#### SOUTH FLORIDA WATER MANAGEMENT DISTRICT



#### **Central and Southern Florida Flood Resiliency Study**

Carolina Maran, P.E., Ph.D., District Resiliency Officer

Governing Board Meeting March 12, 2020

#### **Overview**

- Central and Southern Florida (C&SF) project background
- Previous review study: Comprehensive Everglades Restoration Plan
- New review study due to changed conditions: C&SF Flood Resiliency Study
- Impacts observed and SFWMD efforts to address changed conditions
- Other Coastal Studies & USACE Coordination
- Initial Appraisal Report request and next steps

Board's Action: consider approval of SFWMD Letter of Endorsement to <u>C&SF Flood Resiliency Study – USACE Budget Request</u>

#### **Background: Central & Southern Florida Project**

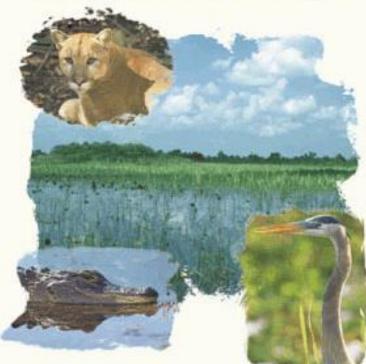


Flood Control Act of 1948 – Congress authorizes the U.S. Army Corps of Engineers to design and construct water management infrastructure

- Projected to serve a population of 2 million people
- Authorized purposes: flood control, water supply, navigation, prevention of saltwater intrusion, and protection of fish and wildlife resources
- Served as the foundation for the creation of the District

## **Comprehensive Review Study**

Rescuing an Endangered Ecosystem: The Plan to Restore America's Everglades



The Central and Southern Florida Project Comprehensive Review Study (The Restudy) Central and Southern Florida Project (C&SF) Restudy – WRDA 1992

> Reconnaissance Report by USACE -1994

Governor's Commission for a Sustainable South Florida develops Conceptual Plan – 1996

> Comprehensive Review Study by USACE - 1999

CERP authorized by Congress - 2000

#### CENTRAL AND SOUTHERN FLORIDA PROJECT COMPREHENSIVE REVIEW STUDY

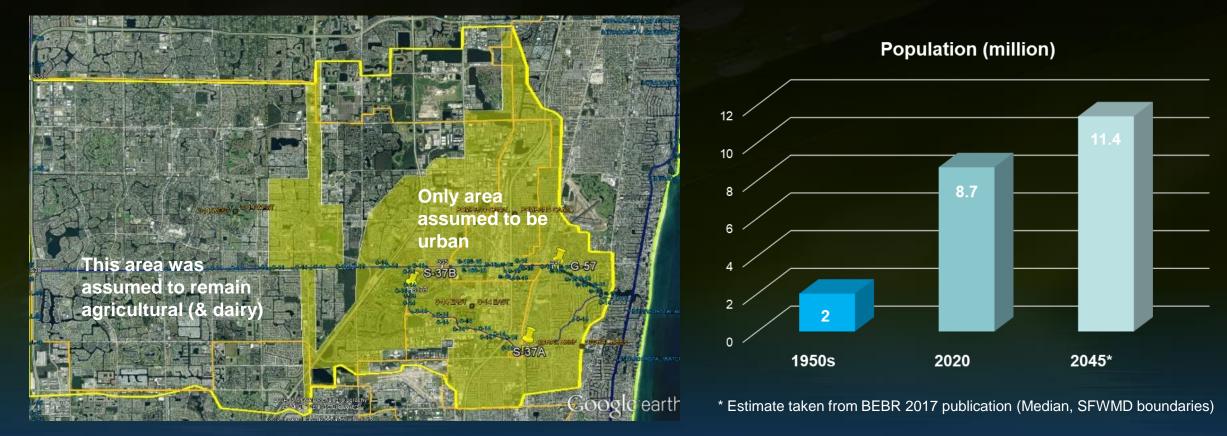
FINAL INTEGRATED FEASIBILITY REPORT AND PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT



#### **New Review Study: Changed Conditions**

#### LAND DEVELOPMENT

#### **POPULATION GROWTH**



#### **Climate Changed Conditions**

#### SEA LEVEL RISE **MORE EXTREME RAINFALL** 8724580 Key West, Florida 2.40 +/- 0.15 mm/yr 48-Hour Rainfall - Thru 8 AM June 07, 2017 Source: ASOS, AWOS, AWSS, Co-Op observers, CoCoRaHs observers, SFWMD and AHPS data - Linear Mean Sea Level Trend RDAR I observations. Yellow dots are estimated values. Values between the observations have been interp The CoCoBaHS list was last undated on 6/3/14. This information is not official and should be conside Upper 95% Confidence Interval 0.45 Lower 95% Confidence Interval Monthly mean sea level with the average seasonal cycle removed 0.1 Glades 2.62 .3.16 0.00 -0.1Palm Beach 10 49 - 0.3 Hendry -0.4 -0.60 Rainfall (inches) 1900 1910 1920 1980 1990 2000 2010 0.00 or T Associated with High Tides **HIGHER GROUNDWATER** 0.01 - 0.50 0.51 - 1.00 Gulf of Mexico Atlantic Ocean 1.01 - 2.00 Miami-Dade 2.01 - 5.00 Mainland Monroe USGS 260155080092002 G -2612 5.01 - 7.50 2.0 7.51 - 10.00 4.5 jee land 2.5 10.01 - 12.50 belou 4.0 3.0 12.51 - 15.00 NGVD 3.5 15.01 - 20.00 NWS Miami, F Site Number: 26015508009200 level Site Name: G -2612 Site Type: Well 4.5 Agency: USGS 5.0 2.0 5.5 1.5

1.0 10

2008

Period of approved data

2010 2012 2014 2016

— Period of provisional data



Meters

## **Impacts Already Being Observed**



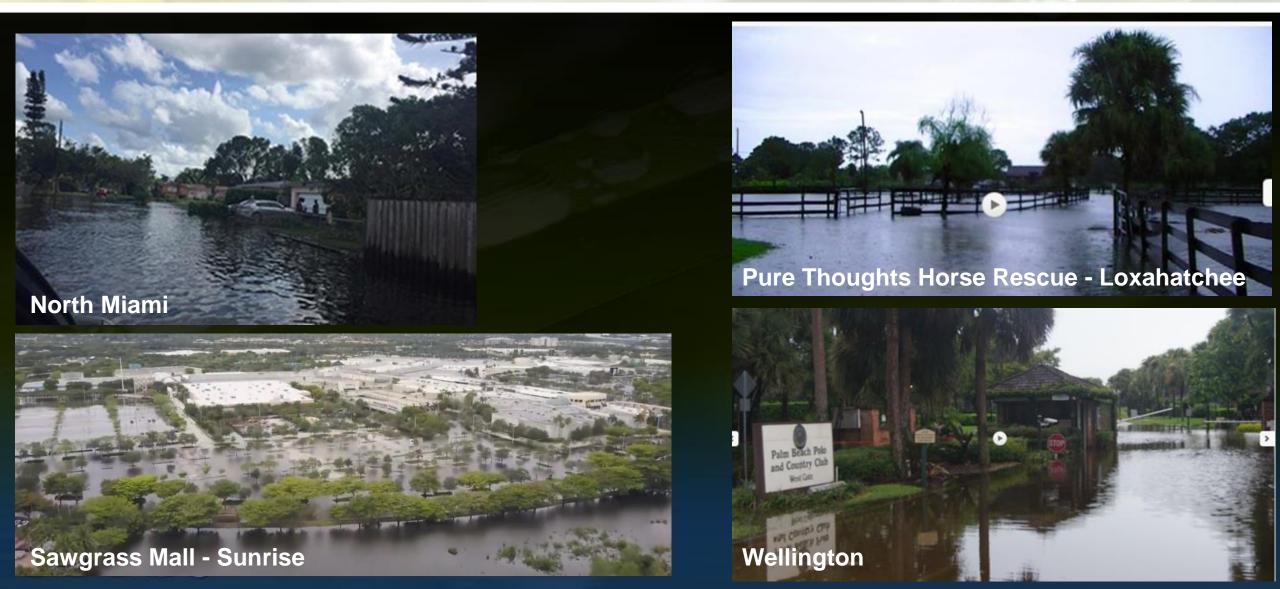
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## **Sunny Day Flooding**

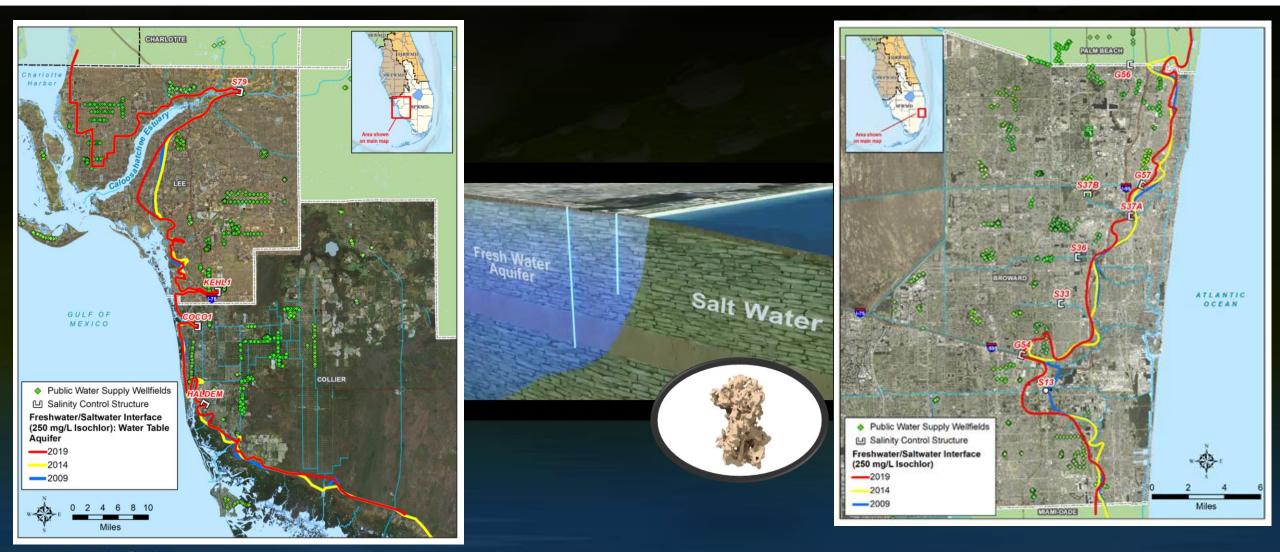


sfwmd.gov

## **Extreme Rainfall Flooding**



#### **Saltwater Intrusion**



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

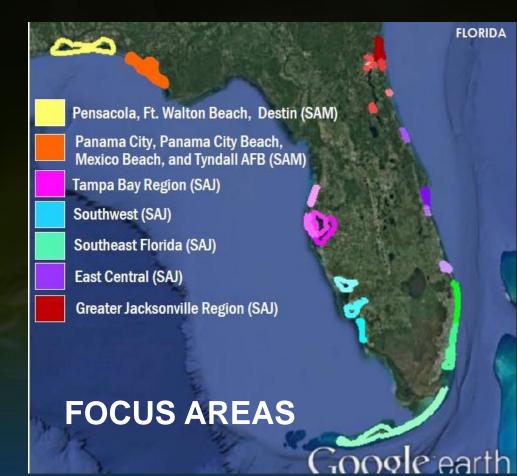
## **Flood Protection Level of Service Program**



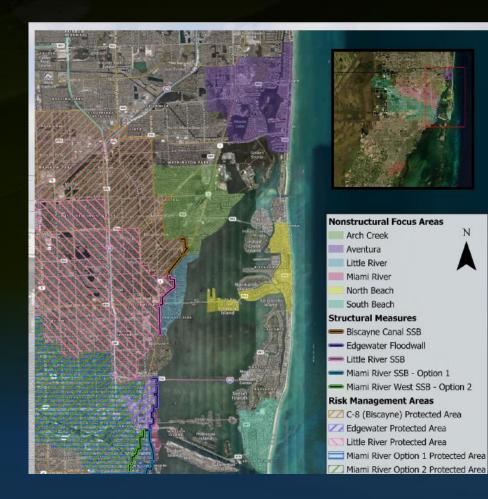
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## **Additional Efforts: Coastal Study Examples**

#### SOUTH ATLANTIC COASTAL STUDY (SACS)



#### MIAMI-DADE BACK BAY COASTAL STORM RISK MANAGEMENT FEASIBILITY STUDY



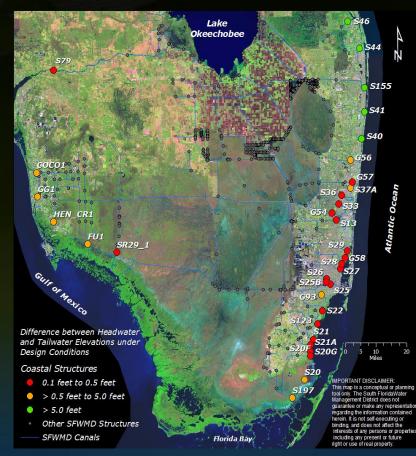
## **C&SF Flood Resiliency Study**

- Current request: C&SF Review Study due to changed physical conditions
- Conducted under section 216 of the Flood Control Act of 1970
  - Initial request for \$6M over 4 years
- USACE Jacksonville District is completing a 216 Initial Appraisal Report in order to qualify for study funds
- FY22 Regular Budget or FY21 Workplan



## **C&SF Flood Resiliency Study**

- Opportunity to address vulnerabilities with a phased approach
- Identify improvements needed and inform how the system should look, operate, and adapt considering changes since initial construction
- Focus on the project features which can reduce the most immediate flood risk, based on a broad C&SF system overview
- Selection of critical structures will be defined jointly between SFWMD and USACE
- Study would be conducted in coordination with stakeholders, Federal agencies, State, Tribal and local officials.



#### **Next Steps**

Consider approval of the SFWMD Letter of Endorsement to the USACE to seek federal funding to initiate a Section 216 Feasibility Study

Federal Cost-Share Agreement for the C&SF Review Study at 50%/50% cost-share

- Preliminary Engineering and Design through a 75%/25% cost-share agreement
- Project Partnership Agreement for construction at 65%/35%

>100% O&M will be SFWMD's responsibility (continue non-federal sponsor)

#### 2020



# Discussion

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Photo by Paul Krashefski