South Florida Water Management District Sea Level Rise and Flood Resiliency Plan, 2025

David Colangelo, SFWMD Resiliency Plan Coordinator, Earthology Consulting Services

April 23, 2025

Project Team

- Office of Resiliency
- Budget and Finance
- Engineering and Construction
- Hydrology and Hydraulics
- Applied Sciences
- Ecosystem Restoration
- GeoSpatial Services
- Water Supply
- Big Cypress Basin
- Land Resources/Real Estate
- Field Operations
- Operations (Flood Control Systems)
- Emergency Operations Center

Project Partners

Comments and Contributions Received

Local Governments / Districts (18):

- Broward County
- Collier County
- Lee County
- Martin County / Martin MPO
- Miami-Dade County
- Monroe County
- Orange County
- Palm Beach County
- St. Lucie County
- City of Apopka
- City of Fort Lauderdale
- City of Hallandale Beach
- Town of Cutler Bay
- Town of Jupiter
- Village of El Portal
- Florida Keys Aqueduct Authority
- Lake Worth Drainage District
- South Broward Drainage District

NGOs (16):

- Audubon of Florida
- Center for Biological Diversity
- Coastal and Heartland National Estuary Partnership
- Everglades Foundation
- Everglades Law Center
- Florida Bay Forever
- Florida Veterans for Common Sense
- Friends of Biscayne Bay
- Growing Climate Solutions
- Miami Waterkeepers
- National Parks Conservation Association
- Sanibel-Captiva Conservation Foundation
- South Florida Water Coalition
- South Florida Wildlands Association
- Tropical Audubon Society
- Urban Paradise Guild

Tribes (1):

- Seminole Tribe of Florida

State Agencies (4):

- Statewide Office of Resilience
- Florida Flood Hub for Applied Research and Innovation
- Florida Department of Transportation
- Florida Department of Emergency Management

Federal Agencies (2):

- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service

Planning Councils (2):

- Central Florida Regional Planning Council
- South Florida Regional Planning Council

Universities (2):

- University of Miami (2)
- Florida International University

Private Companies (9)

Other individuals (10)

Goals for the 2025 Plan Update

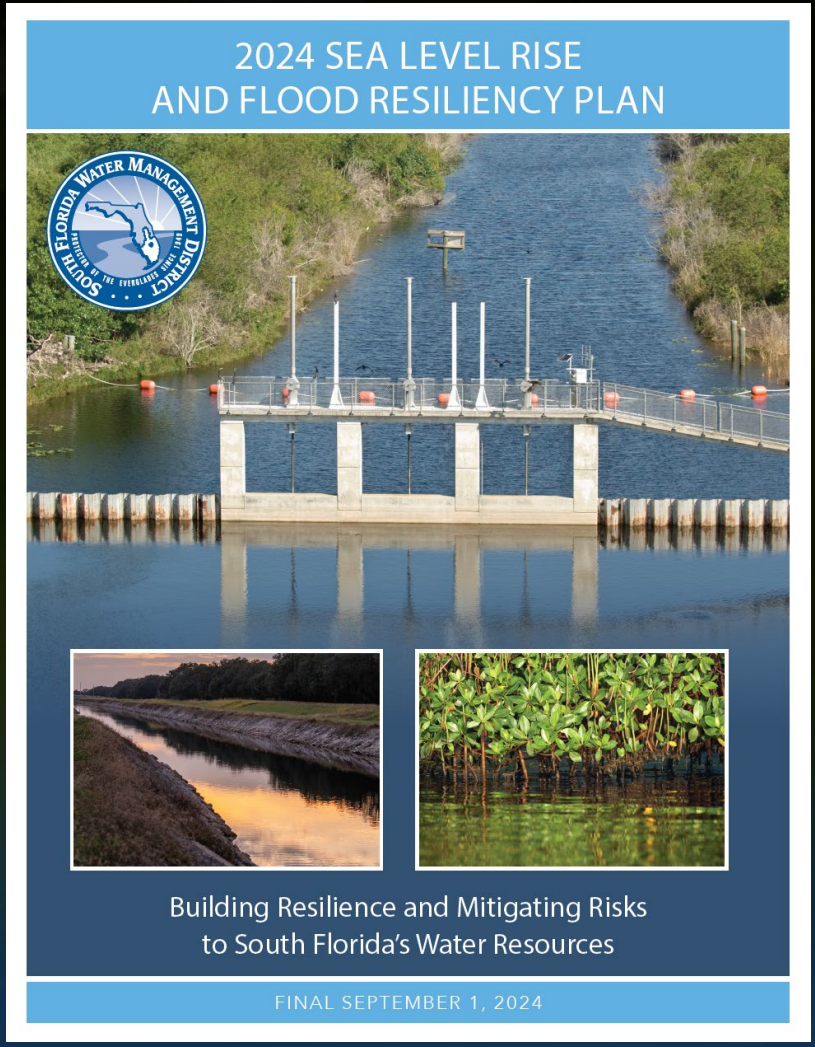
- Create a robust 2025 Plan with latest project information
  - Thorough internal review
  - Include early input from four regional Public Workshops
- Update Plan to include most comprehensive set of projects
  - Living document with projects continually refined as needs, strategies, and opportunities for risk reduction emerge
    - Upper Kissimmee Basin and Palm Beach County FPLOS Results
    - Completed LOS studies in most of the urban areas in South Florida
  - Future updates will be on a 3–5-year cycle (not annually going forward)

Today's Outline

- Background
- How Projects Get into the Plan
- Project Ranking
- Priority Projects Map
- Stakeholder Input and Workshops
- Timeline and Next Steps

Background: Resiliency Planning Vision

- Risk Reduction / Effectiveness
- Implementation Resources
- Anticipated Future Conditions
- Population and Critical Infrastructure Impacted
- Public Engagement & Leveraging Partnerships
- Ongoing Ecosystem Restoration Efforts
- Innovative Green/Nature-Based Solutions

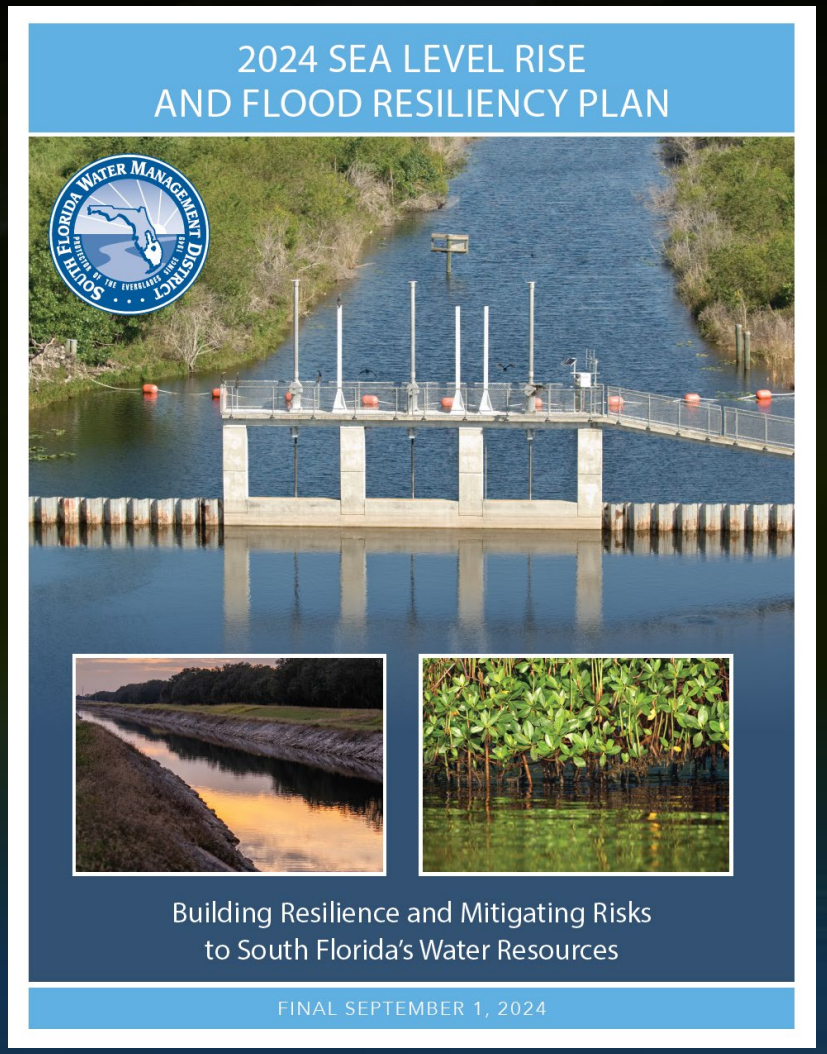


Background: Justification

- Florida Statutes Chapter 380 Section 093: Resilient Florida Program established by Senate Bill 1954, May 12, 2021: comprehensive legislation ensures a coordinated approach to Florida's coastal and inland resilience
- Section 380.093 (5)(d)(2), F.S. Statewide Flooding and Sea Level Rise Resilience Plan, due to FDEP annually on Sept 1st
- Section 373.1501(10)(a), F.S. Consolidated Report on Flood Resiliency, due to the Governor, Senate, House, FDEP and EDR annually on Oct 1st
- Chapter/content on Resilient Florida Statewide Alignment will be added to 2025 Plan

Background: What is the Plan?

- Resiliency Vision
- Central and Southern Florida System and BCB System
- Flood Protection Level of Service Program
- Nature-Based Solutions
- Water and Climate Resiliency Metrics
- Ecosystem Restoration Resiliency & Carbon Storage
- Water Supply Resiliency
- Energy Efficiency and Renewable Energy
- Characterizing and Ranking Resiliency Projects
- Priority Projects
  - Implementation Projects
  - Additional Studies (Planning Projects)
- Appendix A. (project descriptions and cost estimates)
- Apppendix B. Water Supply Vulnerability Assessment



How Projects Get Into The Plan

FPLOS Phase II Studies

Project recommendations from advanced modeling studies
- Includes specific project recommendations such as properly sized engineering and nature-based solutions

FPLOS Phase I Studies

Project recommendations from flood vulnerability assessments
- No-regret strategies (storm surge barriers forward pumps)

Event Response

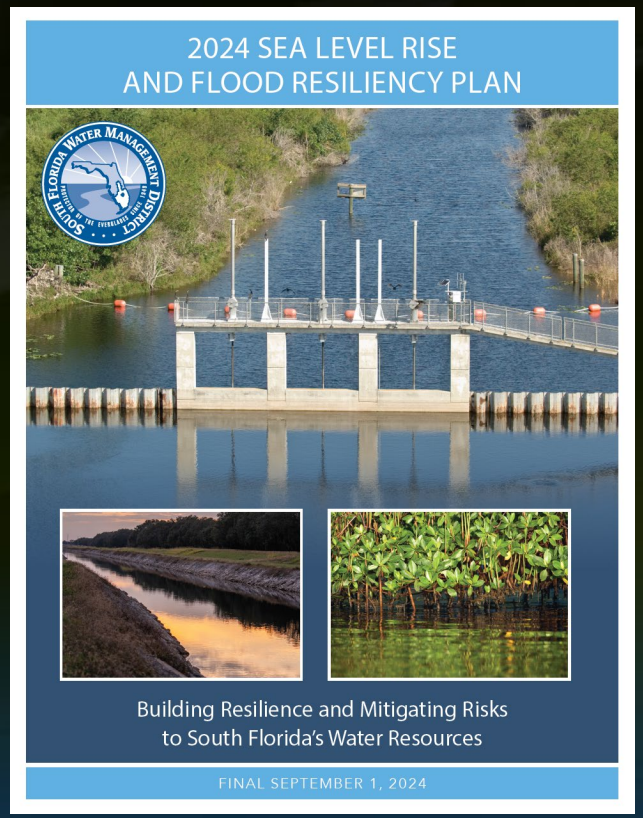
Project recommendations from extreme events
- i.e., Hurricane Ian flooding events in the upper Kissimmee Basin

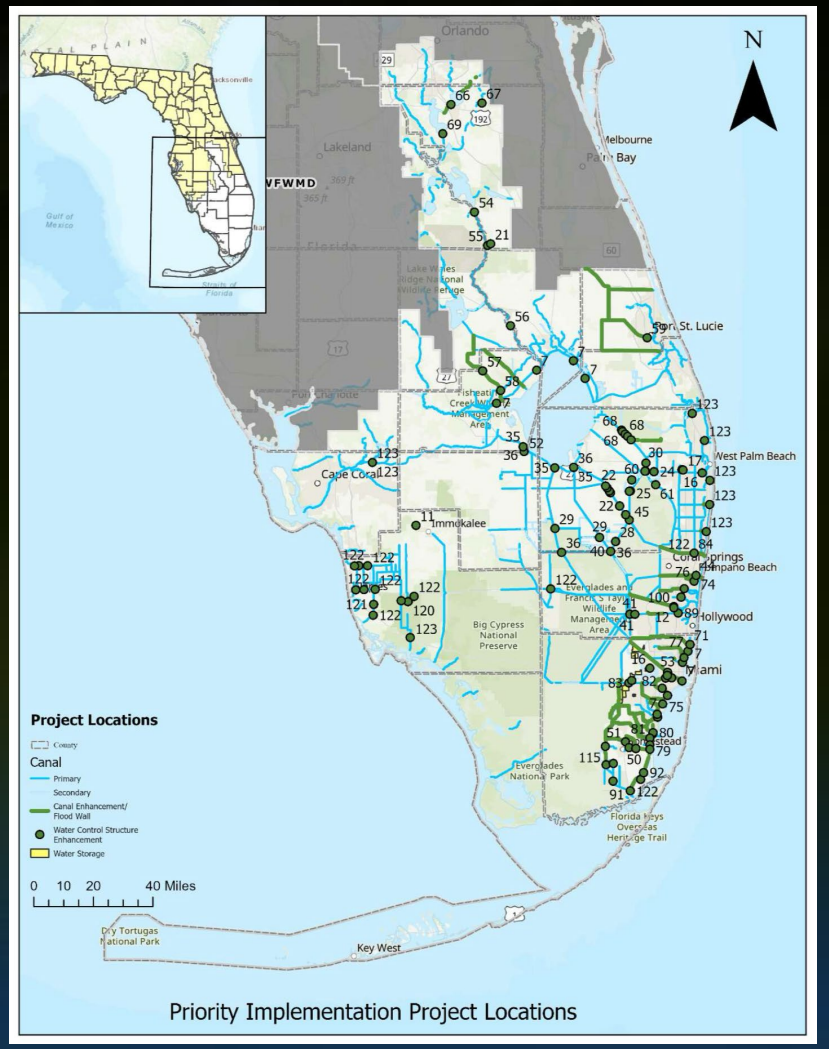
CIP Projects

Project recommendations that are based on CIP needs
- Water control infrastructure improvements

Innovative Projects

Project recommendations that are new and innovative
- Nature-Based Solutions
- Renewable energy projects
- Sometimes result from grant funding requirements



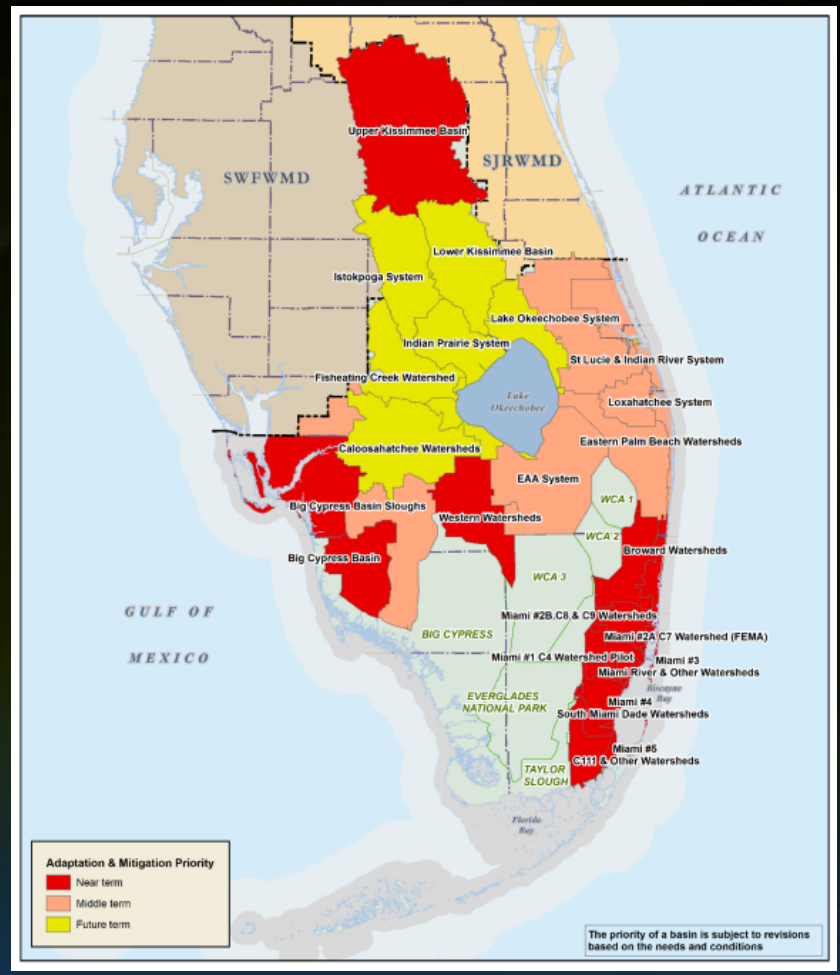


How Projects Get Into the Plan: Flood Protection Level of Service Program

SFWMD's strategy for assessing the impacts of land development and changing climate on flood control infrastructure

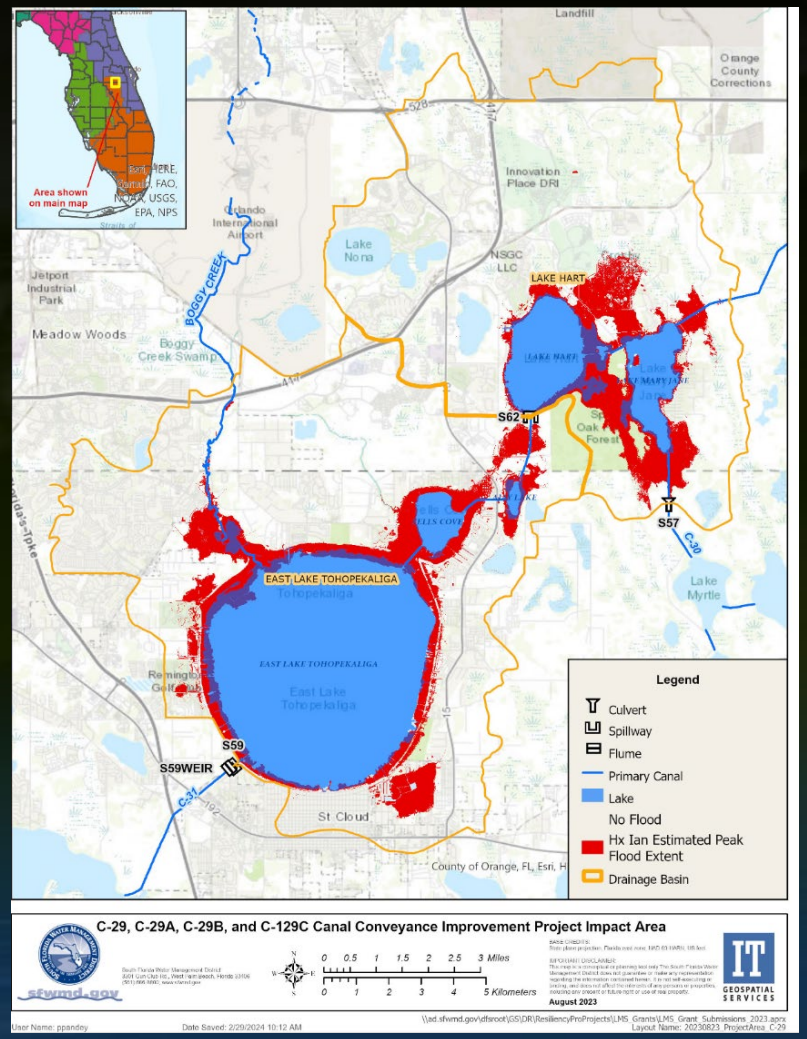
Evaluate current and future flood risks to communities in South Florida

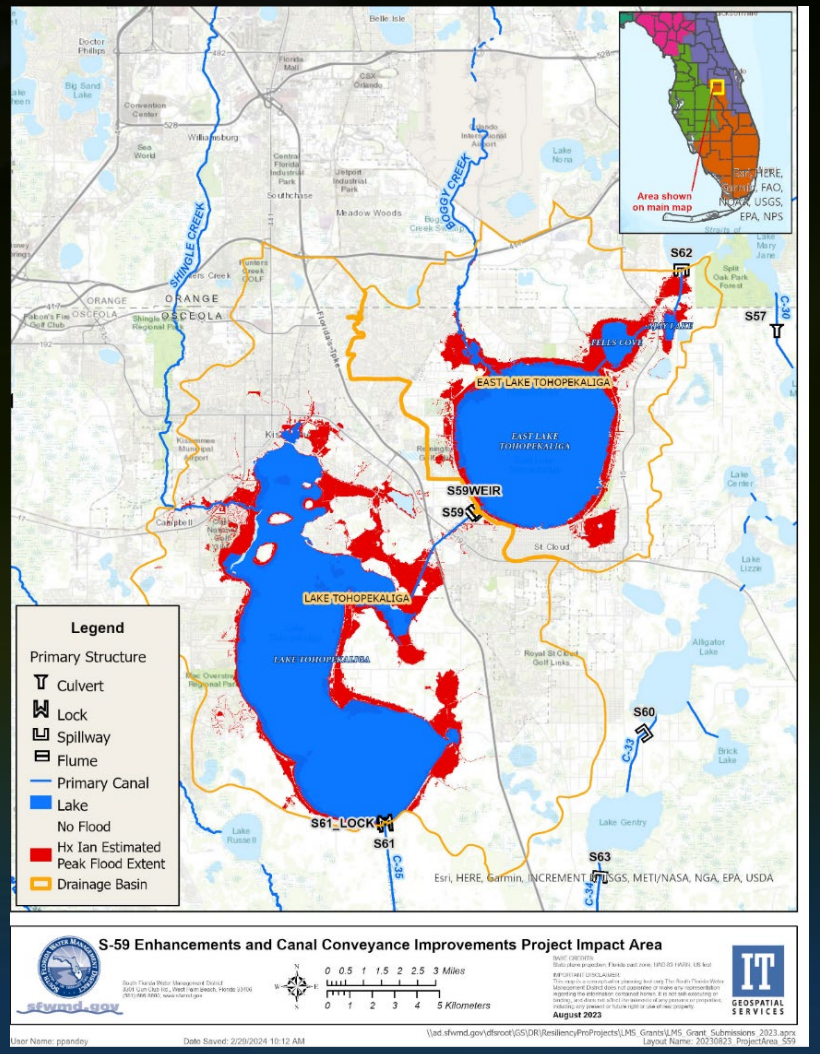
- Pre-defined performance metrics: canal stages, discharge capacity, overland flood inundation and duration
- Considers rainfall, groundwater levels, tides, storm surge and sea level: compound flooding analysis
- Basin-wide integrated modeling supports the assessment of structural, non-structural and nature-based solutions
- **Support decision making on prioritizing and sequencing infrastructure investments**
- **Safeguarding tomorrow, today**



How Projects Get Into the Plan: Event Response

- Some projects are prioritized after a major event that exposes flood vulnerabilities in the system
- For example – Hurricane Ian exposed flood vulnerabilities in the Upper Kissimmee Basin that produced new projects

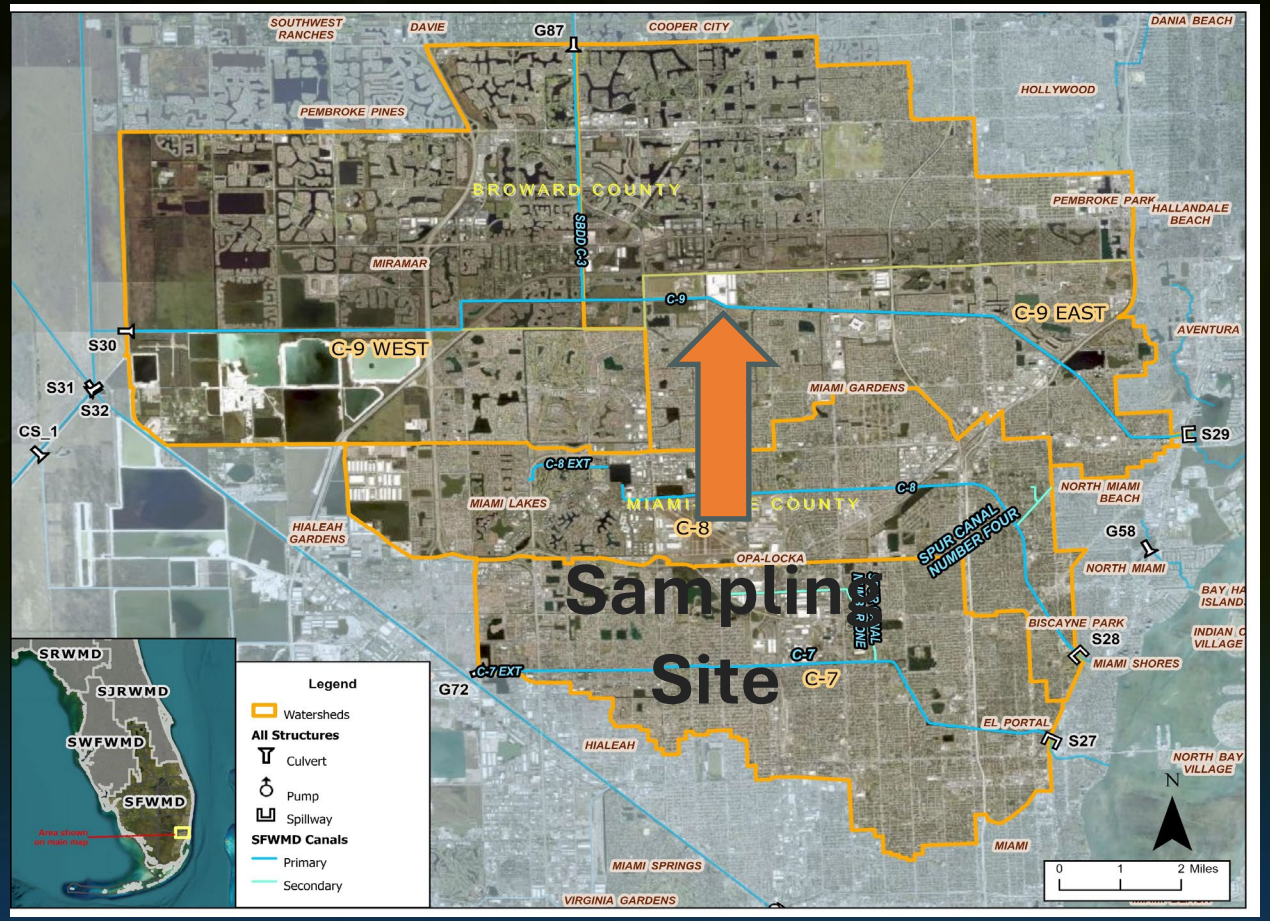




How Projects Get Into the Plan: Innovative Projects

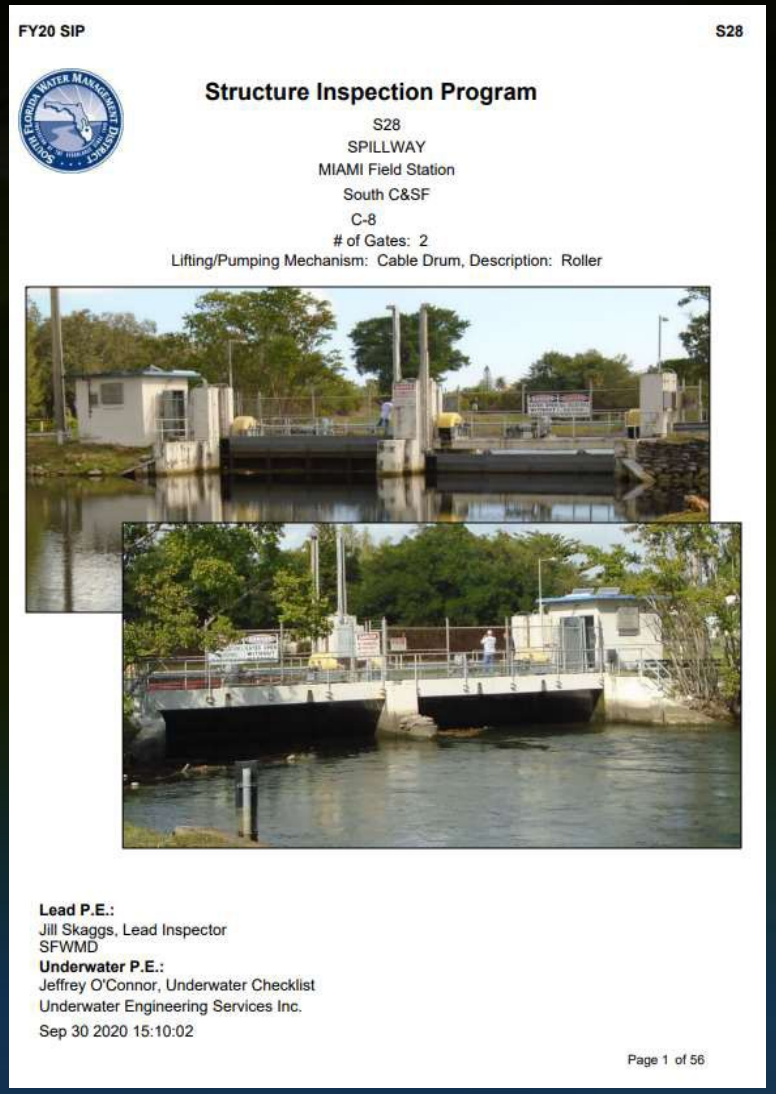
Innovative Technology for Improving Water Quality in C-9 Basin

- FDEP Innovative Technology Grant
- Joint Miami-Dade County & SFWMD Project -
  - Evaluation of innovative approaches to enhance water quality and reduce stormwater pollution as we prioritize flood risk management stategies
- Project Components
  - Design
  - Construction
  - Monitoring
  - Reporting
  - Breakdown



How Projects Get Into the Plan: Capital Improvement Program Needs

- The SFWMD Capital Improvement Plan identifies projects that are needed to keep the water control system operating effectively and efficiently
- These projects often mesh with Resiliency needs and therefore are integrated into the implementation strategy



FY20 SIP S28

Structure Inspection Program

S28
SPILLWAY
MIAMI Field Station
South C&SF
C-8
# of Gates: 2
Lifting/Pumping Mechanism: Cable Drum, Description: Roller

Lead P.E.:
Jill Skaggs, Lead Inspector
SFWMD
Underwater P.E.:
Jeffrey O'Connor, Underwater Checklist
Underwater Engineering Services Inc.
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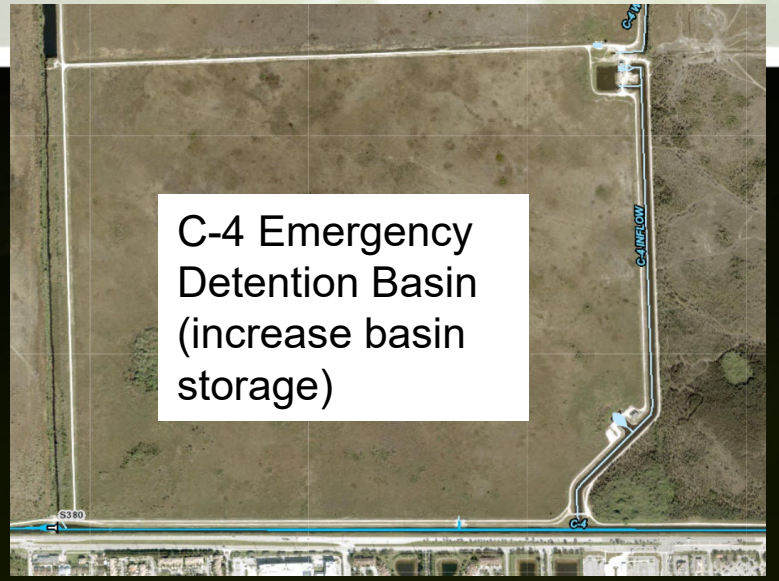
Examples of Flood Mitigation Solutions

Seawall (protect against surge)

S-26 Forward pump (maintain basin discharge)

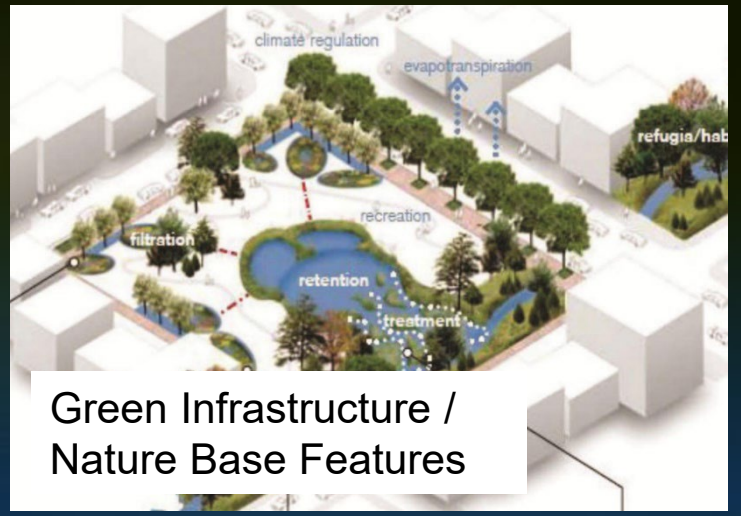


C-4 Emergency Detention Basin (increase basin storage)

Raised Canal Banks C-4 Floodwall (conveyance)

Convertible Flood Barrier (harden infrastructure)

Flap Gate (enhance basin connectivity & backflow prevention)

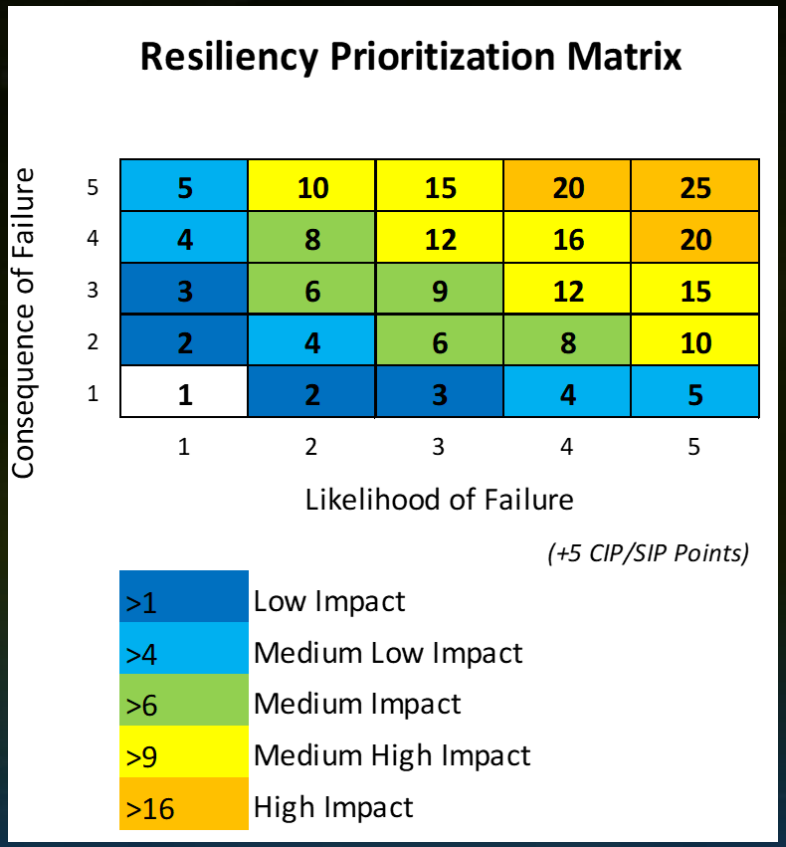


Green Infrastructure / Nature Base Features

Project Ranking

Ranking Criteria – Four Tiers

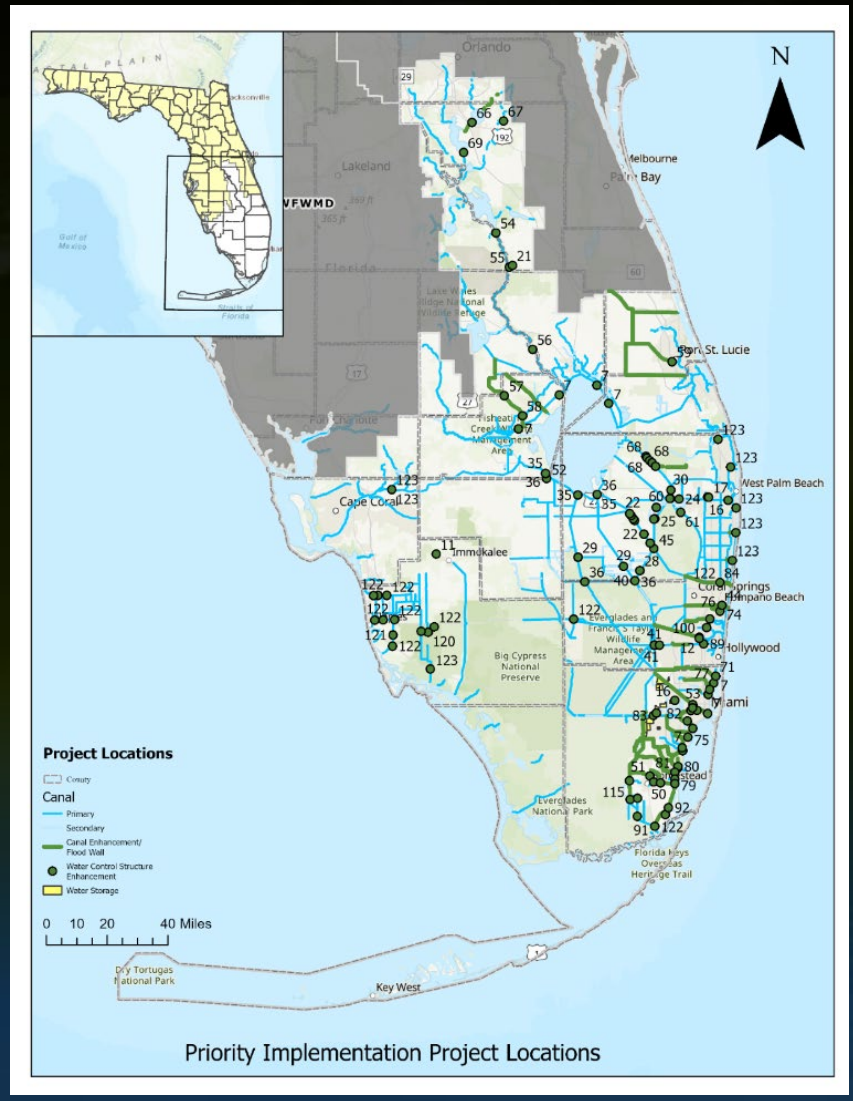
1. Likelihood of System Deficiency (40%)
2. Consequence of System Deficiency (30%)
3. Project Benefits and System Enhancement (20%)
4. Structure Inspection Program Rating and CIP Status (10%)



Priority Projects Map

- Open GIS Project Map
- Locations and project impact areas for all priority projects
- Additional supporting planning layers

https://www.sfwmd.gov/our-work/sea-level-rise-and-flood-resiliency-plan



Stakeholder Comments

- Four Workshops, 201 Attendees
- Lower East Coast – 62 Attendees
- Upper East Coast – 38 Attendees
- Southwest Coast – 53 Attendees
- Kissimmee Basin – 48 Attendees

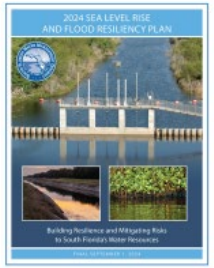
Stakeholder Comments

2025 Sea Level Rise and Flood Resiliency Plan

Public Workshop Highlights

The Sea Level Rise and Resiliency Plan by the South Florida Water Management District (District) is a strategic roadmap to reduce the risks of sea level rise, flooding, extreme storm events and other evolving conditions on South Florida's critical assets, water management operations, water supplies and water resources.

The District is also making significant infrastructure adaptation investments that are needed to continue to successfully implement its mission of safeguarding and restoring South Florida's water resources and ecosystems, protecting communities from flooding, and ensuring an adequate water supply for all of South Florida's needs. Working to ensure the region's water resources and ecosystems resiliency, now and in the future, is part of everything the District does.



Bringing Stakeholders Together

As part of the 2025 Sea Level Rise and Flood Resiliency Plan Update, the District organized four public workshops. These workshops brought together over 220 stakeholders representing 100 organizations across the region. Meetings were held in four locations Lower East Coast, Upper East Coast, Southwest Coast, and Kissimmee River Basin.

Why We Came Together

These in-person workshops brought together key stakeholders to engage in meaningful discussions, share insights, and provide early feedback on the 2025 Sea Level Rise and Flood Resiliency Plan Update. The workshops served as an opportunity to explore available tools, resources, and information, including the latest Resilient Florida Program updates from the State of Florida, and to ensure the Plan update reflects the diverse needs and priorities of our local communities.

WORKSHOP #1
Lower East Coast
Doral, FL

WORKSHOP #2
Upper East Coast
Stuart, FL

WORKSHOP #3
Lower West Coast
Bonita Springs, FL

WORKSHOP #4
Kissimmee Basin
Orlando, FL

"Collaboration is the key to tackling flood resilience in our region. These workshops sparked great discussions and next steps for a stronger, more resilient future for our region and the City of Miami."
– Sonia Brubaker, Chief Resilience Officer, City of Miami

SFWMD.gov/Resiliency

Key Outcomes

- As a region, we need to **align local and regional flood risk projects** and priorities. Regional collaboration is key to our shared success.
- The District shares technical resources to support local governments to design and implement projects. **Leveraging already available data, models, and tools** will lead to improved results and more effective action.
- South Florida's water management system is complex and has many players that must continue to collaborate closely. **Aligning projects through collaboration and data-driven decision-making** is essential to reduce costs and implementation time.
- **Nature-based solutions should be prioritized** where possible for projects at various levels. Using nature for flood risk reduction can provide additional community benefits.

Our Commitment to Collaboration

Our communities recognize the urgent need for action, and we must work together to find the best solutions.

- **Collaboration Increases Effectiveness:** A well-planned combination of structural measures – designed to reduce flood risk regionally without shifting it to neighboring communities – and non-structural measures, such as living with water, elevating structures, and hardening infrastructure, ensures a sustainable and effective approach to flood risk management.
- **Collaboration Optimizes Solutions:** Effective resource allocation maximizes impact, ensuring that flood risk reduction efforts are strategic, efficient, and aligned with long-term resilience goals.
- **Collaboration Expands Funding Opportunities:** Coordinated efforts strengthen project positioning for competitive funding, increasing access to critical financial resources for resilience and adaptation initiatives.

Shared Goals

The importance of resilience was underscored, as flooding risks pose significant threats to communities, economies, and ecosystems. Building resilience through collaborative efforts is crucial to:

- Protect property and lives
- Support economic growth and stability
- Preserve environmental resources

Our State Partners

This collaboration is supported by the Department of Environmental Protection's Resilient Florida Program, the Florida Flood Hub for Applied Research and Innovation and the Statewide Office of Resilience within the Governor's Office.

Our community recognizes and appreciates the significant resources available to advance resilience projects across Florida from those programs, along with the Hazard Mitigation Programs at the Florida Department of Emergency Management.

The District's resiliency efforts include advancing scientific data and research to ensure the District's resiliency planning and implementation projects are founded on the best available science and robust technical analyses.

These efforts are in collaboration and cooperation with regional, state and federal agencies, local and tribal governments, non-governmental entities, universities, and citizens throughout Central and Southern Florida.

SFWMD.gov/Resiliency

You can view the workshop highlights in PDF format here.

Timeline and Next Steps

- February/March: Public Workshops & Early Input from Internal Teams
- April: Internal Coordination Meetings
- May 20: Final Draft, technical editing
- May 28, 2025: Draft Plan Presented at Resiliency Forum and Open for Public Comments
- June 25, 2025: Public Comment Period Closes
- July / August 2025: Follow up with comments and incorporate into Plan
- September 1, 2025: Final Plan Submission

Thanks!

Questions?

Comments?

www.sfwmd.gov/resiliency

Photo by Miami DDA