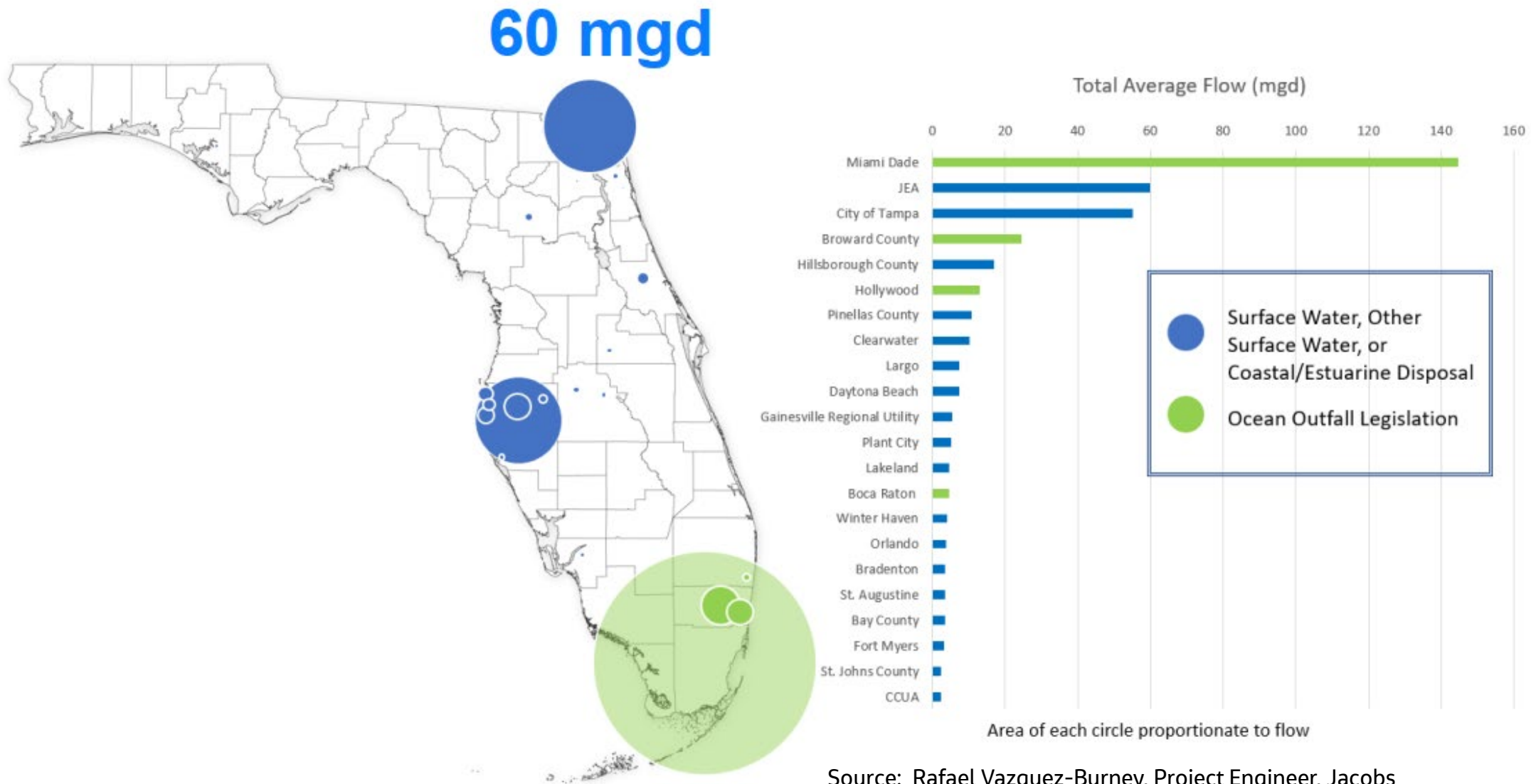


Source: FDEP Water Reuse Inventory Report (2023)

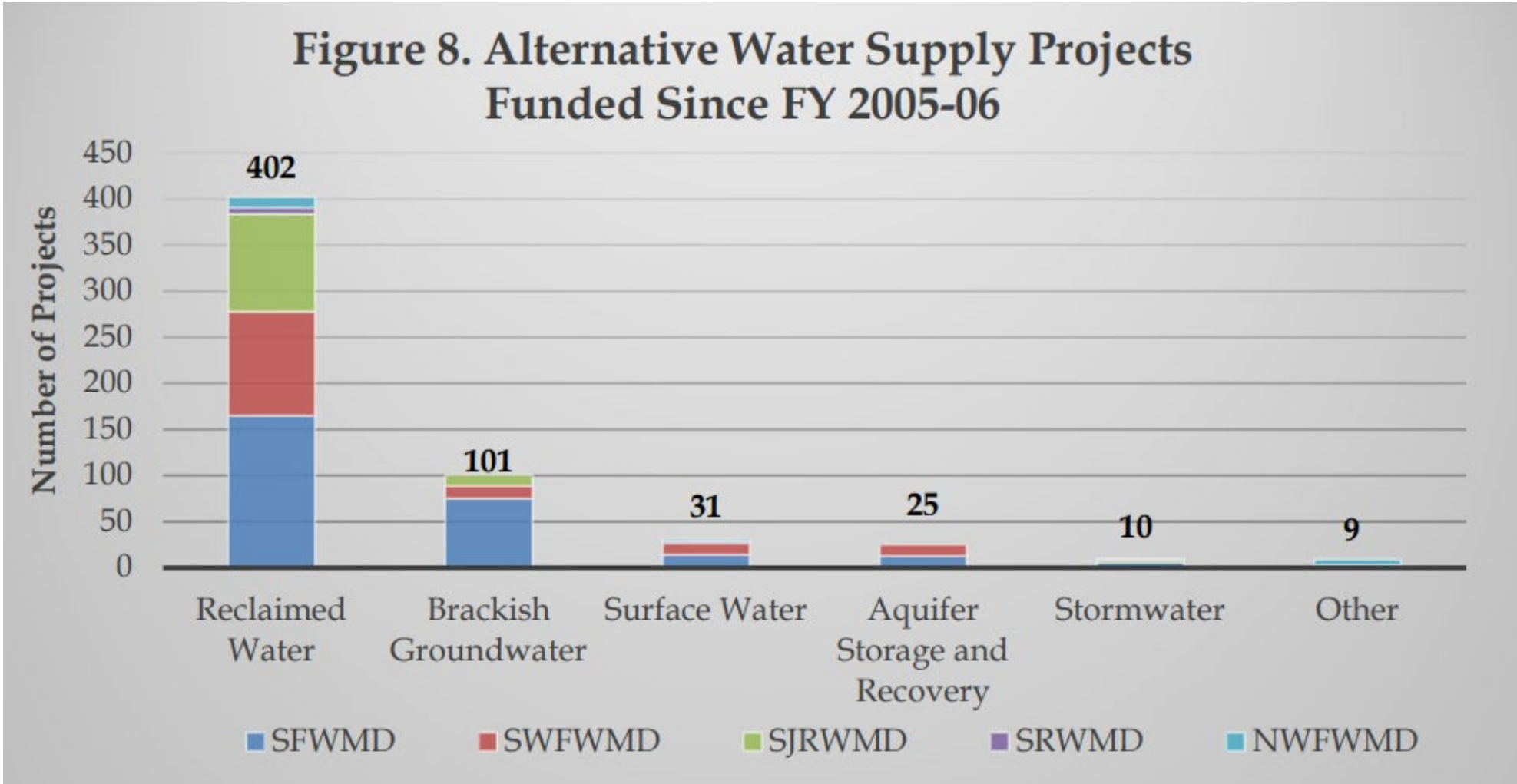
Florida Water Reuse



Florida SB64: Beneficial Reuse of WW Effluent by Jan. 2032

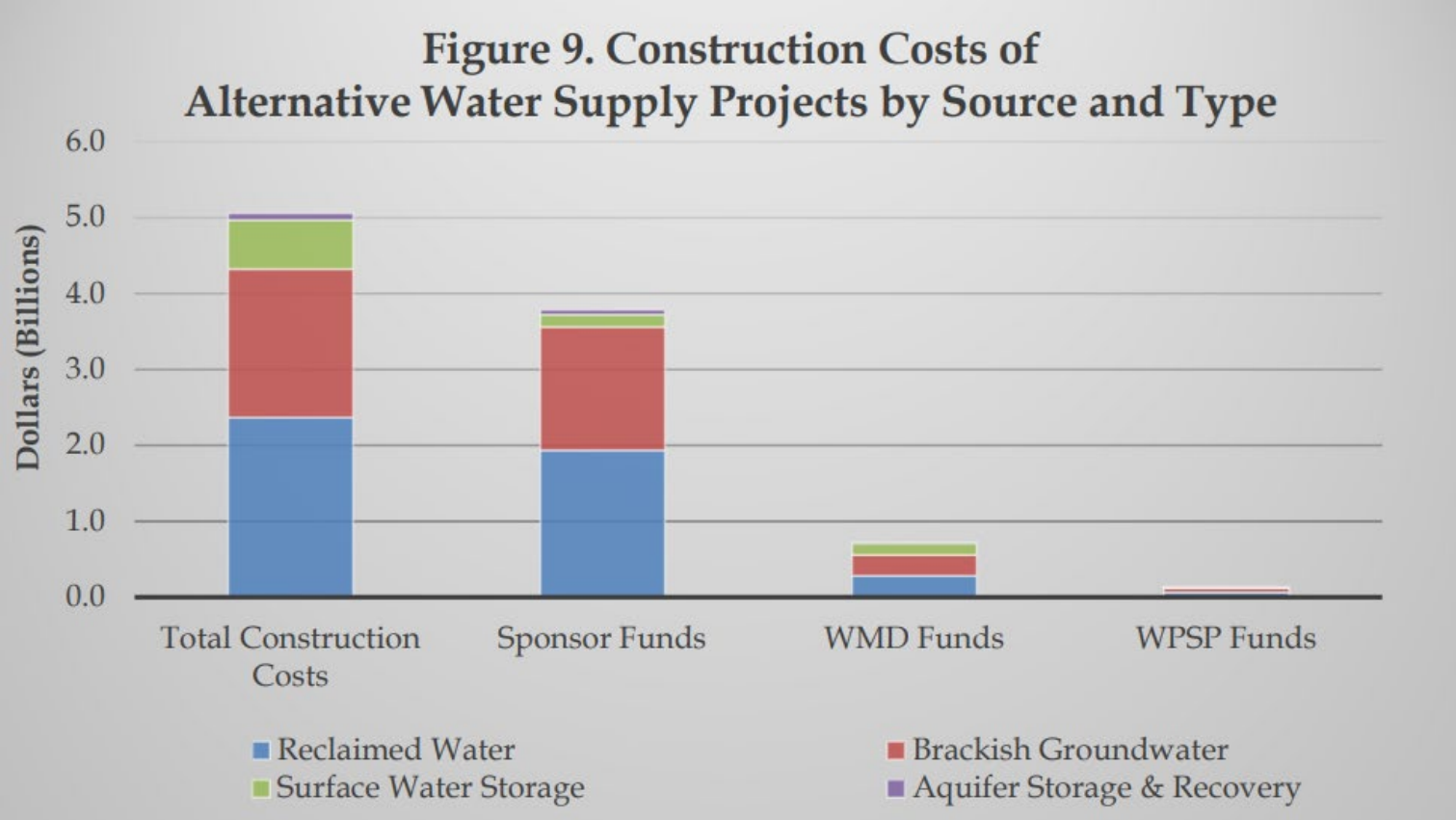


Funding Alternative Water Supply Projects



Source: FDEP Water Supply Planning 2016 Annual Report

Funding Water Resources Projects



Industry research suggests 2025 will see over \$48 billion in US water and wastewater system spending with continued high investment, demonstrating the resilience of the industry.

Source: Global Water Intelligence

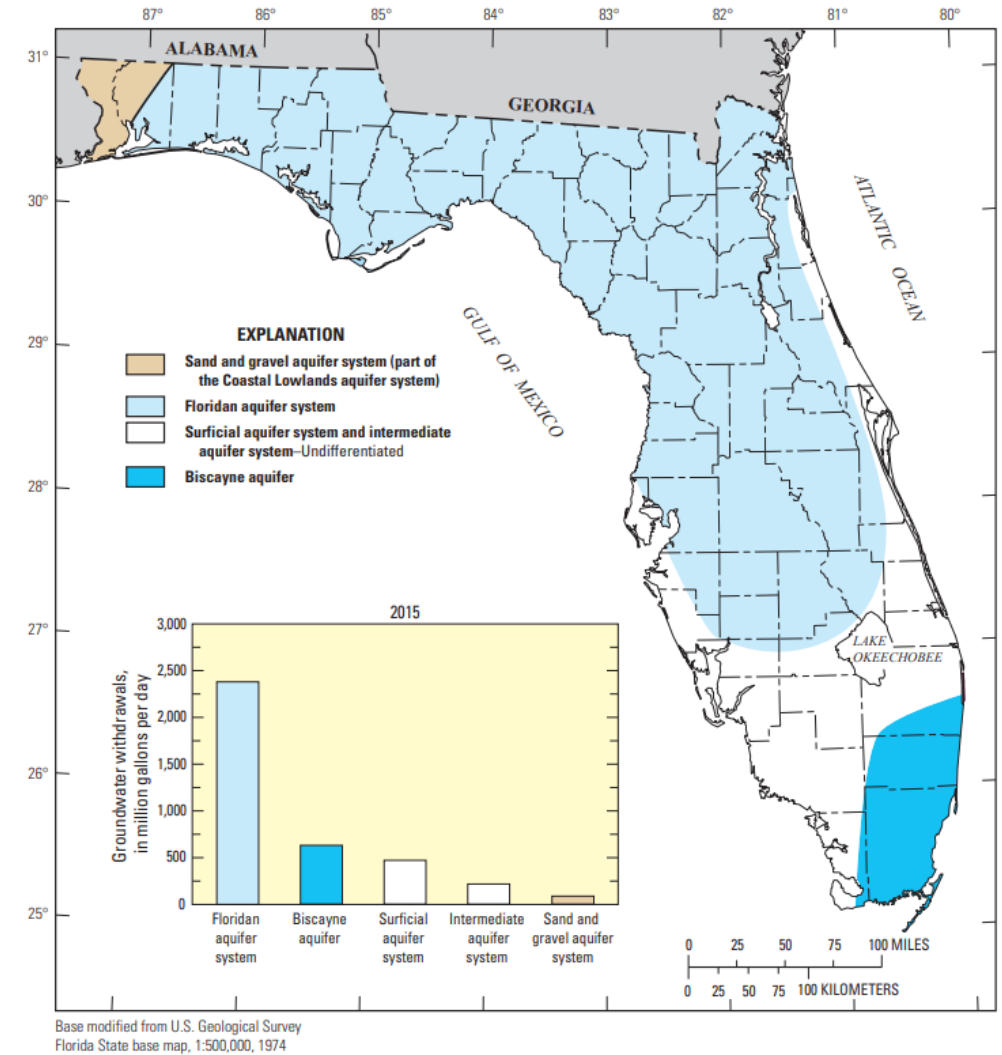
Source: FDEP Water Supply Planning 2016 Annual Report

In addition, the U.S. Environmental Protection Agency estimates it could cost \$21.9 billion for capital improvements for Florida’s existing utility systems to continue to provide safe drinking water through 2034.

Source: St. Augustine.com, [Florida's expanding population applies pressure on water supplies](#)

Regional Water Resource Opportunities

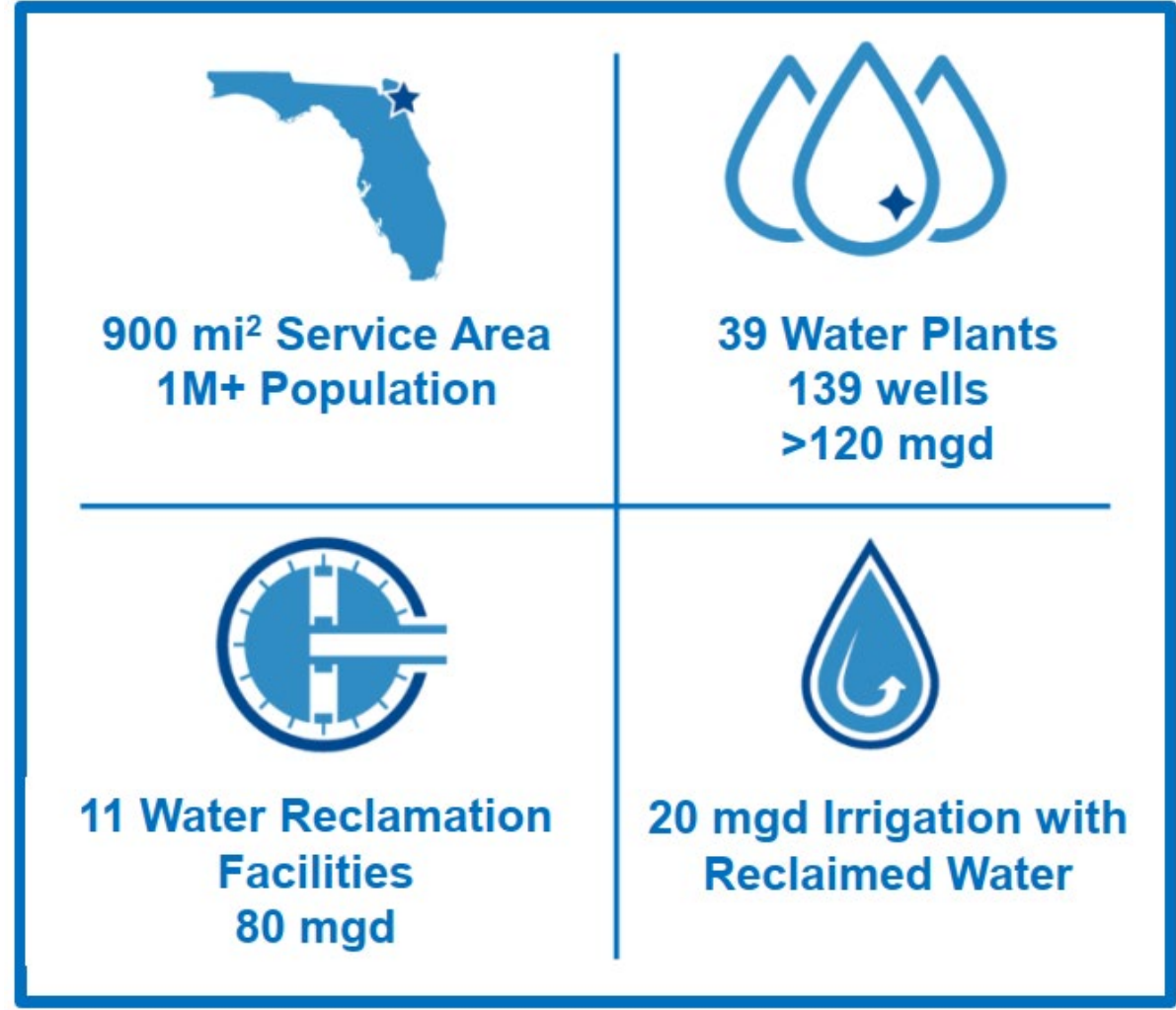
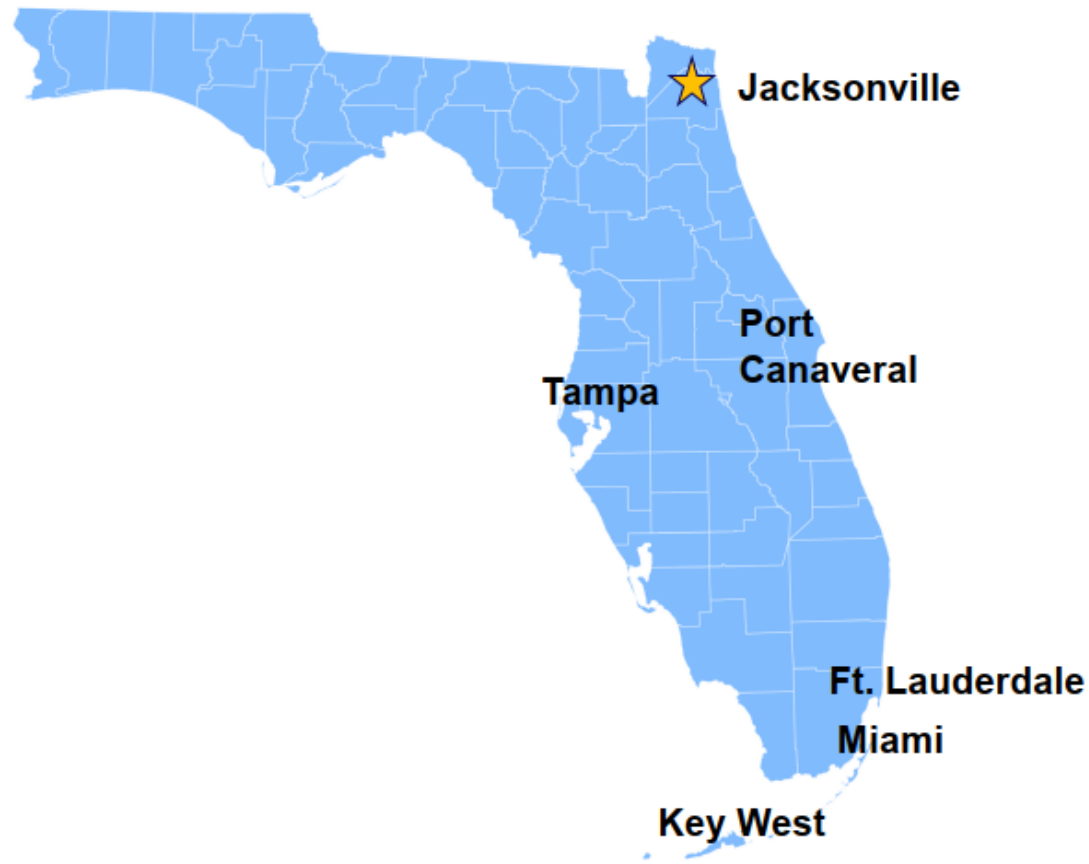
- Increase Supply
 - New/alt. sources/desal
- Reduce Demands
 - Conservation/reuse/policy
- Reduce Loss
 - Improve water distribution and tracking
- Alternative supplies for non-potable demands
 - Industrial water/manufacturing
 - HVAC cooling water
 - Landscape Irrigation
- Maximize Reuse (SB64)
 - One Water approach



Florida Aquifers as Primary Groundwater Source
Source: USGS Scientific Investigations Report 2019–5147

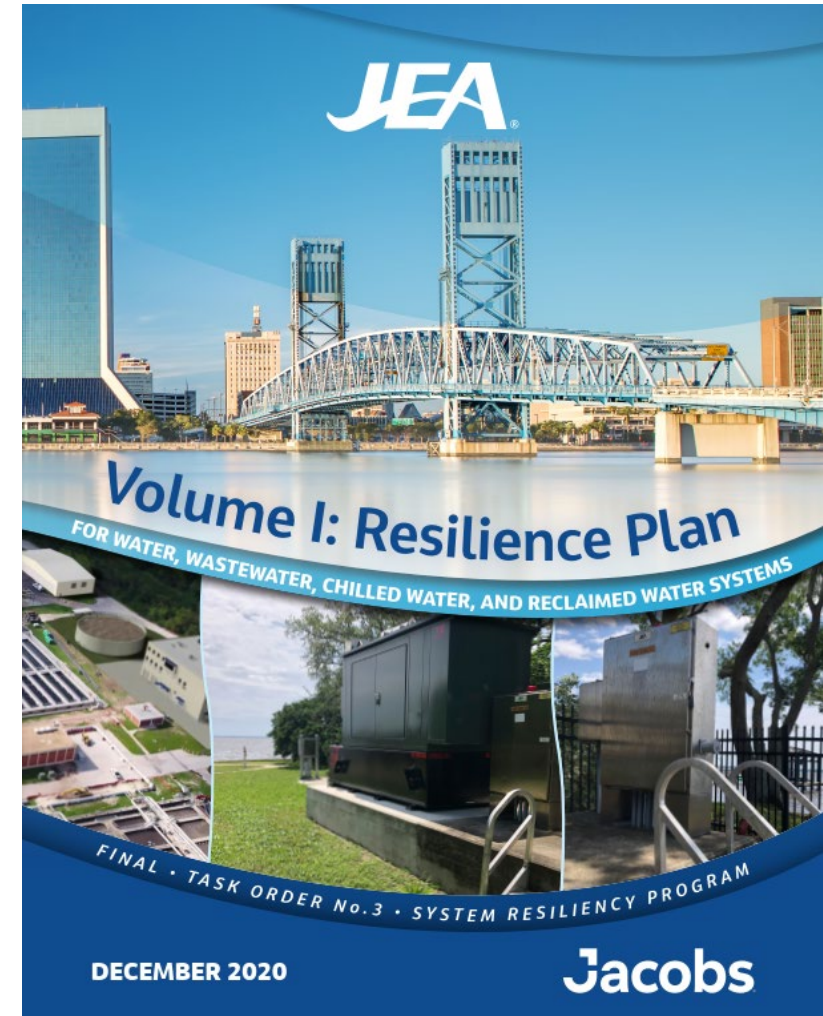
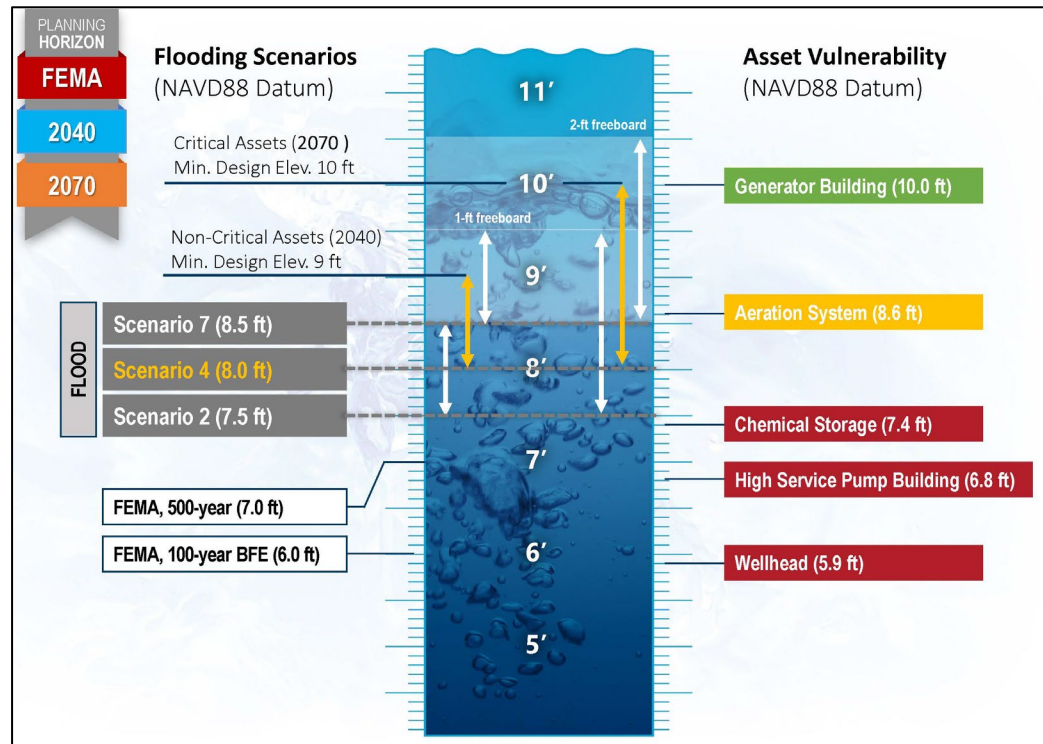
Case Study - JEA

JEA Case Study – Resilient Water Resources in NE FL

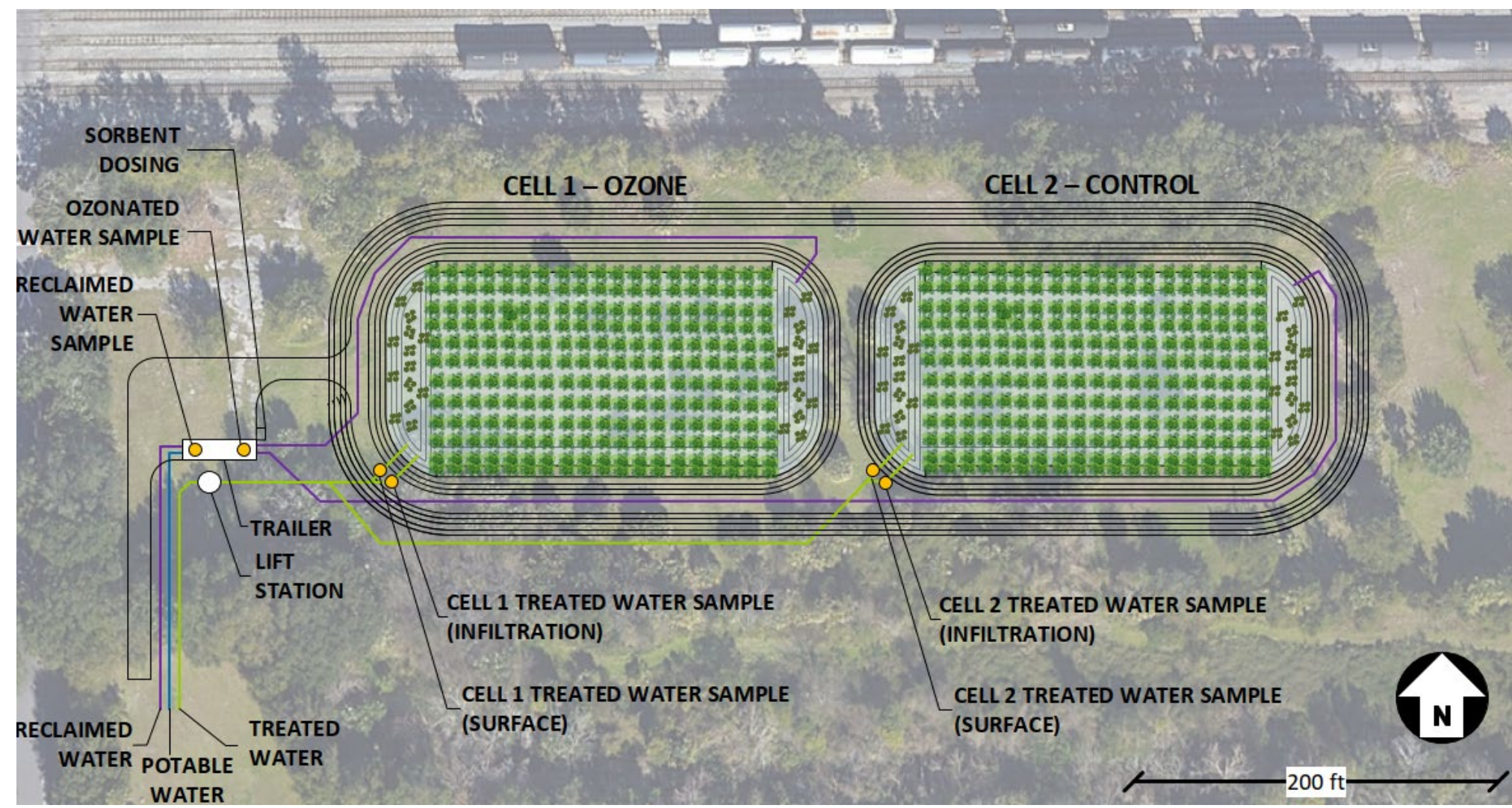


JEA – Enhancing Resilience of W & WW Systems

- Implementing Resilience Plan for W & WW systems
 - Hardening of existing W/WW plants, lift stations & wells
 - Enhanced design standards for all capital projects
 - Added system redundancy (electric service, conveyance, pumping)

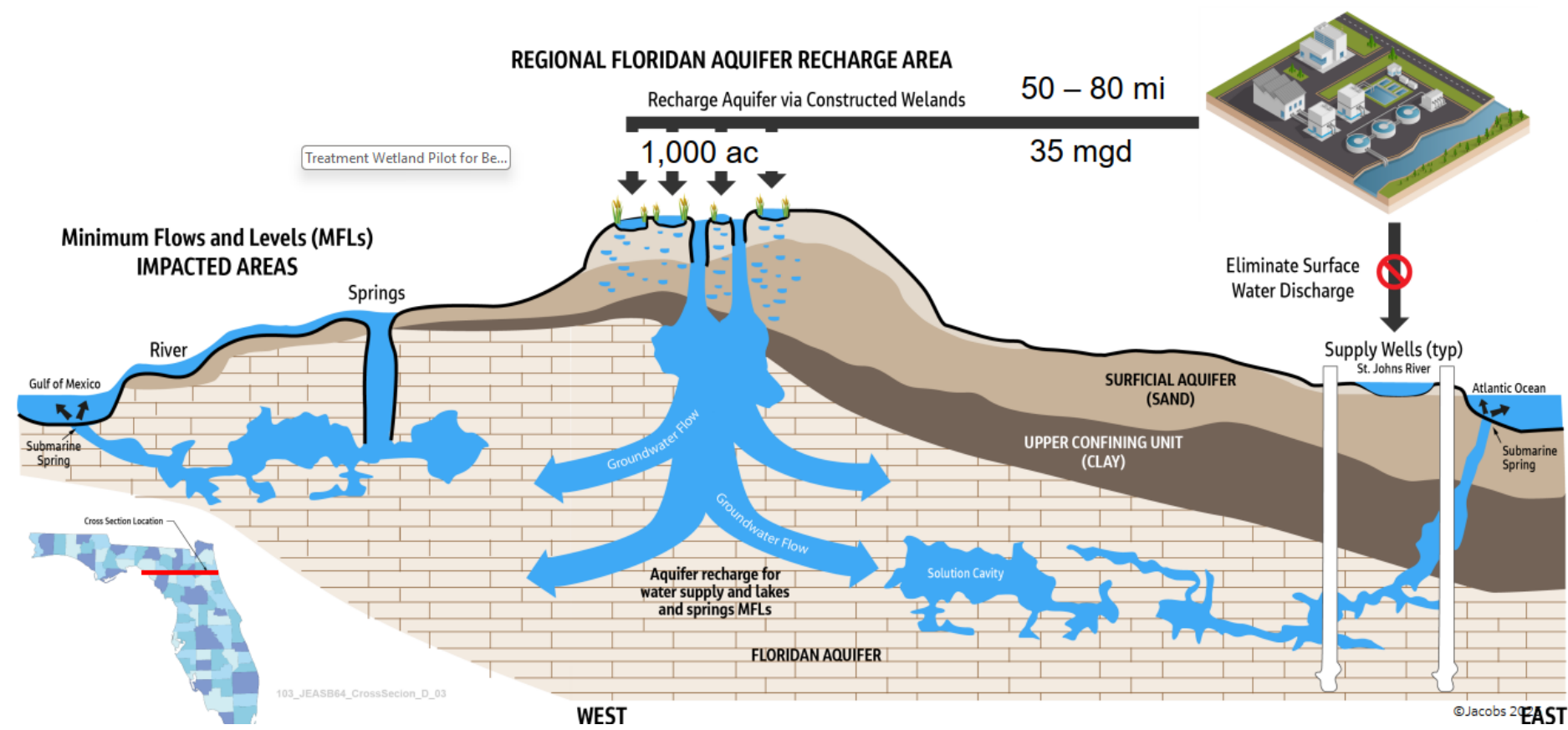


Treatment Wetland Pilot for Beneficial Reuse



JEA – Resilient Regional Water Resources

Regional strategy being explored to replenish groundwater sources for long-term water supply reliability for NE FL.



Case Study - MIRR

Military Installation Resilience/Readiness Review (MIRR)

- OLDCC focuses on enhancing military mission readiness through community resilience.
- Regional approach reduces risk and enhances service reliability of critical infrastructure that support both the community and the military installations.
- Regional stakeholder collaboration identifies threats, develops adaptation actions, and provides funding to implement critical infrastructure projects.



U.S. Department of Defense
Office of Local Defense
Community Cooperation



[Installation Readiness | Office of Local Defense Community Cooperation](#)



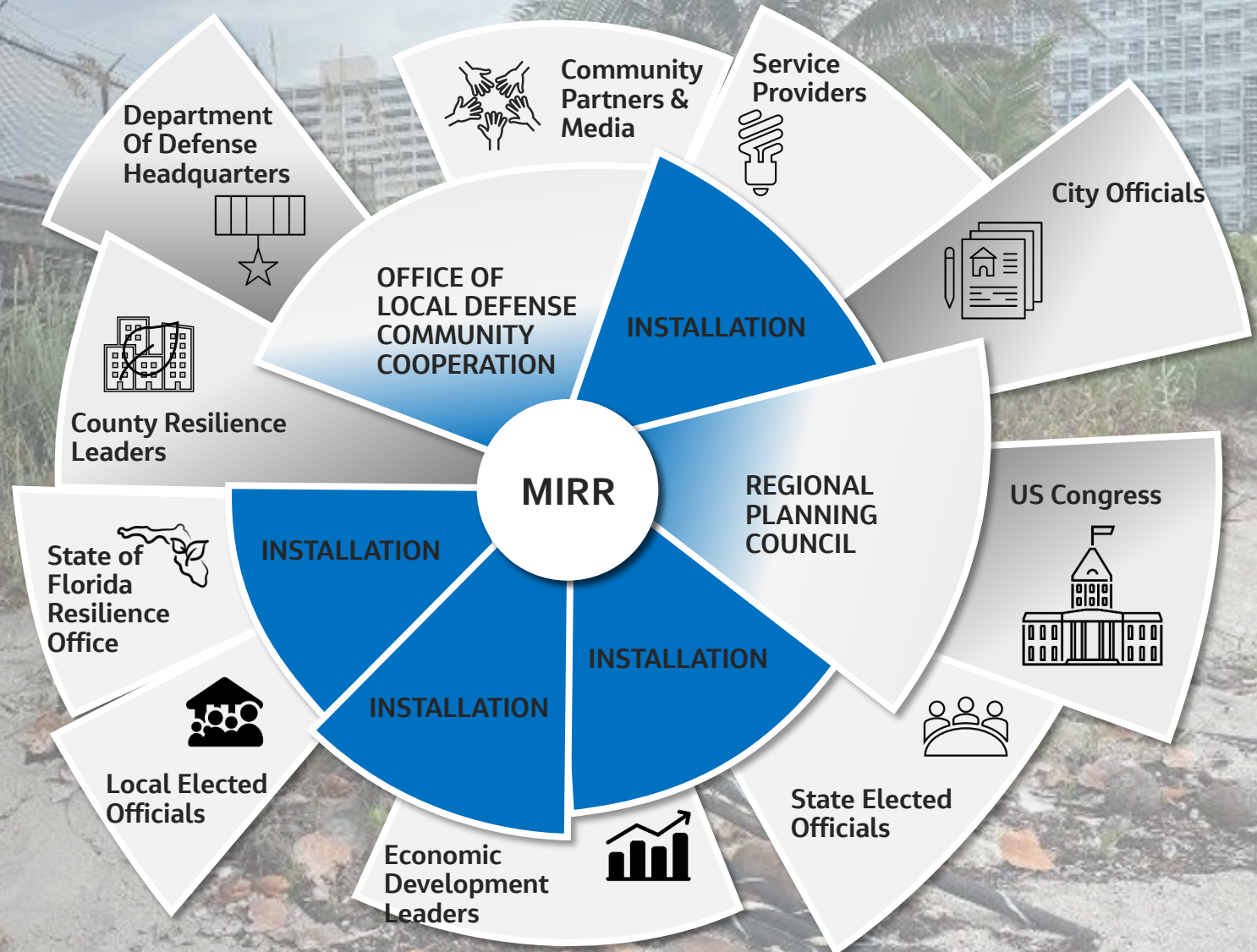
The purpose of the MIRR is to identify hazards, vulnerabilities and risk to military's ability to carry out its missions on the installation that could be mitigated through investment in solutions *outside the fence line in the community.*



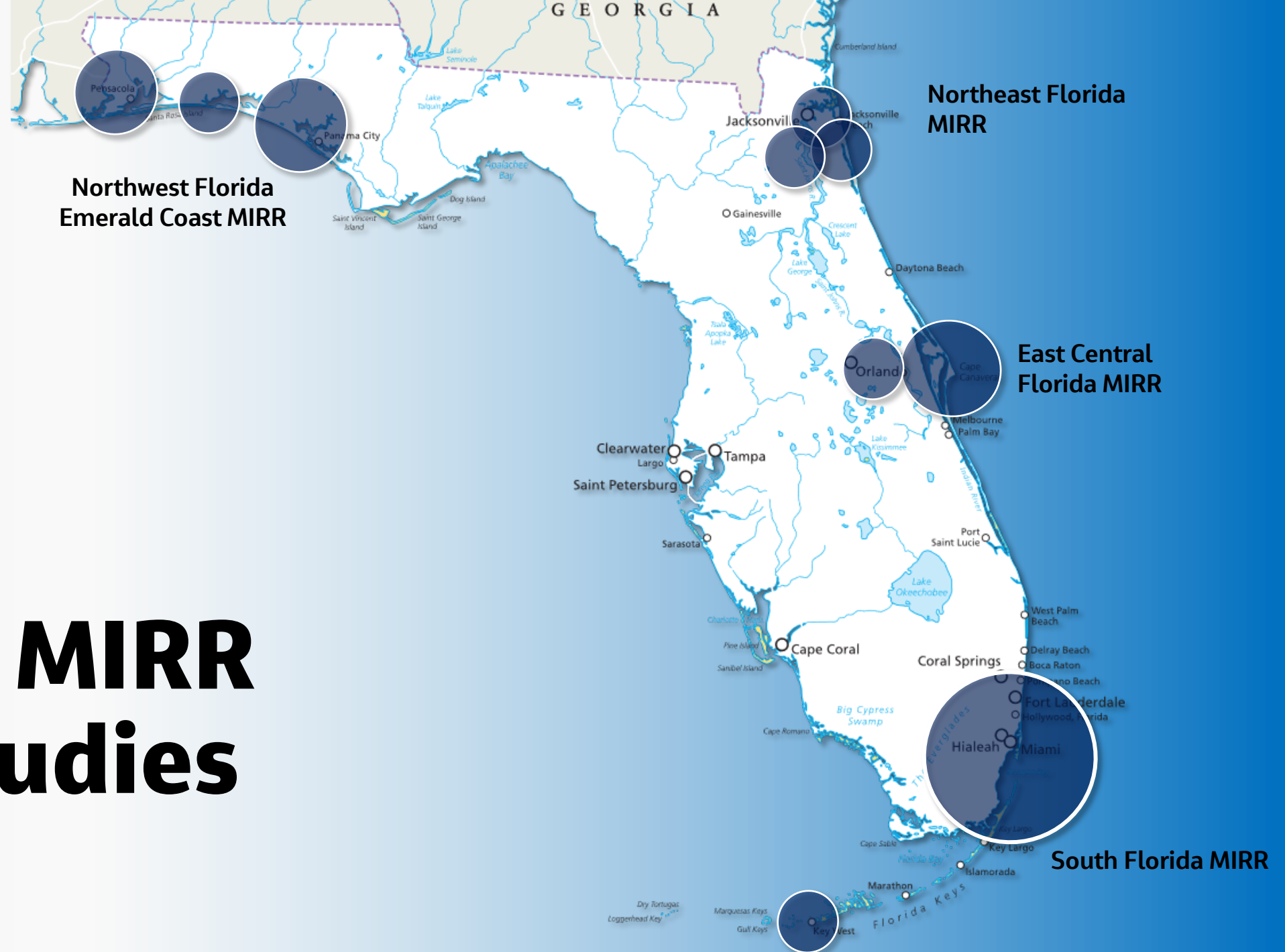
Regional Collaboration

Regional Partnerships strengthen resilient outcomes

- ❑ Leverage relationships across region to identify and tackle regional needs together.
- ❑ Installations continue to actively communicate and coordinate with their surrounding communities specifically to increase resilience on both sides of the fence line.



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Military Installation Resilience/Readiness Review (MIRR)

Projects developed in collaboration with dozens of stakeholders, across each multi-county region, including: local, state, federal, utilities, WMDs and many more.

- [South Florida MIRR](#) (complete)

Ex. project: Enhance water supply reliability and WW plant operation for FL keys.

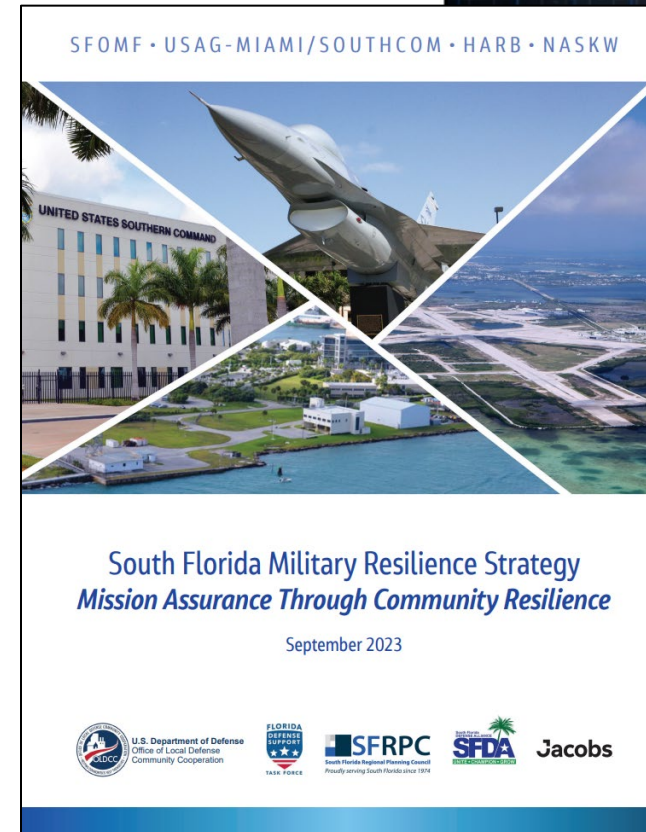
- [Emerald Coast MIRR](#) (complete)

Ex. project: Upgrade WW treatment plant and upgrade system interconnect, for increased capacity and service reliability.

- [East Central Florida MIRR](#) (underway)

Ex. project: Development of non-potable water supplies for non-potable industry demands.

- [Northeast Florida MIRR](#) (starting soon)





Engagement

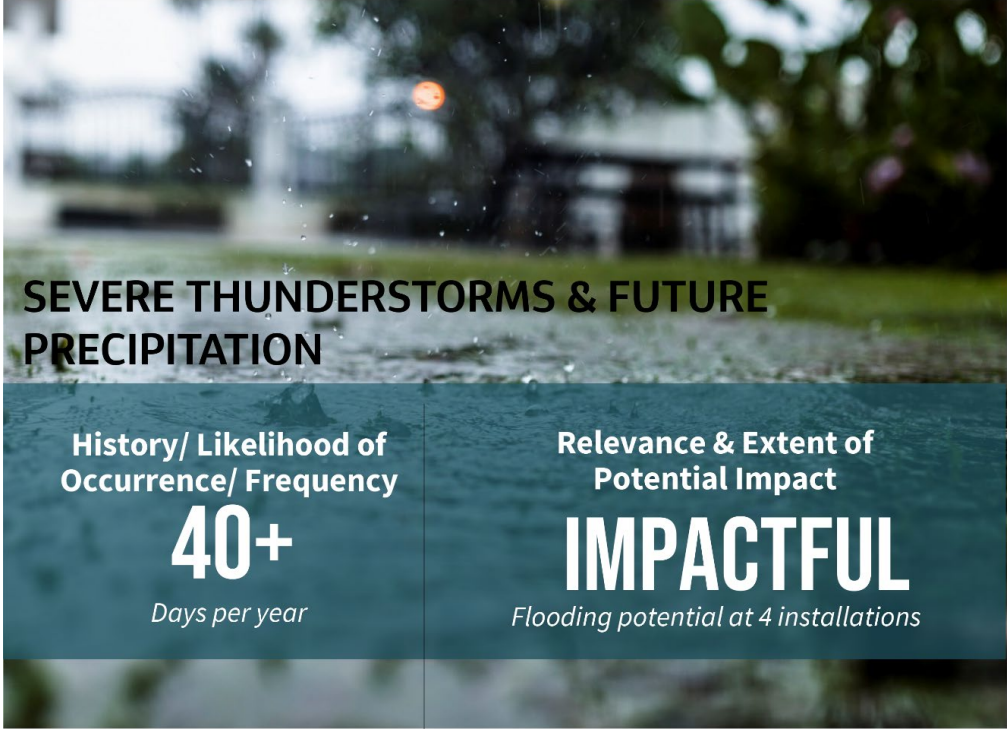


Understanding Evolving Natural Hazards



Sea level rise leads to compound flooding when rainfall, tidal flooding and surge flooding occur simultaneously.

Tidal flooding occurs today in coastal areas with elevations lower than 1.6 feet NAVD. Sea level rise also contributes to groundwater rise, seepage through the ground surface, degrading transportation assets and reducing capacity of stormwater systems. Sea level rise will eventually overtop and inundate coastal infrastructure if adaptation does not occur. Sea level rise also causes saltwater intrusion of inland freshwater/ potable water supplies.



With climate change, severe thunderstorms are projected to increase in rainfall intensity and volume

SFOMF and NASKW are entirely within the 100-year floodplain. The areas surrounding SOUTHCOM and HARB are partially within the 100-year floodplain. Poses risk to drainage systems and roads

The Adaptation Strategy

Policy Actions

Physical Infrastructure Improvements

Environmental & Land Management Planning

Recommendations for Installations



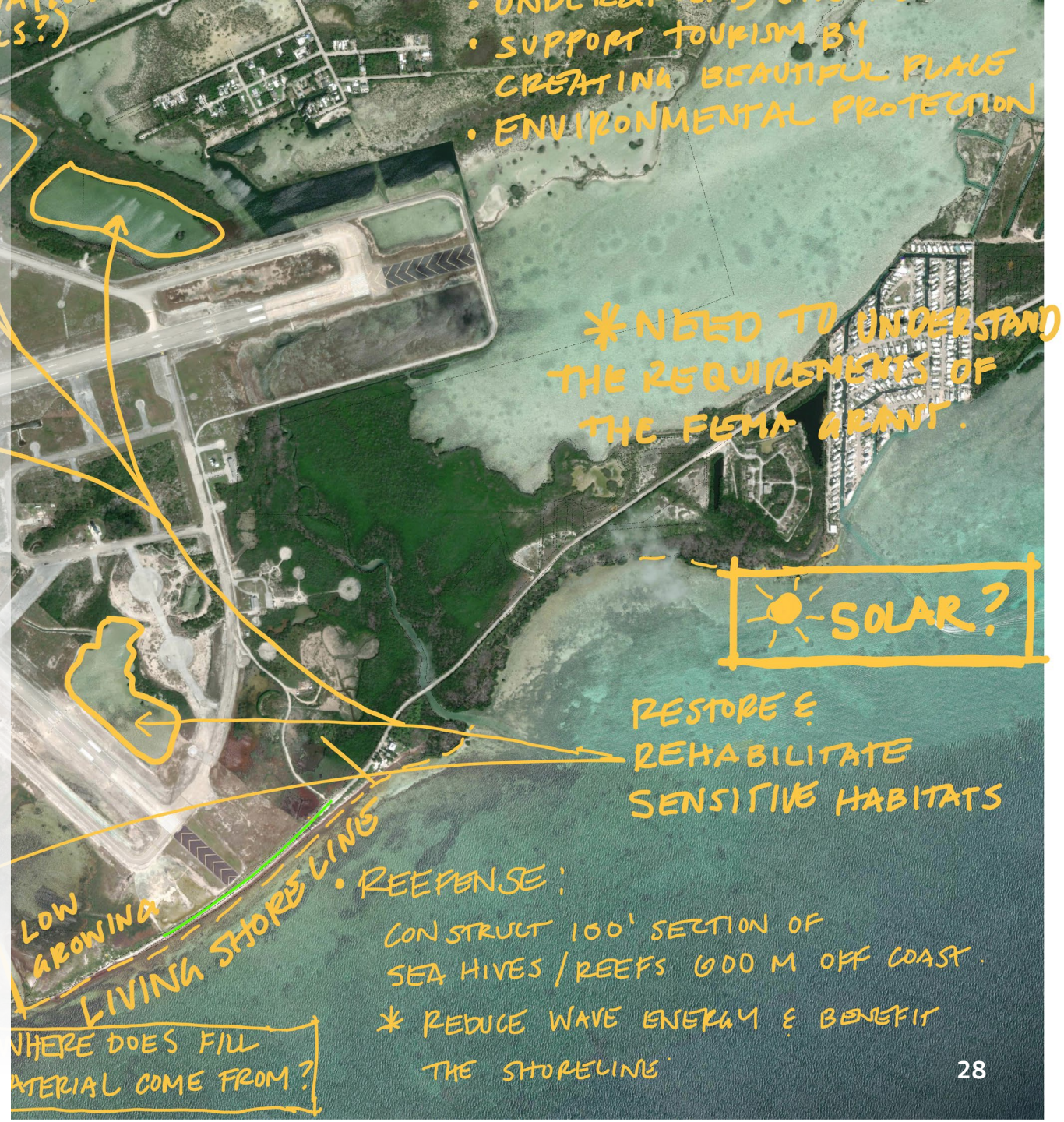
The Plan

Short / Mid
/ Long Term
Phasing

Funding
Options

Partnership
Agreements

Resilience Plan for
Mission Assurance Through
Community Resilience



Key Takeaways

- Broaden lens by which we frame water resource challenges and develop future-looking regional solutions.
- Innovate and diversify via One Water approach to maximize utilization of limited freshwater resources and meet growing water demands.
- Build regional partnerships to leverage networks, capacity, funding and resources to prepare for future needs and support continued regional economic growth.

Questions

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