

## April 29, 2025 Public Meeting

### Project Overview

Central & Southern Florida System Flood Resiliency Study (Section 203) for Broward Basins

> Matthew J. Morrison Chief Policy Advisor South Florida Water Management District



## Section 203 C&SF Flood Resiliency Study for Broward Basins

**Project Goals:** To develop, evaluate and recommend flood risk management measures and adaptation strategies to build flood resiliency in the communities served by the C&SF system, now and in the future

**Study Objective:** Enhance C&SF Project water control structures' functionality and capacity to reduce flood damages and improve resiliency caused by inundation and changed conditions within the Study Area over the 50-year period of analysis of 2035–2085

- Study using WRDA 1986 Section 203 process to complete an integrated Flood Resiliency Study and required NEPA documentation for Broward Basins
- SFWMD is the Non-Federal Sponsor in partnership and with funding support from FDEP and Broward County
- Study focuses on the primary canals and coastal water control structures in the managed watersheds that are part of the C&SF project
- Leveraging C&SF Flood Resiliency Study (216 Study) Milestones Reach A
- Project management, modeling, and evaluations completed by SFWMD
- Consulting services providing technical, policy, modeling, and engineering support services
- Federal assistance from the USACE Jacksonville District
- Targeting authorization WRDA 2026







## Section 203

## **C&SF Flood Resiliency Study for Broward Basins**

#### **Project Study Area – Managed Basins**

- Nine (9) Upstream Inland Managed Watershed Basins
- Seven (7) Primary Canals
- Nine (9) Water Control Structures

MANAGED BASIN	PRIMARY CANAL	PRIMARY WATER CONTROL STRUCTURE	
Hillsboro Canal Basin	G-08 (Hillsboro) Canal	G-56 Gated Spillway	
Pompano Canal Basin	G-16 (Pompano) Canal	G-57 Gated Spillway	
C-14 West Basin	C-14 (Cypress Creek) Canal	S-37B Gated Spillway	
C-14 East Basin	C-14 (Cypress Creek) Canal	S-37A Gated Spillway	
C-13 West Basin	C-13 (West Middle River) Canal	S-36 Gated Spillway	
C-12 West Basin C-12 (Plantation) Canal		S-33 Gated Spillway	
North New River Canal West Basin	G-15 (North New River( Canal	G-54 Gated Spillway	
C-11 West Basin	C-11 (South New River) Canal	S13AW Gated Culvert	
C-11 East Basin	C-11 (South New River) Canal	S-13 Pump Station & Gated Spillway	



## PLAN FORMULATION AND STUDY APPROACH

#### Where Our Study Ideas Come From:

To build this project study, we pulled together ideas and information from many places, including:

- The C&SF 216 Study (with an early list of options)
- The South Florida Water Management District's flood protection evaluations
- The District's Sea Level Rise and Flood Resiliency Plan
- Broward County's resiliency planning efforts
- Feedback from the Project Kickoff Meeting
- Comments from the Scoping Meeting and Scoping Letters

We took all these ideas and combined them into an **Initial Array of Alternatives** — basically, a set of different options for improving how we manage inland water. Then, we looked closely at how each option could work.



## **INITIAL ARRAY OF ALTERNATIVES**

- Alt 1 Gravity Conveyance Improvements (Structures and Canals)
- Alt 2 Pumps at Structures & Hardening
- Alt 3 Removal of Coastal Structures
- Alt 4 Relocation of Coastal Structures to the East
- Alt 5 Alternatives to Discharging East
- Alt6 Natural & Nature Based Features Only
  - Freshwater Wetlands
  - Storage Impoundments and Flow Equalization Basins
  - Stormwater Parks and Floodplain Expansions
  - Infiltration and Groundwater Recharge Components
- Alt7 "Non-Structural" Features Only
  - Buy-Outs and Relocations
  - Elevating and Dry Floodproofing Structures
  - Flood Preparedness Planning and Flood Warning Systems



The "Initial Array of Alternatives" have been evaluated and recombined using the high-performing project features into a "Final Array of Alternatives" for further consideration.





# **Project Schedule**

Targeting June 2026 - Deliver Corrected Final Feasibility Report & Environmental Impact Statement to ASA Civil Works







# Public Meeting

### Plan Formulation Strategy

#### Central & Southern Florida System Flood Resiliency Study (Section 203) for Broward Basins

Katie Magoun NEPA Specialist South Florida Water Management District Consultant



#### Central & Southern Florida Broward Basins Flood Resiliency Study Section 203 Study Approach



Study Goal

To develop, evaluate and recommend flood risk management measures and adaptation strategies to build flood resiliency in the communities served by the C&SF system, now and in the future. Section 216 Process Section 203 Process Modeling/Data Analysis

Section 216 Public Involvement

#### Problems

The existing C&SF system was not designed to manage the combination of runoff, storm surge, high tides and a high groundwater table, which is exacerbated by sea level rise, extreme rainfall events and land development patterns. Therefore, natural, agricultural and highly-dense urban areas in south Florida are currently experiencing significant flooding and conditions are expected to worsen in the future. Enhancements to the existing C&SF infrastructure are necessary to provide flood protection and water supply to more than 9 million people.

#### **Opportunities**

- Manage life safety risk caused by inundation.
- Manage risk to historical and cultural resources.
- Unify coordination and build trust with stakeholders and the public.

#### **Objectives**

Enhance the C&SF system water control and salinity control structure's functionality and capacity to reduce flood damages and improve resiliency caused by inundation and changed conditions within southern Palm Beach, Broward and Miami Dade counties over 50-year period of analysis from 2035-2085.

#### Constraints

- Avoid, minimize and/or mitigate induced flood risk to other areas within the study area over the period of analysis.
- Avoid, minimize, and/or mitigate impacts to objectives and authorized benefits of other Federal studies and projects within the study area.

USACE Risk Informed Planning Guidance (ER 1105-2-103)



### Central & Southern Florida Broward Basins Flood Resiliency Study Section 203 Study Approach





#### Structural Management Measures:

- Expanding canal cross sections
- Raising canal banks
- Adding gates
- Moving existing gates
- Adding pump stations
- Upgrading existing pump stations
- Constructing flood barriers
- Hardening structures
- Removing coastal water control structures
- Relocating coastal water control structures
- Creating inter-basin transfers
- Creating well injection sites

#### Nature-based Management Measures:

- Enhancing floodplain restoration
- Freshwater wetlands
- Rain gardens

#### Non-structural Management Measures:

- House raising
- Flood proofing
- Floodplain management







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Initial Array Screening Analysis - Alternatives 1 through 5 Modeling Results

Central & Southern Florida System Flood Resiliency Study (Section 203) for Broward Basins

> Walter Wilcox, P.E. Bureau Chief, Water Resources Systems Modeling South Florida Water Management District

## **INITIAL ARRAY OF ALTERNATIVES**

Informed by management measures collected from several previous studies and presented in public engagement and kickoff meeting (included at the December 2024 Scoping Meeting):

- Alt 1 Gravity Conveyance Improvements (Structures and Canals)
- Alt 2 Pumps at Structures & Hardening
- Alt 3 Removal of Coastal Structures
- Alt 4 Relocation of Coastal Structures (to the East)
- Alt 5 Alternatives to Discharging East on Peak
- Alt 6 Natural & Nature-Based Only
- Alt 7 Non-structural Only





## PROBABILITY EVENTS: EVALUATION OF COMPOUND FLOODING

- The total water level (i.e., compound flooding) due to multiple flood sources, including rainfall runoff, groundwater and coastal forcings will be simulated.
- Hydrologic & Hydraulic model simulations include an array of rainfall and coastal return frequency events. Sea level change is included in the coastal water level data & run in parallel for sea level scenarios.
- For the Initial Array evaluation, the following conditions were examined:
  - 2-year Surge, 25-year Rainfall for Intermediate SLC (2S25RI)
  - 20-year Surge, 25-year Rainfall for Intermediate SLC (20S25RI)
  - 20-year Surge, 25-year Rainfall for High SLC (20S25RH)

Coastal water level Return Period (CHS data )	Rainfall return period (NOAA Atlas14)	
2-year	5-year	
2-year	10-year	
10-year	10-year	
2-year	25-year	
20-year	25-year	
2-year	100-year	
100-year	100-year	
2-year	500-year	



## **VIEWING & EVALUATING MODEL RESULTS**

- Several ways of examining & summarizing modeling data are available
- For the Initial Array evaluation, these include:
  - Maximum Canal Profiles
  - Depth Difference Maps
  - Structural Performance (Stages + Flows)
- Many other ways of evaluating results will be employed in future formulation steps











### EXAMPLE ALT1 GRAVITY CONVEYANCE IMPROVEMENTS



15



## ALT 1 – MITIGATION MEASURES & FINDINGS

- Increase gate sizes
- Increase number of gates
- Improve canal conveyance
- Hardening of tidal structures





## **ALT 1 – EXAMPLE RESULTS**

CALLA BEACH COUNTY G55 EAST





- 20525R851\_FWOP\_baseline - 20525R851\_Alt5\_prelim\_v6 - 20525R851\_Alt4\_hardening\_v6 - 20525R851\_Alt3\_prelim\_v6 - 20525R851\_Alt1\_prelim - Left Bank · · · Right Bank • Bridge Low Chord · · · Alt1\_XS flow line · · · Alt2\_XS flow line · · · Base\_XS flow line - 20525R851\_Alt2\_hardening\_v6

## ALT 1 – EXAMPLE RESULTS

ARDA





#### In Some Cases, Increased Gravity Conveyance Can Recover Impacted Structure Capacity







### EXAMPLE ALT2 PUMPS AT STRUCTURES & HARDENING



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## ALT 2 – MITIGATION MEASURES & FINDINGS

- Add forward pumps
- Improve canal conveyance
- Hardening of tidal structures
- Extensive pre-storm
  - drawdown operations







## ALT 2 – EXAMPLE PUMP SIZING SENSITIVITY TESTING



Design discharge: 1,090cfs Low range: [3.0ft – 3.9ft] Pre-storm drawdown: 3.0ft - 0.5ft = 2.5ft





EXAMPLE ALT3 Removal of Coastal Structures



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## ALT 3 – MITIGATION MEASURES & FINDINGS

- Removal of coastal structures
- Can allow flood getaway in some cases, but can also allow surge inland
- Removes the ability of the system to maintain water supply levels and avoid saltwater intrusion







## **ALT 3 – EXAMPLE RESULTS**

In Extreme Cases, Removal of Coastal Structure can Allow Downstream Water to Reach Upstream Watershed









EXAMPLE ALT4 RELOCATION OF COASTAL STRUCTURES



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26



## ALT 4 – MITIGATION MEASURES & FINDINGS

- Relocation of coastal structures
- Relatively effective in lower lying watershed
- Illustrates synergy with future potential coastal watershed studies







Alt1\_XS flow line

Alt2\_XS flow line

Base\_XS flow line

## **ALT 4 – EXAMPLE RESULTS**

#### 



20S25R85i Alt2 hardening v6



Max Depth FWOPi 20S25R85i - ALT4 20S25R85i (Broward County)





EXAMPLE ALT5 ALTERNATIVES TO DISCHARGING EAST





## ALT 5 – MITIGATION MEASURES & FINDINGS

- Inter-basin transfer
- Divert water between basins
- Divert water to local storage
- Divert water to regional storage
- Local improvements evident and some measures carried forward







## **ALT 5 – EXAMPLE RESULTS**

While Local Storage Features Were **Utilized, Effects Across the Basin Were** Not as Significant as in Some Other **Alternatives** 







Legend

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## **H&H MODELING DATA**

### Study H&H Modeling Data can be Accesses at:

ftp://ftppub.sfwmd.gov/pub/lbrion/BrowardBasinsFloodResiliency/2025\_04\_29\_Public\_Meeting/H&H\_Data

#### NOTE:

Due to current computer system security protocols, simply accessing the above SFWMD ftp link will likely NOT work. To successfully access and eventually view/open the files, please follow the following steps:

- 1. Be sure to be connected to the internet. This is required.
- 2. Copy the ftp link, and
- 3. Paste it in the address bar of your file/directory browser

(e.g., Windows Explorer/File Explorer in Windows or Finder in MacOS), NOT into a web/internet browser (e.g., Microsoft Edge or Safari or Google Chrome). This step provides the user the ability to navigate through the directory structure and list of files available at the SFWMD ftp site. Please DO NOT preview or doubleclick on individual files at this point.

- 4. Copy the specific directories and/or files of interest into your LOCAL directory/ folder/machine. This is the downloading step of the procedure that may take a considerable amount of time depending on the size of the directories and/or files and speed of your internet connect.
- 5. View or open the LOCAL copy of the files by double-clicking on them.





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Initial Array Screening Analysis – Alternative 6 Nature Based Features Only Alternative

Central & Southern Florida System Flood Resiliency Study (Section 203) for Broward Basins

> Aaron Duecaster Resiliency GIS Specialist South Florida Water Management District Contractor

## **INITIAL ARRAY OF ALTERNATIVES**

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## **Alternative 6 Nature-Based Features Only**

#### Nature-Based Feature

Designed, engineered, and constructed to mimic natural features

#### **Nature-Based Features Under Consideration**

- Increase surface storage to attenuate runoff, with associated environmental benefits
- Create wetlands and restore natural areas
- Develop stormwater parks and flexible-use spaces
- Convert land into lakes and/or detention/retention ponds

#### Additional Nature-Based Features Considerations

- Integrate with structural or nonstructural measures to further reduce flood risks
- Improve sustainability, resilience, and costeffectiveness while providing co-benefits such as better habitat, improved water quality, and recreational opportunities



Acme Basin B



# **Project Study Area**

Screening Analysis conducted for the Nature Based Features tied to primary system within the Managed Basins and with associated stormwater / flood risk management goals

#### MANAGED BASINS

Hillsboro Canal Basin

Pompano Canal Basin

C-14 West Basin

C-14 East Basin

C-13 West Basin

C-12 West Basin

North New River Canal West Basin

C-11 West Basin

C-11 East Basin





## IDENTIFYING SUITABLE LOCATIONS FOR NATURE BASED STORAGE FEATURES UTILIZING SPATIAL ANALYSIS TOOLS

Consistent with Project Objectives identify land suitable for stormwater storage that would improve the flood control performance of the primary system and have associated environmental benefits

#### **STEP 1 SCREENING**

- Size of parcel > 10 acres (limited real estate availability)
- Parcel size relative to total size of watershed (and not necessarily most critical storage needs)
- Distance to primary and secondary canals
- Suitability of existing land use and development for conversion to a feature
- Consideration of known HTRW (Hazardous, Toxic, and Radioactive Waste)
- Consideration of known cultural and historical resource

#### **STEP 2 SCREENING**

- Consideration of T&E species habitat
- Consideration of engineering/construction factors, including but not limited to:
  - Ground elevation relative to normal and peak canal stages
  - Existing and future Seasonal High-Water Table
  - Suitable for gravity or pumped inflow
  - Feasibility of connection to a canal
  - Earthwork requirements
  - Constructability and costs
  - Cost effectiveness

## **SCREENING FOR SUITABLE NATURE BASED FEATURES**





### SCREENING FOR SUITABLE NATURE BASED FEATURES

**Nature Based Sites Identified For Further Evaluation** 

Clustering of Parcels that Cover At Least 1% Of The Watershed

Parcels Have a Potential Connection with Primary and Secondary Systems

#### Hillsboro Feature **Hillsboro Canal Basin**

- Adjacent to Hillsboro Canal (Primary Canal)
- **Agricultural Site** ٠
- Private Ownership ٠
- Approximately 718 ٠ acres or 1.12 square miles
- No known HTRW but soils likely to contain Agrichemicals

#### North New River Feature North New River Canal West Basin

- Adjacent to North New ٠ **River Canal (Primary** Canal)
- Park/Recreation Area ٠
- **Public Ownership** ٠
- Approximately 669 . acres or 1.05 square miles
- Some portions of the ٠ site may not be suitable for project features

### Legend Primary Water Control Structure Parcels Advanced For Further Evaluation Upstream Watershed from Coastal Structure Downstream Watershed G56 From Coastal Structure Hillsboro Canal 8 Miles S33 ATH NEW RIVER G54

Recommendation

Advance sites into the Final Array of Alternatives for further evaluation



Public Meeting

Initial Array Screening Analysis – Alternative 7 Non-Structural Only Alternative

Central & Southern Florida System Flood Resiliency Study (Section 203) for Broward Basins

> Katie Magoun **NEPA Specialist** South Florida Water Management District Consultant

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## **NONSTRUCTURAL MEASURES**



Moderate



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	Management Measure	Effectiveness	Acceptability	Completeness	Efficiency	Carried Forward	
	Elevate residential and commercial structures	<b>S</b>		<b>S</b>	•	Yes	
	Dry floodproof commercial structures, where appropriate Residential dry-floodproofing not recommended in USACE guidance.	•	8	<ul> <li>Image: A start of the start of</li></ul>	<b>S</b>	Yes	
	Structure Relocation or Acquisition	<b>S</b>	8	•	8	No	
	Non-Physical Measures (I.E., Flood Warning Systems)*	8	Ø	8		Yes	

\*Non-physical measures such as evacuation plans, flood emergency preparation, floodplain mapping, land use regulations, risk communication, zoning, and flood insurance are part of existing conditions.





## MANAGEMENT MEASURES TO ALTERNATIVES

	Management Measures	Alternative Formulation
1)	Elevate existing structures within the study area to address changing conditions or	
2)	Dry floodproof existing structures within the study area to address changing conditions and	Alternative 7a
3)	Implement a flood warning system with real-time flood forecasting.	
1)	Elevate existing structures within the study area vulnerable to residual risk or	
2)	Dry floodproof existing structures within the study area vulnerable to residual risk and	Alternative 7b
3)	Implement a flood warning system with real-time flood forecasting	



## **MANAGEMENT MEASURES TO ALTERNATIVES**

Alternative Formulation	Basins	Estimated Number of Buildings Impacted (Inundation >0.1 feet)	
	C-11 East	13,000 to 18,000	
Alternative	C-11 West	14,000 to 21,000	
7a	C-13 West	8,500 to 14,000	
Non-	C-14 West	16,000 to 26,000	
structural	Hillsboro Canal	21,000 to 29,000	
Only	North New River	6,000 to 10,000	
	Pompano Canal	700 to 1,500	

Estimated number of buildings based on high SLR condition in future year of 2085.

Estimated number of structures based on compound frequency events at the 30, 110, and 430 year.



## April 29, 2025 Public Meeting

### **Draft Final Array of Alternatives**

#### Central & Southern Florida System Flood Resiliency Study (Section 203) for Broward Basins

Walter Wilcox, PE Bureau Chief, Water Resources Systems Modeling South Florida Water Management District Katie Magoun NEPA Specialist South Florida Water Management District Consultant





### Central & Southern Florida Broward Basins Flood Resiliency Study Study Objectives - Initial Array of Alternatives



en l	NC		Decision Criteria	Acceptability	Efficiency	Effectiveness	Completeness	
	Management Measures	Initial Array of Alternatives	The alternative meets the study objectives.	The alternative is consistent with existing federal laws, authorities, and public policies and does not include local or regional preferences for solutions or political expediency	The alternative alleviates the specified problems and realizes the specified opportunities at the least cost	The alternative alleviates the problems and achieves the opportunities	The alternative provides and accounts for all features, investments, and actions to realize the planned effects, including actions by others	Carry Forward to Final Array
	Gravity Conveyance Improvements	Alternative 1 Gravity Conveyance Improvements (Canals and Structures)	9	<b>S</b>	9	9	0	<b>S</b>
	Pumps at Structures and Hardening	Alternative 2 Pumps at Structures & Hardening	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	
	Removal of Coastal Structures	Alternative 3 Removal of Coastal Structures	$\bigotimes$	$\bigotimes$	8	$\bigotimes$	$\bigotimes$	$\bigotimes$
	Relocation of Coastal Structures	<b>Alternative 4</b> Relocation of Coastal Structures (to the East)	<b>S</b>	$\otimes$	$\otimes$	$\bigotimes$	$\otimes$	$\bigotimes$
	Alternatives to Discharging East	Alternative 5 Alternatives to Discharging East on Peak	<b>S</b>	8	<b>S</b>	0	8	<b>S</b>
	Shoreline Protection-Restoration of Floodways	Alternative 6	$\bigotimes$					
	Surface Storage	Natural & Nature Based Only				<b>S</b>	<b>V</b>	
	Wetland Creation							
	Flood-proofing Buildings							
	Flood Warning System	Altornativo 7a						
	Buy-out Buildings	Non-Structural Only	<b>V</b>		<b>V</b>		<b>V</b>	<b>V</b>
	Elevating Buildings							
	Updating Land Use Regulation							
	Flood Warning System							
	Buy-out Buildings	Alternative 7b						
	Elevating Buildings	Risk	$\mathbf{v}$		•••	•		
	Updating Land Use Regulations							
1 .								

Partially

Not likely

## **SUMMARY OF FINAL ARRAY ALTERNATIVES**

Alternatives proposed in the Final Array:

- Alternatives A, B, C; will be compared to No Action (Future Without Project)
- Each increasing in complexity or level of intervention (and associated cost).
- Alternatives focus on improvements to the inland watersheds; targeted coastal watershed modifications may be considered when optimizing the selected plan Infrastructure modifications proposed in Final Array:
  - Tidal gate structure improvements
    - Hardening, Capacity (Gravity or Pump)
    - Changes to pre-storm operation levels
  - Primary C&SF Canal Conveyance Capacity improvements
    - Channel improvements to improve areas of constricted flow; not intended to represent large-scale, uniform canal expansion or widening
    - Bridges and/or culvert enhancements to address significant constrictions
  - Storage & Nature Based Features
  - Secondary Structures changes to pre-storm operation



## **ALTERNATIVE A**

## **ALTERNATIVE B**

## **ALTERNATIVE C**







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## SUMMARY OF PROPOSED FINAL ARRAY ALTERNATIVES

Draiget Type	Project Type		Alternatives			
Project Type	Detail	A	В	C		
	Gates	S-37A (4 x 25 ft) - C-14 East, G-57 (2 x 14 ft) - Pompano, S-36 (2 x 25 ft) - C-13 West	G-56 (5 x 20 ft) - Hillsboro S-37B (2 x 35 ft) - C-14 West, G-57 (2 x 21 ft) - Pompano, S-33 (2 x 20 ft) - C-12 West, G-54 (5 x 16 ft) - NNR West	G-56 (5 x 20 ft) - Hillsboro, S-37A (4 x 25 ft) - C-14 East, G-57 (2 x 21 ft) - Pompano, S-36 (2 x 25 ft) - C-13 West, S-33 (2 x 20 ft) - C-12 West, G-54 (5 x 16 ft) - NNR West		
Primary Structure Modification	Pump	S-37A (1200 Cfs) - C-14 East, S-33 (510 cfs) - C-12 West, S-13 (add'l 160 cfs) - C-11 East	S-37A (1500 Cfs) - C-14 East, S-36 (510 cfs) - C-13 West, S-33 (510 cfs) - C-12 West, S-13 (add'l 540 cfs) - C-11 East	G-56 (1000 cfs) -Hillsboro, S-37A (1200 cfs) - C-14 East, G-57 (300 cfs) - Pompano, S-36 (600 cfs) - C-13 West, S-33 (700 cfs) - C-12 West, G-54 (800 cfs) - NNR West, S-13 (add'l 960 cfs) - C-11 East		
	Hardening	G-56 (Hillsboro), S-37A (Cypress Creek/C-14), G-57 (Pompano), S-36 (C-13 West), S-33 (C-12 West), G-54 (NNR West), S-13 (C-11 East)	G-56 (Hillsboro), S-37A (Cypress Creek/C-14), G-57 (Pompano), S-36 (C-13 West), S-33 (C-12 West), G-54 (NNR West), S-13 (C-11 East)	G-56 (Hillsboro), S-37A (Cypress Creek/C-14), G-57 (Pompano), S-36 (C-13 West), S-33 (C-12 West), G-54 (NNR West), S-13 (C-11 East)		

Note: If not listed, the structure retains its current geometry & capacity in the Alternative





## SUMMARY OF PROPOSED FINAL ARRAY ALTERNATIVES

Drojoot Typo	Project Type Dotail	Alternatives			
Project Type	Project Type Detait	Α	В	С	
				Hillsboro,	
				C-14 West,	
			Hillsboro,	C-14 East,	
	Local Canal		C-14 West,	C-13 West,	
	Improvements		C-11 West,	C-12 West,	
Primary C&SE Canals			C-11 East	NNR,	
				C-11 West	
				C-11 East	
	Culverts/Bridges			G-65 - Pompano Canal,	
		Triple culvert u/s of G-57 -	Triple culvert u/s of G-57 -	Triple culvert u/s of G-57 -	
		Pompano Canal	Pompano Canal	Pompano Canal	
				Winkopp Bridge - C-11 West	
Storage & Nature			NNP Wost	Hillsboro,	
Based Features				NNR West	
Primary Structure	Pre-storm	All basins, all alternatives -	All basins all alternatives -	All basins all alternatives -	
Modification		except C-11 West, C-14	except C-11 West	excent C-11 West	
	Diatidowin	West			
Assumed Inflows from	Pre-storm	n All basins, all alternatives			
Secondary to Primary	Drawdown				





## **Evaluation of Alternatives**







ARDB





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ER MANA

April 29, 2025 Public Meeting

Integrated Strategy

Central & Southern Florida System Flood Resiliency Study (Section 203) for Broward Basins

> Carolina Maran, PE, Ph.D. Chief of District Resiliency South Florida Water Management District

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## **Flooding: Sources and Impacts**

**Understanding Coastal and Inland Compounding Effects** 





Sea level rise and future extreme rainfall will increase the frequency and impact for all sources of flooding









### USACE/SFWMD Flood Risk Management Studies

#### C&SF Flood Resiliency Study

- Reduce flood risk and increase flood resiliency in high-risk urban watersheds in southeast Florida, while looking to enhance the overall benefits of the multipurpose C&SF Project
- Improve the C&SF Project and enhance SEFL Communities' quality of life and economies



#### Comprehensive C&SF Study

- Multipurpose Project
- 18 Counties
- ~9 Million Population
- ~18,000 Square Miles
- Federal Cost = \$9.9B (as of April 2022)
- Multiple Federal Projects
   including CERP

#### C&SF Flood Resiliency

Studies (Section 203 / 216 / Other)

- Single Purpose: focus on Flood Risk Management (rainfall driven discharges, limited by SLR)
- Focus on coastal salinity and other highly vulnerable regional C&SF structures to build flood resilience and other comprehensive benefits
- 4 Planning Reaches
- 3 Counties
- > 5 Million Population
- > 1,100 Square Miles



## C&SF Flood Resilience: Integrated Path Forward

#### Planning Reach A - Broward County Basins

- Section 203 Feasibility Study Target WRDA 26
- Funding support from FDEP and Broward County

#### Planning Reach B - C-7, C-8, C-9 Basins

- FDEM / FEMA Hazard Mitigation
- Resilient Florida Grant
- Support from Miami Dade County

#### Planning Reach C – Miami River Basins

- C&SF Flood Resiliency Study Section 216 Authorization – Final VTAM Approval
- Feasibility Study Target WRDA28 or WRDA30

#### Planning Reach D - South Dade Basins

CS&F Comprehensive Study or future planning studies







# **Resiliency Initiatives Coordination**

Integrating Inland and Coastal Flood Mitigation Strategies

Counties Studies/ Projects Water Control Districts and Municipalities Projects

USACE Studies/ Projects

Regional Climate Compacts

**Other Partners** 

POTENTIAL MEASURES TO IMPROVE RESILIENCE AND SUSTAINABILITY

Graphic modified from https://ewn.el.erdc.dren.mil/nnbf/other/5\_ERDC-NNBF\_Brochure.pdf





### April 29, 2025 Public Meeting

#### Next Steps

### Central & Southern Florida System Flood Resiliency Study (Section 203) for Broward Basins

Matthew J. Morrison Chief Policy Advisor South Florida Water Management District



# **Project Schedule**

Targeting June 2026 - Deliver Corrected Final Feasibility Report & Environmental Impact Statement to ASA Civil Works







### April 29, 2025 Public Meeting

### **Public Comment Period**

Central & Southern Florida System Flood Resiliency Study (Section 203) for Broward Basins

> Matthew J. Morrison Chief Policy Advisor South Florida Water Management District



# **ADDITIONAL COMMENT OPPORTUNITIES**

# Email: <a href="mailto:resiliency@sfwmd.gov">resiliency@sfwmd.gov</a>

Comments due no later than Wednesday May 14, 2025

