



South Florida Water Management District

RESILIENCY COORDINATION FORUM AND LOCAL MITIGATION STRATEGIES OPEN HOUSE

AGENDA

August 30, 2023

9:00 AM

District Headquarters - B-1 Auditorium
3301 Gun Club Road
West Palm Beach, FL 33406

FINAL

1. Opening Remarks
 - A. Drew Bartlett, Executive Director, SFWMD
 - B. Wes Brooks, Ph.D., Chief Resilience Officer, Statewide Office of Resilience
2. District Resiliency Updates - Carolina Maran, Ph.D., PE, Chief of District Resiliency, SFWMD
 - A. Improving Accuracy of Water Level Data: SFWMD Upgrade from NGVD 29 to NAVD 88 - Tibebe Dessalegne, Section Leader, Operational Hydraulics, SFWMD
 - B. Saltwater Intrusion Monitoring 2024 Update - Peter Kwiatkowski, P.G., Water Resources Evaluation Section Administrator, SFWMD
3. Resiliency Planning and Vulnerability Assessment - Amy Eason, Coastal Engineer, Martin County
4. Statewide Hazard Mitigation Plan - Kristin Lentz, Mitigation Planning Manager, Florida Division of Emergency Management
5. FEMA Technical Support Presentation - Antionette Fowlkes, Emergency Management Specialist, FEMA Mitigation Division
6. Local Mitigation Strategies - Around the Table Updates and Invitation to Open House

7. Flood Risks Local Mitigation Strategies & Resiliency Open House
8. Flood Observation Tools and Engagement with Local Governments and 298 Districts - Libby Pigman, External Affairs Director, SFWMD
9. C&SF Section 216 Flood Resiliency Study Update - Eva Velez, P.E., Chief, Ecosystem Branch and Timothy Gysan, P.E., Resilience Senior Project Manager, USACE Jacksonville District
10. Around the Table Updates from Local, Tribal and State Agencies
11. Public Comment
12. Closing Remarks - Carolina Maran, Ph.D., P.E., Chief of District Resiliency, SFWMD
13. Adjourn

Presentations for agenda items: 2, 2a, 2b, 3, 5, 8, and 9 combined.

Agenda Item 4 was postponed due to Hurricane Idalia

(Staff contact, Carolina Maran)

Agenda Item Background:
[Aug 2023 Presentations](#)

MEMORANDUM

TO: Governing Board Members

FROM: Carolina Maran, Executive Office

DATE: August 30, 2023

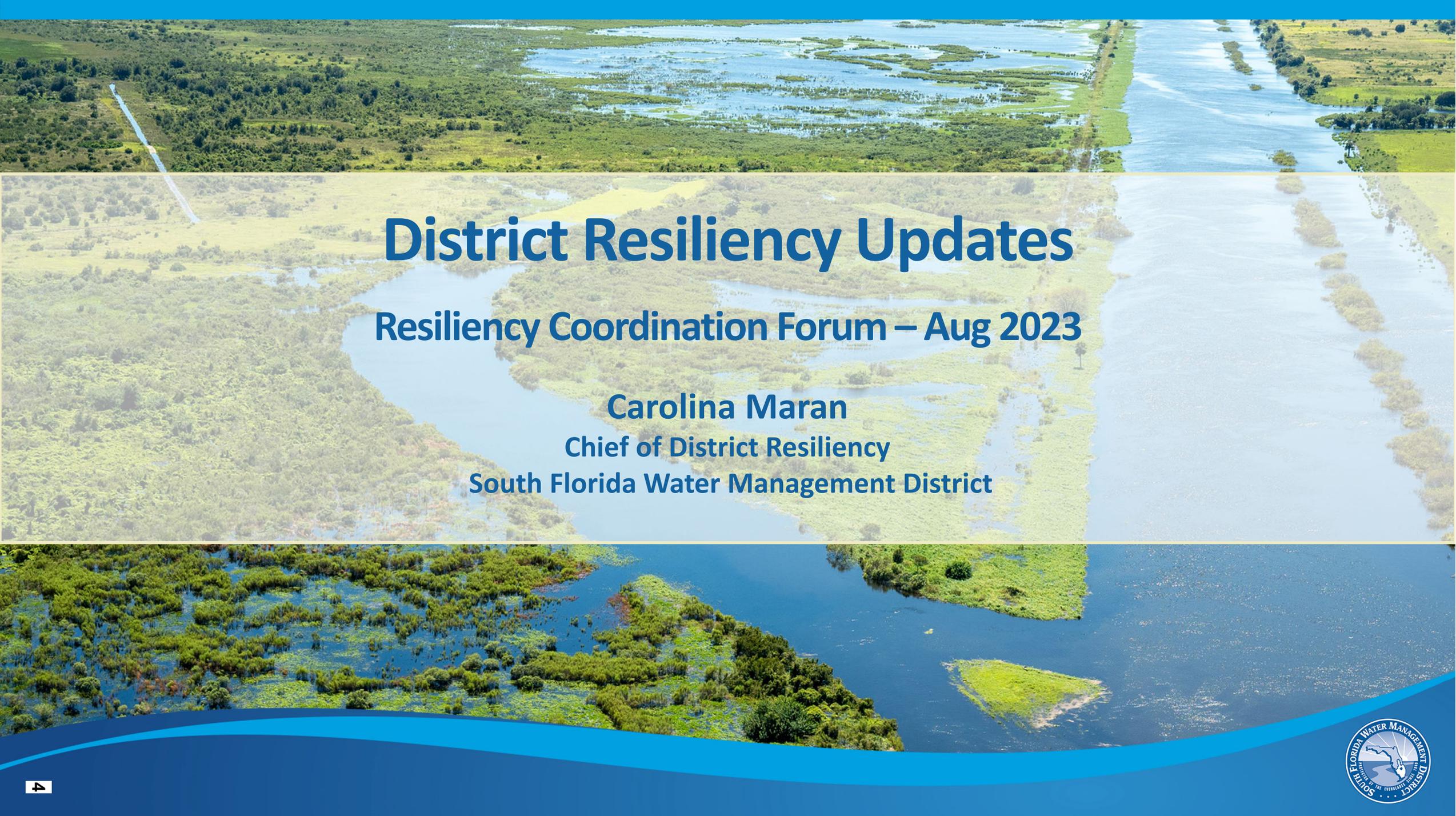
SUBJECT: Presentations for agenda items: 2, 2a, 2b, 3, 5, 8, and 9 combined.
Agenda Item 4 was postponed due to Hurricane Idalia

Agenda Item Background:

Staff Contact and/or Presenter:

ATTACHMENTS:

[Aug 2023 Presentations](#)



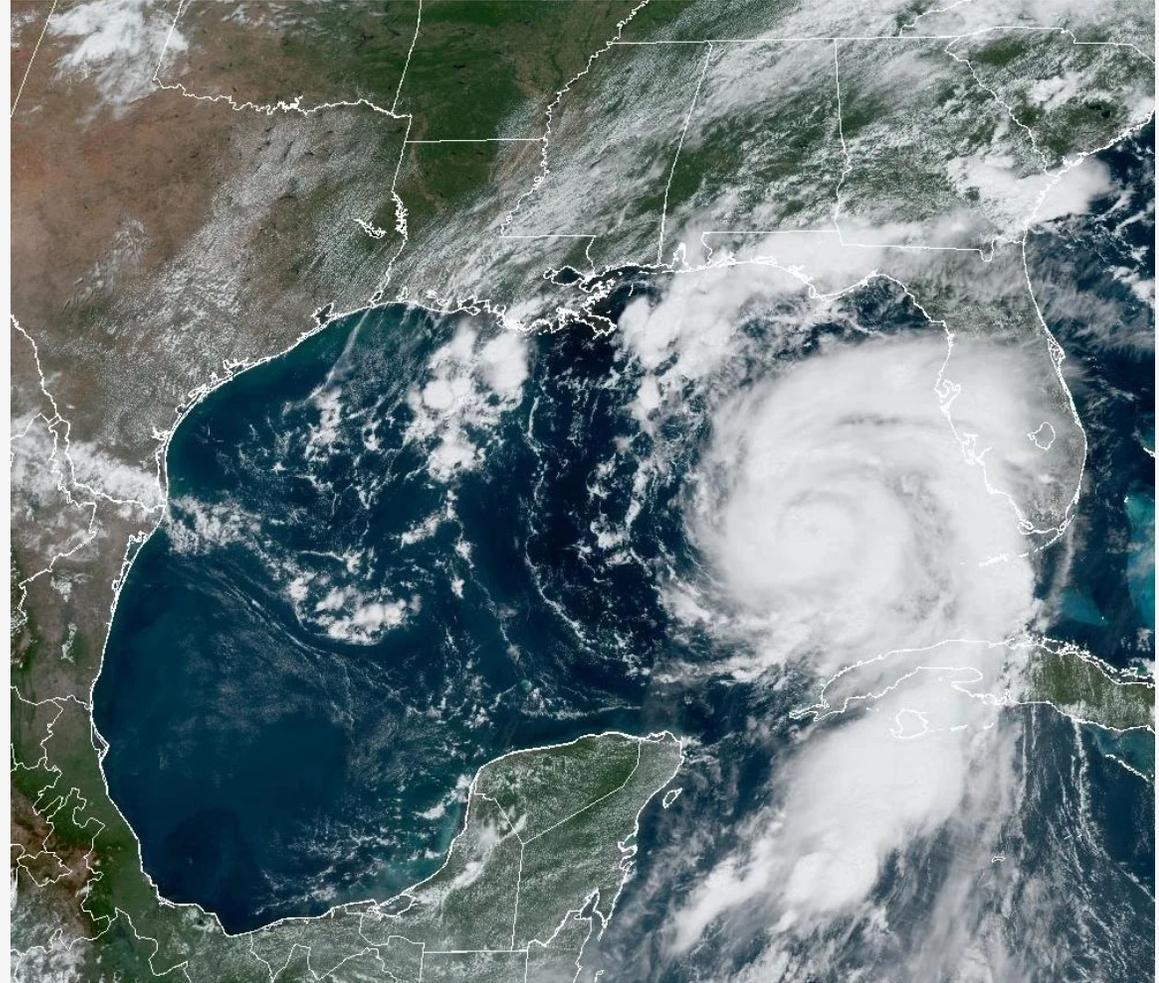
District Resiliency Updates

Resiliency Coordination Forum – Aug 2023

Carolina Maran
Chief of District Resiliency
South Florida Water Management District

Our thoughts are with you, Northwest Florida Neighbors

**Hurricane Idalia
Cat 3
Landfall 08/30/2023
@ Big Bend near
Keaton Beach
around 7:45 AM EDT**



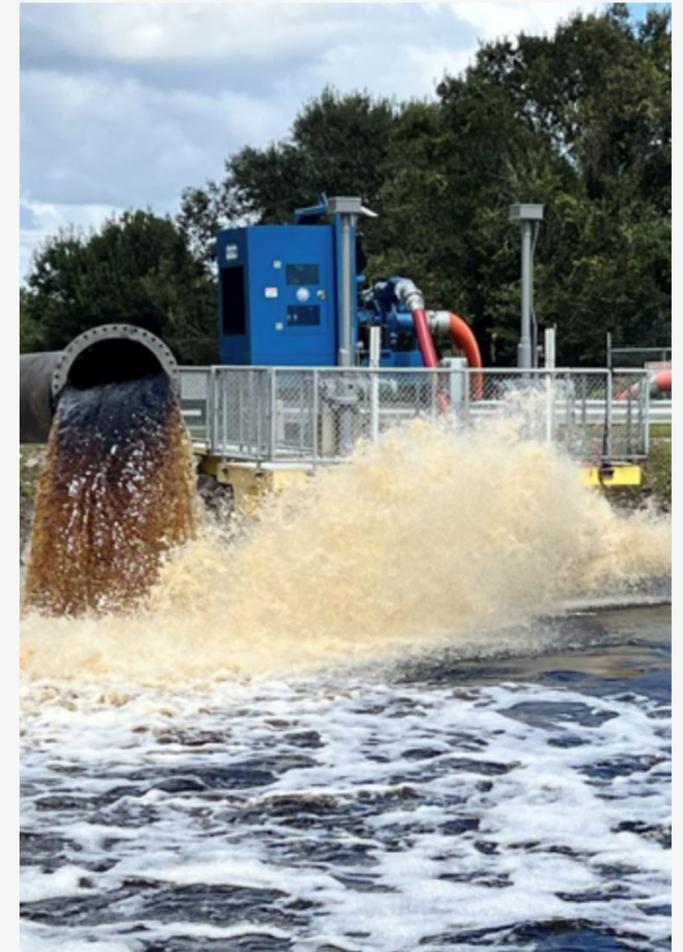
Resiliency & Preparedness

- Even bigger reason to be here today
- Share data, analysis, tools, models, approaches... knowledge and resources to ensure we all can be ready



Hurricane Season

- Year-round preparation to ensure operational readiness for hurricanes and other emergencies that could impact water management
- Staff and operate in-house Emergency Operation Center
- Emergency trainings and exercises, testing of equipment
- Coordination with other EOC personnel from partner agencies
- Emergency Modeling information to support local and regional mitigation planning and responses
- Participation in Statewide and Local Mitigation Strategy Committees
- Coordination with local drainage districts before, during and after tropical storms or major rainfall events
- Also drought emergency response



King Tide Season

Flood Documentation – Throughout the Wet Season

King Tide Observations

Tidal Outlook Forecast

<https://apps.sfwmd.gov/sfwmd/common/images/weather/webplots/tidal.html>

SFWMD Weather

Home Radar & Satellite Recent Conditions **Forecasts** Climatology Other

South Florida Water Management District
Tidal Outlook
11:27AM Monday, August 28, 2023 (tbk)

FORECAST PERIOD: 28 August -3 September 2023

DISCUSSION:

The end-of-the-month King Tide is likely to be enhanced along the east coast of the SFWMD through Tuesday, thanks to increasing onshore winds around the large circulation of Tropical Storm Idalia. After Idalia moves offshore the southeast U.S. by Thursday, relatively strong surface high pressure will build into the eastern U.S., causing some increase of onshore winds late this week. This could lead to marginally greater tidal conditions, further enhanced by the existing peak of the King Tide.

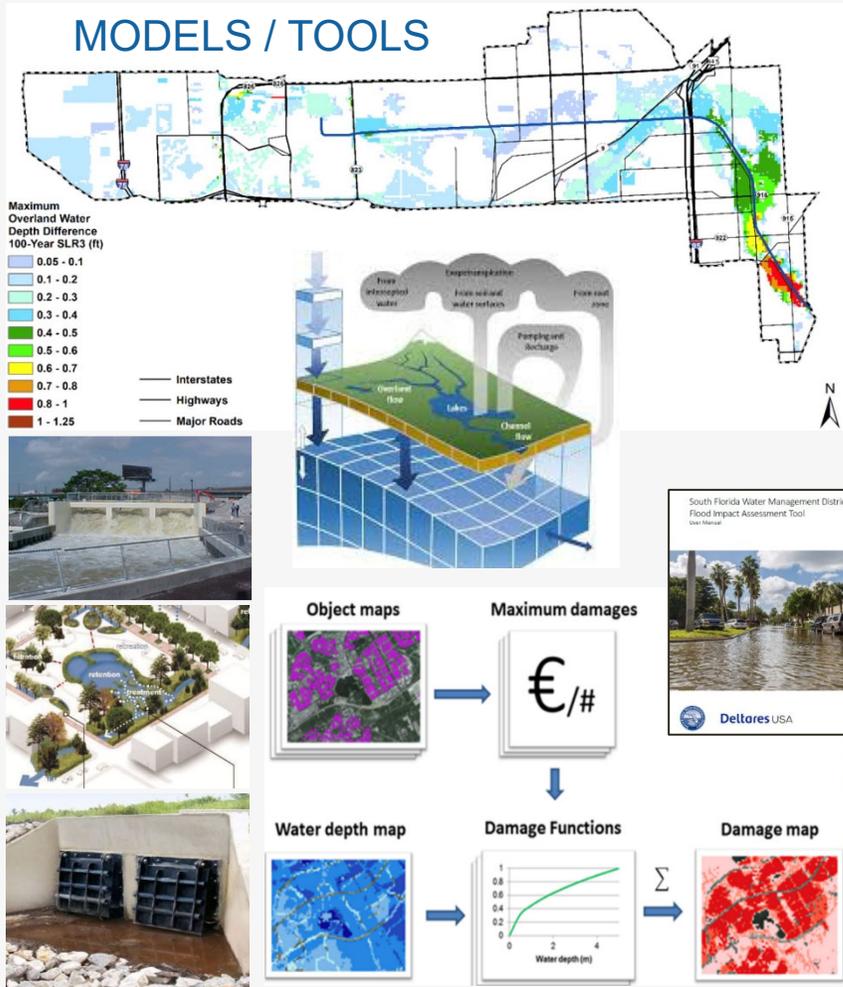
NEXT SCHEDULED UPDATE: 4 September 2023

RELEVANT LINKS:

(Courtesy Brian McNoldy/Rosenstiel School)

- [Tidal predications at Virginia Key \(Full Year\)](#)
- [Tidal predications at Virginia Key \(King Tide Season\)](#)
- [Water level history at Virginia Key](#)
- [Sea surface temperature anomalies](#)
- [Virginia Key tide forecasts](#)
- [GFS-Wavewatch forecasts](#)

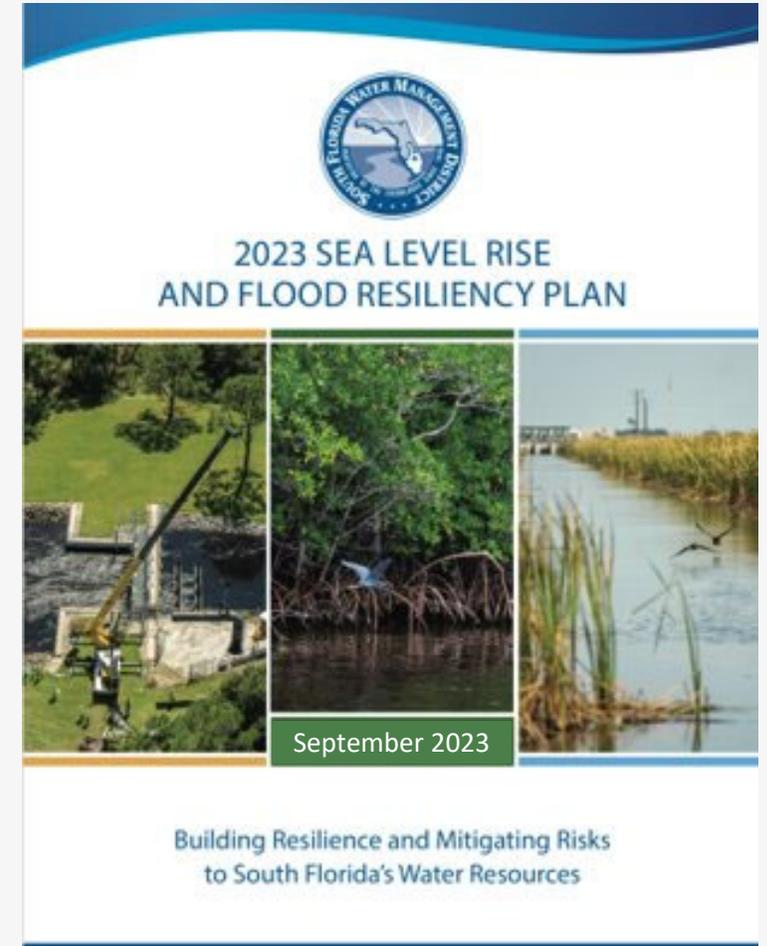
Resiliency Planning: 2023 Updates



Reducing the risks of flooding, sea level rise and other climate impacts on water resources and increasing community and ecosystem resiliency in South Florida

To be Published on September 1st

Thanks for 24 Agency Comments Received



USACE Resiliency Coordination Efforts

- **C&SF Flood Resiliency Study: Completed the Alternative Milestone Meeting and obtained waiver for \$11M, extended through Sep 2026**
- **Hosted initial meetings between SJRWMD/SFWMD/USACE for the Comprehensive Study**
- **Southeast Florida Integration Meeting**



**US Army Corps
of Engineers®**
Jacksonville District

Other Relevant Recent Updates

- LMS Plan Adoptions for Osceola, Orange, Collier and Broward (upcoming)
- LMS Projects Submission and Ranking
- SJRWMD Hurricane Preparedness Coordination Meetings, in coordination with Orange and Osceola Counties
- Coordination with FDEP on Resilient Florida Grants Implementation
- FPLOS Phase I Studies completed for basins in South Miami
- Recent Coordination for Grant Applications





8 BRIC and 32 FMA

FLORIDA

FEMA Search Prepare for Disasters Get Flood Insurance + Apply for Assistance ✓ Check Application Status

Disasters & Assistance ▾ Grants ▾ Floods & Maps ▾ Emergency Management ▾ **About** ▾ Work With Us ▾

About
News & Multimedia
Press Releases
Blog
Events
Fact Sheets
FEMA Live
Mobile Products
Newsletters
Podcast
Social Media
About Us
Reports & Data
FEMA in Action

Biden-Harris Administration Announces Nearly \$3 Billion in Project Selections to Help Communities Build Resilience to Climate Change and Extreme Weather Events

English Español

Release Date	Release Number
August 28, 2023	HQ-23-158

Release Date: August 28, 2023

Additional Funding from the President's Investing in America Agenda Enables Major Program Expansion, with 23 States Selected for the First Time

WASHINGTON -- Today, Homeland Security Secretary Alejandro N. Mayorkas, FEMA Administrator Deanne Criswell and Senior Advisor to the President and White House Infrastructure Coordinator Mitch Landrieu announced the project selections for nearly



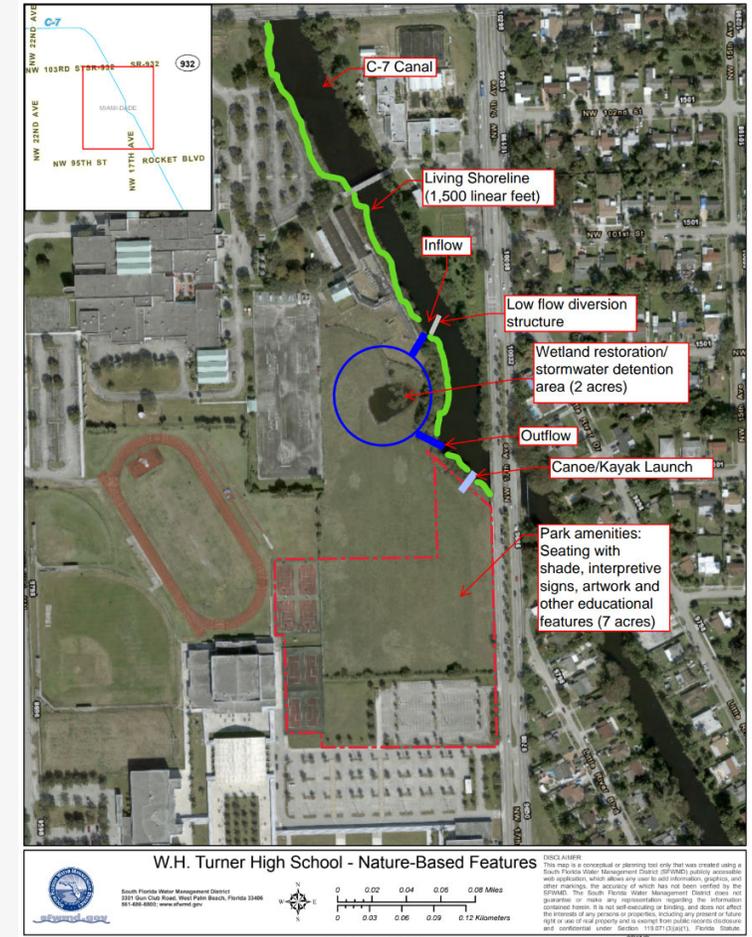
Moving into Implementation: C-9 Basin Resiliency

- Basinwide strategy to reduce flood risks due to sea-level rise and extreme rainfall; protect water resources
- Combination of Green and Gray Infrastructure: Pickwick Lake Stormwater Detention Area & Living Shoreline
- Increasing water management flexibility
- Restore S-29 Structure discharge capacity
- Increase the basin's flood protection level of service, including Miami Dade's secondary canal enhancements & South Broward Drainage District Gates
- Enhance quality of life in the region
- Currently Advancing Design
- FDEM/FEMA BRIC Recommendation: \$50M Award for a 25%/75% cost share agreement



Moving into Implementation: C-7 Basin Resiliency

- Basinwide strategy to reduce flood risks due to sea-level rise and extreme rainfall; protect water resources
- Combination of Green and Gray Infrastructure: Wetland Restoration Detention (Miami Schools) & Living Shoreline
- Increasing water management flexibility
- Restore S-27 Structure discharge capacity
- Increase the basin's flood protection level of service in Miami
- Enhance quality of life in the region
- Currently Advancing Design
- FDEM/FEMA BRIC Recommendation: \$50M Award for a 25%/75% cost share agreement



Vertical Datum Upgrade to NAVD88 at the SFWMD

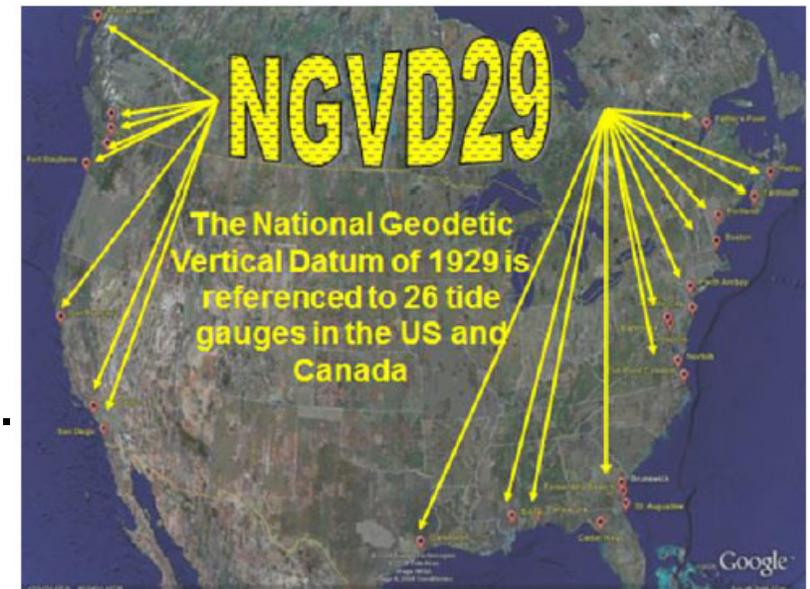


Tibebe Dessalegne, Ph.D., P.E.
H & H Bureau
SFWMD

Presentation at Resiliency Forum, SFWMD, West Palm Beach, FL, August 30, 2023

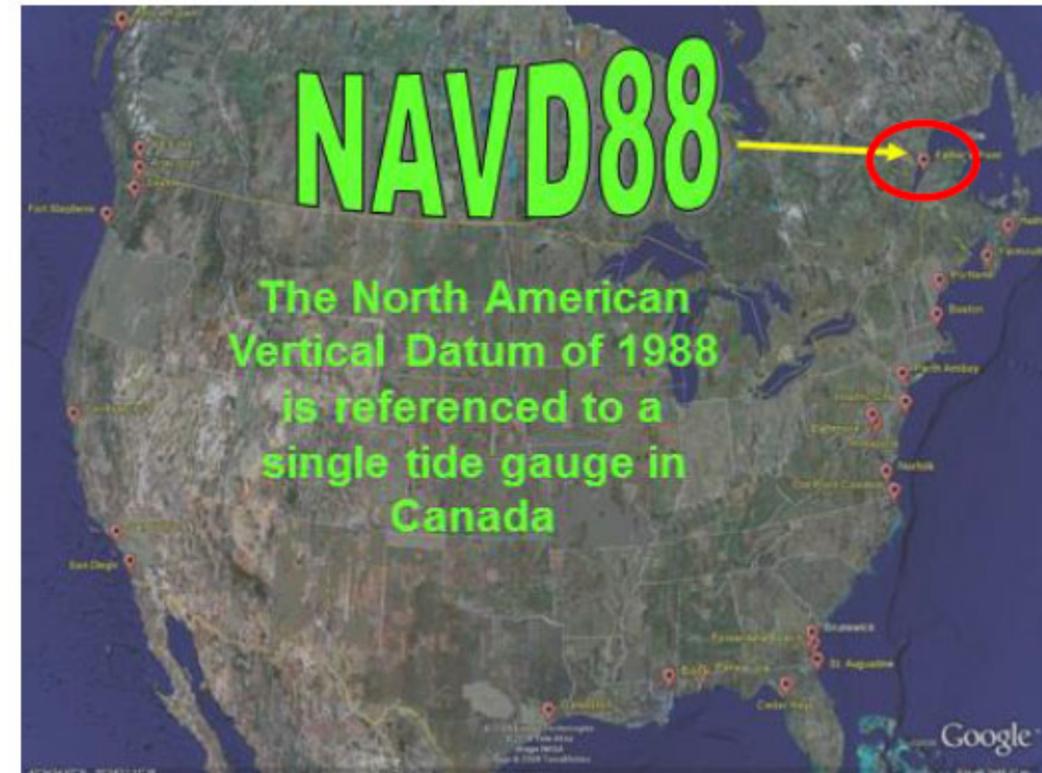
NGVD 29 vs NAVD 88

- National Geodetic Vertical Datum of 1929 (NGVD 29)
 - Referenced to a network of 26 tidal gauges across North America.
 - Found to be inaccurate.
 - National Geodetic Survey (NGS) established a new system to correct the shortcomings of NGVD 29.
 - SFWMD currently operates in derived NGVD 29.



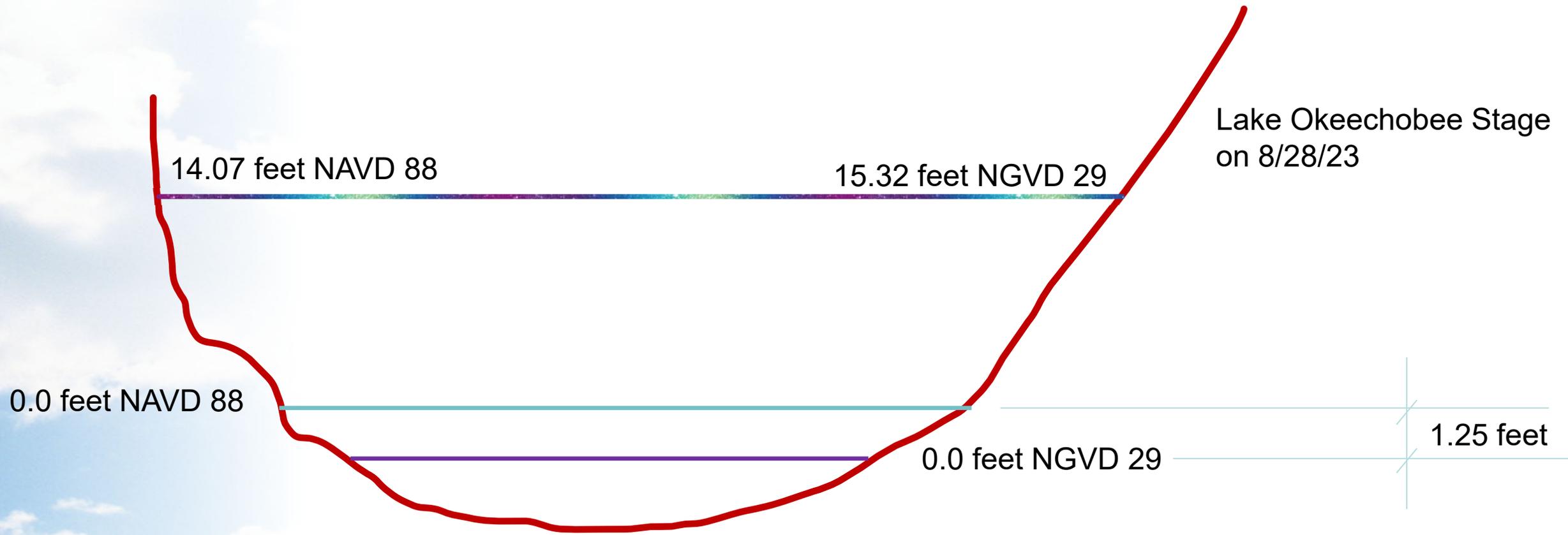
NGVD 29 vs NAVD 88

- North American Vertical Datum of 1988 (NAVD 88)
 - Established in 1991 based on primary tidal benchmark at Father Point/Rimouski, Quebec, Canada.
 - Corrects many problems with NGVD 29 and contains the best fit model for North America.
 - SFWMD currently working on the transition to operate in NAVD 88.



NGVD 29 vs NAVD 88

➤ Vertical Datum Offset (Difference between NGVD 29 and NAVD 88)



Why is the District Changing to NAVD 88

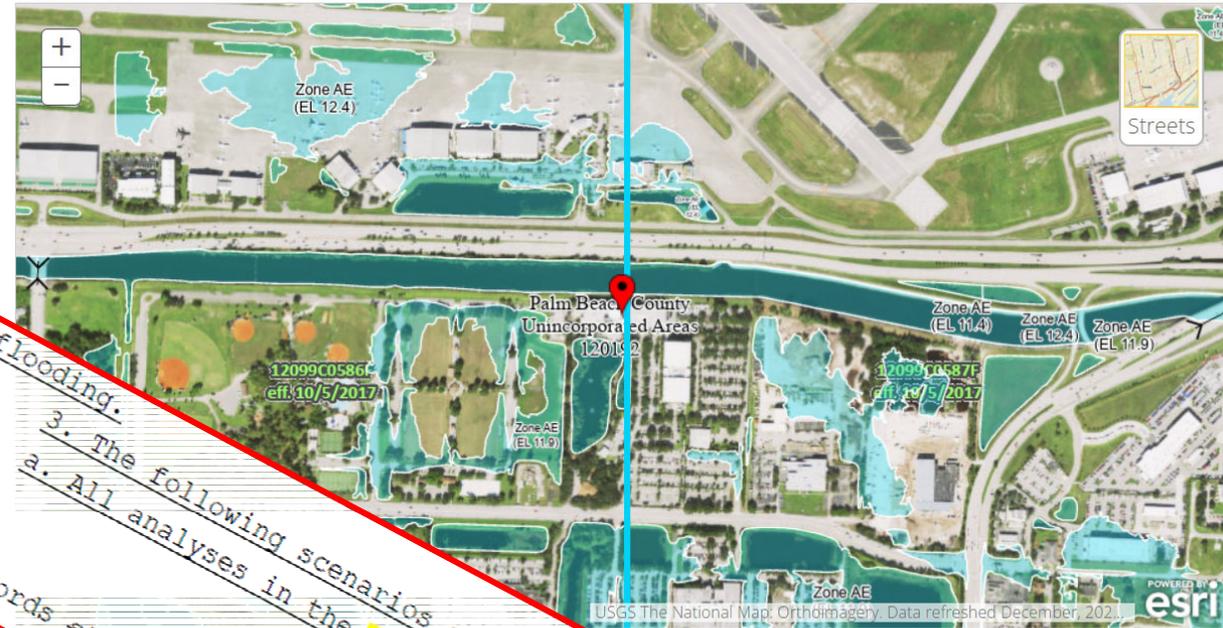
- The SFWND's mission requires accurate measurement of elevations in water bodies connected to the water control system.
- Federal Mandate effective June 24, 1993 affirmed NAVD88 as the official civilian vertical datum for surveying and mapping.

[Docket No. 930650-3150]
Affirmation of Vertical Datum for Surveying and Mapping Activities
Federal Register / Vol. 58, No. 129 / Thursday, June 24, 1993
SUBAGENCY: National Ocean Service, Coast & Geodetic Survey, National Oceanic and Atmospheric Administration
ACTION: Notice.
SUMMARY: This Notice announces a decision by the Federal Geodetic Control Subcommittee (FGCS) to affirm the 1988 (NAVD 88) as the official civilian vertical datum for surveying and mapping activities in the United States; Federal Government, and to the extent practicable, legally allowable, and feasible, require that all Federal agencies use information undertake an orderly transition to NAVD 88.



Why is the District Changing to NAVD 88

- NGS no longer supports NGVD29 survey control points.
- New FEMA Flood Maps are referenced to NAVD 88.
- SB1954 (Statewide flooding and sea level rise resilience).
- Deliverables specify NAVD88 as the vertical datum.



172
173
174

flooding.

3. The following scenarios and standards:

a. All analyses in the North American Vertical Datum of 2011 shall be performed.

CODING: Words ~~stricken~~ are deletions; words underlined are additions.

Page 6 of 18

MAP PANELS	OTHER AREAS	OTHER FEATURES
No Digitals	Area of Minimal Flood Hazard	Cross Sections with 1% Annual Chance Water Surface Elevation
Unmapped	Effective LOMRs	Coastal Transect
NO SCREEN	Area of Undetermined Flood Hazard Zone D	Base Flood Elevation Line (BFE)
Effective LOMRs	Otherwise Protected Area	Limit of Study
Area of Undetermined Flood Hazard Zone D	Coastal Barrier Resource System Area	Jurisdiction Boundary
Otherwise Protected Area		Coastal Transect Baseline
Coastal Barrier Resource System Area		Profile Baseline
		Hydrographic Feature
		Channel, Culvert, or Storm Sewer Levee, Dike, or Floodwall

What the District has done - VDUP

- Initiated the **Vertical Datum Upgrade Project (VDUP)**.
- Completed planning study.
- Identified major components of the transition.
- Implemented VDUP plan.



What the District has done - Data Acquisition & Automation

SIM
DB



Telemetry



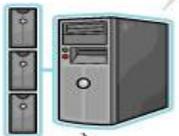
Microwave RF
Communication



Operations
Control

OCC Displays
DDSP
MAGO
BAP
ODSS
GOES
DWR

Remote
Terminal
Units (RTUs)
Conversion



Field
Measurements



Data Consolidation
& QA Inspection
DCVP



Processing Raw
Data into Useful
Data
FLOW Program

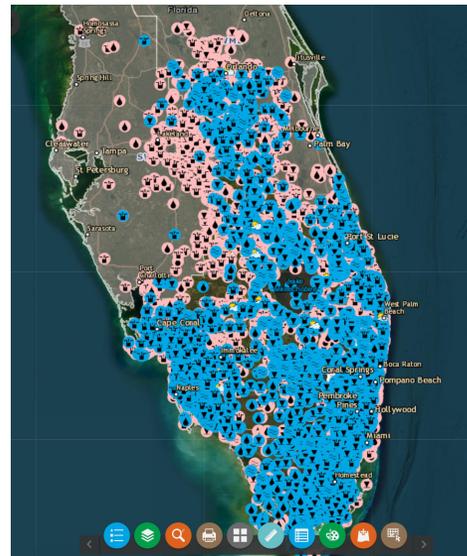


Public Dissemination
& Archival

DBHYDRO
Realtime
Web Portal

VDUP – Survey & SCADA

- All elevation measuring sites (~1600) converted to NAVD88.
- NAVD88 Staff Gauges installed at all sites.
- SCADA Systems calibrated in NAVD88.



VDUP – Timeseries Database Upgrade

➤ DBHYDRO/DCVP Timeseries conversion to NAVD 88

QUERY DATE SELECTION

Time Series List

Get Data	Dbkey	Station	Site	Data Type	Freq	Stat	Strata	Op Num	Recorder	Agency	Start Date	End Date	County	Lat
<input checked="" type="checkbox"/>	IY428	S151_H	S151H	STG	BK	INST	0		CR10	WMD	20150101	20180313	BRO	26

Date Range: User Specified
 Start Date: 20150101 End Date: 20180313 (YYYYMMDD)

Report Format: One Value Per Row

Destination:
 Screen (.html)
 File: Fixed column width (.txt).
 File: Comma delimited (.csv).
 File: Adobe (.pdf) format.
 Chart

Run Mode:
 Online
 Batch [When to use it](#)

Vertical Datum: NAVD88

sfwmd.gov

Time Series Data

DBKEY	STATION	AGENCY	COUNTY	TYPE	UNITS	STAT	FQ	RECORDER	START	END	LAT	LONG	SECTION	TOWN	RANGE	ALTERNATE	ID	OFFSET*
05760	S153_H	WMD	MAR	STG	ft NAVD88	INST	BK	TELE	2015	2016	265921	803616	14	40	37	S153-H		+1.19

* Offset value is used to convert to NGVD29

Date Time	DCVP STATION ID	DBKEY	Data Value	Code	Quality Flag
01-SEP-2018 00:00:08	S153-H	05760	18.80		Provisional
01-SEP-2018 00:21:21	S153-H	05760	18.78		Provisional
01-SEP-2018 00:22:07	S153-H	05760	18.78		Provisional
01-SEP-2018 00:30:08	S153-H	05760	18.78		Provisional
01-SEP-2018 00:52:08	S153-H	05760	18.78		Provisional
01-SEP-2018 01:00:10	S153-H	05760	18.77		Provisional
01-SEP-2018 01:22:07	S153-H	05760	18.76		Provisional

sfwmd.gov

Time Series Data

DBKEY	STATION	AGENCY	COUNTY	TYPE	UNITS	STAT	FQ	RECORDER	START	END	LAT	LONG	SECTION	TOWN	RANGE	ALTERNATE	ID	OFFSET*
05760	S153_H	WMD	MAR	STG	ft NGVD29	INST	BK	TELE	2015	2016	265921	803616	14	40	37	S153-H		-1.19

* Offset value is used to convert to NAVD88

Date Time	DCVP STATION ID	DBKEY	Data Value	Code	Quality Flag
01-SEP-2018 00:00:08	S153-H	05760	19.99		Provisional
01-SEP-2018 00:21:21	S153-H	05760	19.97		Provisional
01-SEP-2018 00:22:07	S153-H	05760	19.97		Provisional
01-SEP-2018 00:30:08	S153-H	05760	19.97		Provisional
01-SEP-2018 00:52:08	S153-H	05760	19.97		Provisional
01-SEP-2018 01:00:10	S153-H	05760	19.96		Provisional
01-SEP-2018 01:22:07	S153-H	05760	19.95		Provisional

VDUP – Timeseries Database Upgrade

DBHYDRO/DCVP Timeseries conversion to NAVD 88 - Plotting

QUERY DATE SELECTION

Time Series List

Get Data	Dbkey	Station	Site	Data Type	Freq	Stat	Strata	Op Num	Recorder	Agency	Start Date	End Date	County	Latitude
<input checked="" type="checkbox"/>	05759	S153_H	S153	STG	DA	MEAN	0		TELE	WMD	19850531	20180806	MAR	265921.928

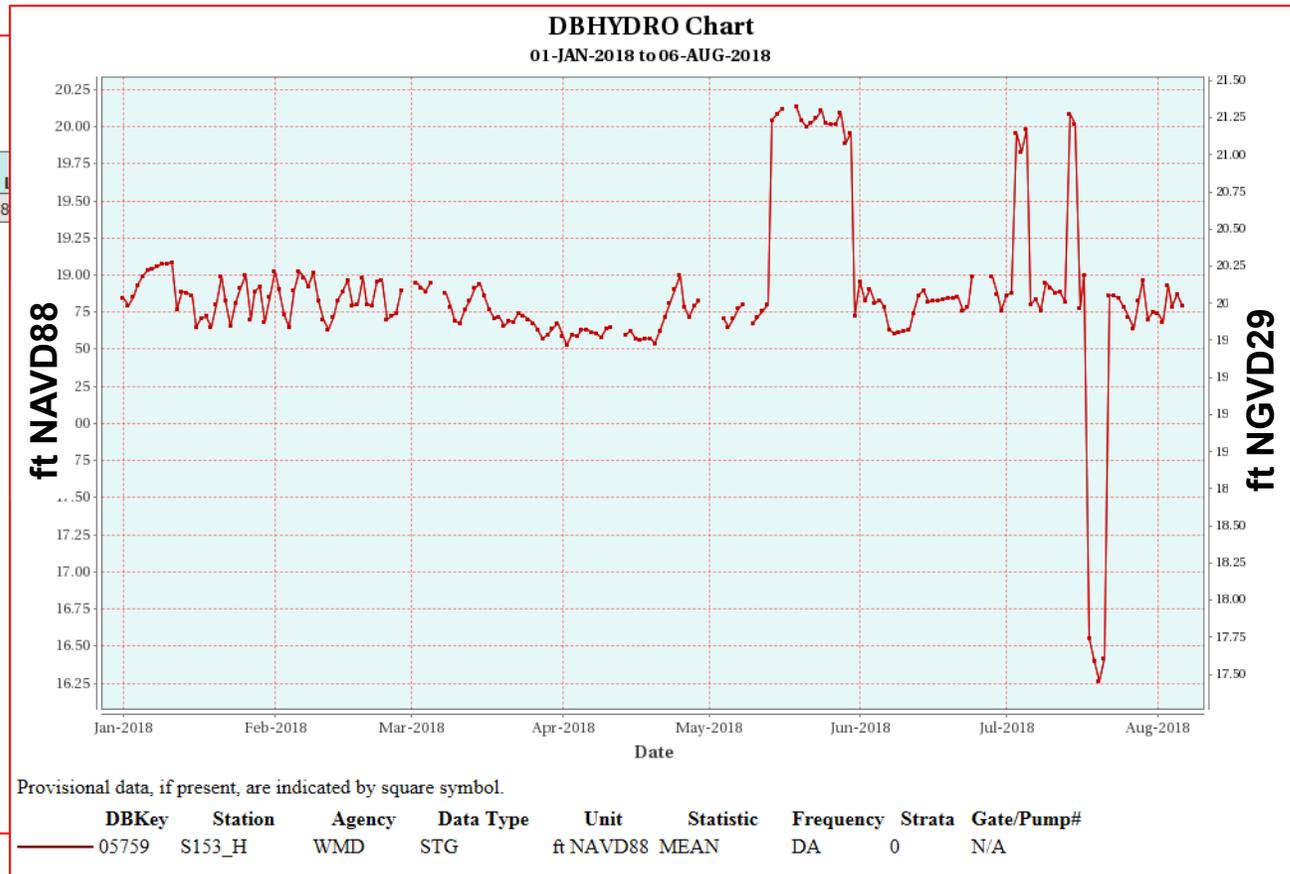
Date Range: User Specified
 Start Date: 20180101 End Date: 20180806 (YYYYMMDD)

Report Format: One Value Per Row

Destination:
 Screen (.html)
 File: Fixed column width (.txt).
 File: Comma delimited (.csv).
 File: Adobe (.pdf) format.
 Chart

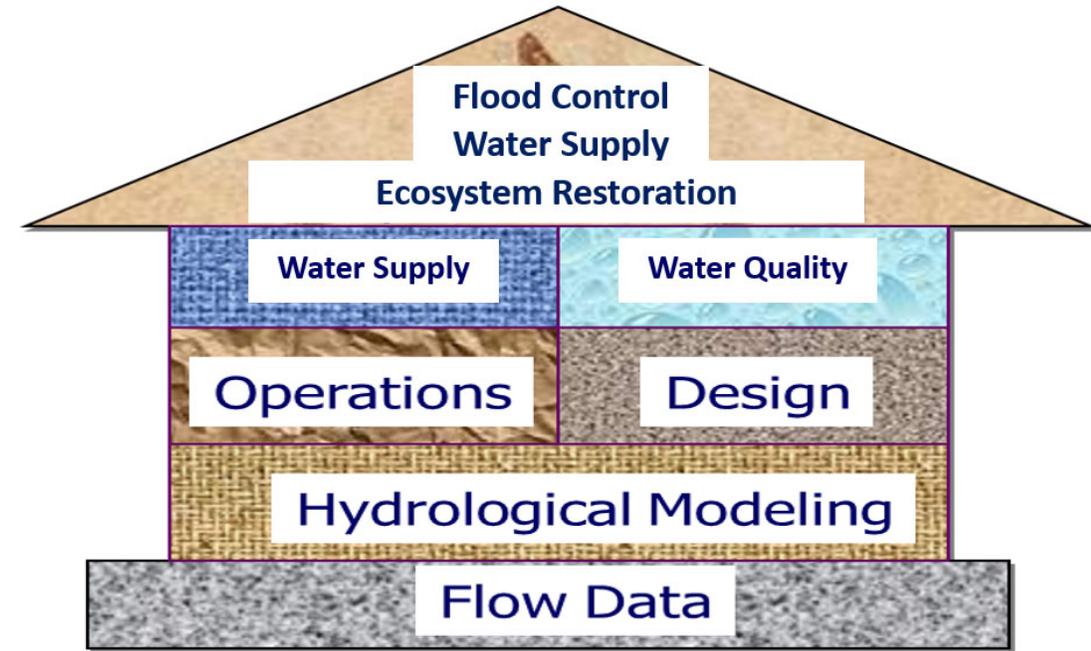
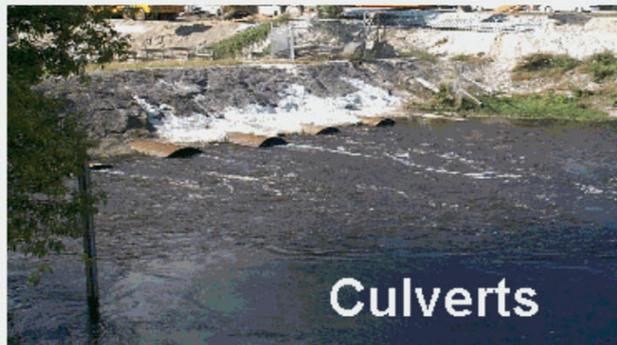
Run Mode:
 Online
 Batch [When to use it](#)

Vertical Datum: NAVD88



VDUP – Flow Impact Analysis

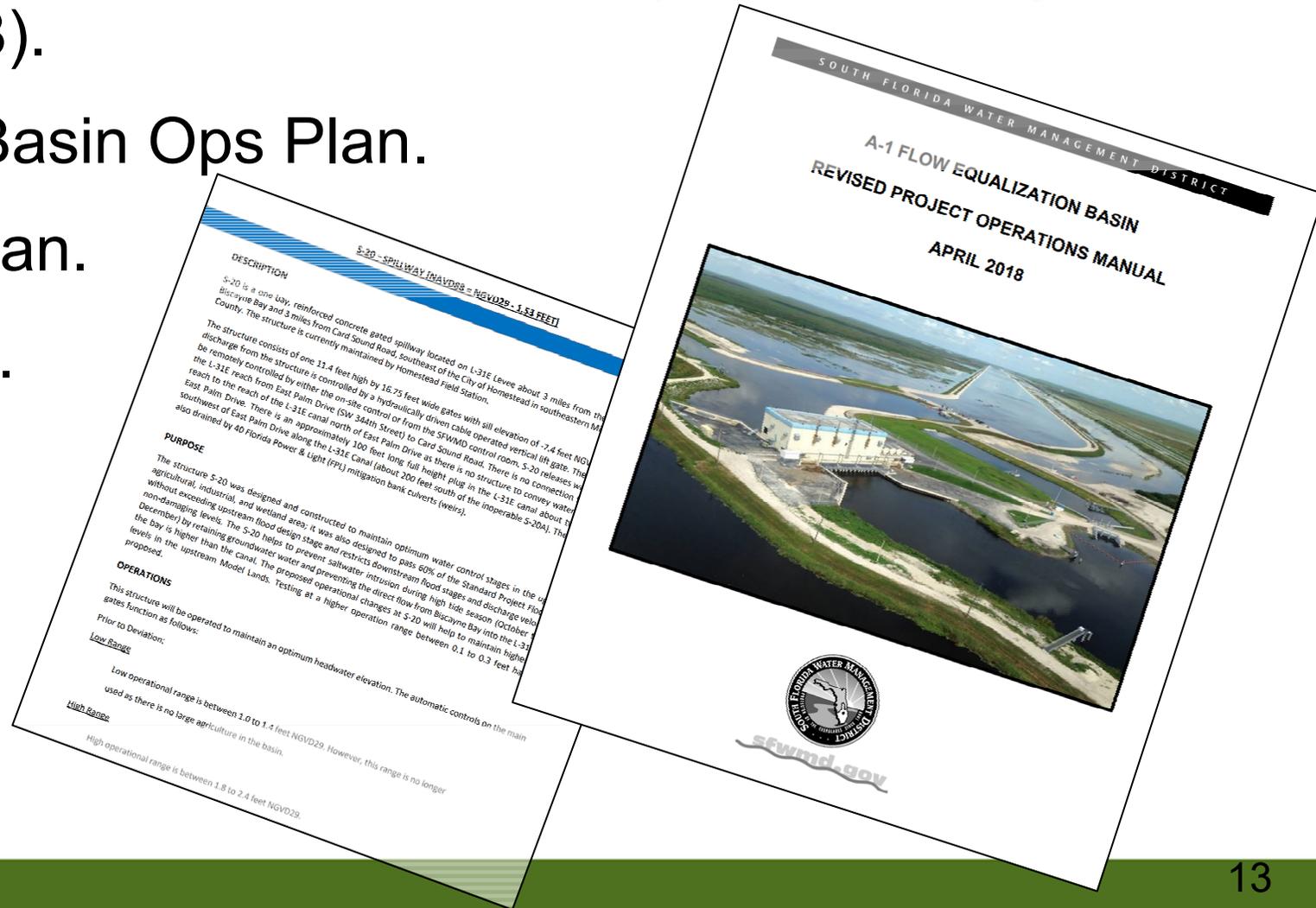
- Flow calculations were evaluated not to impact calculated flows.
- Flow related applications upgraded to NAVD88.



$$Q = f(\text{Stages, Operations, Structure geometry})$$

VDUP – Operation Plans/Basin Atlases/Structure Books Conversions

- SFWMD Operating Manuals: STAs Ops Plans; Project Operating Manuals (A-1 FEB, L-8 FEB).
- C-4 Emergency Detention Basin Ops Plan.
- DWM & Water Farm Ops Plan.
- Structure Information Sheet.

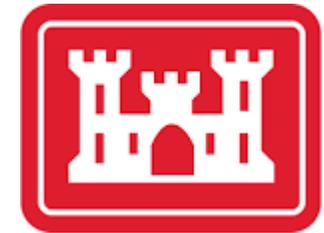


VDUP – Regulation Schedule Conversion

Final Regulation Schedule Conversion Offsets (5/19/2020)

Water Body	Gauge Information	Final Offset [ft]
Lakes Hart & Mary Jane	S62-H	1.10
Lakes Myrtle, Joel and Preston	S57-H	1.00
East Lake Tohopekaliga	S59-H	1.00
Lakes Alligator, Brick, Lizzie, Coon, Center, Trout	Avg. of S58-H, S60-H	1.00
Lake Tohopekaliga	S61-H	1.20
Lake Gentry	S63-H	1.10
Lake Kissimmee	S65-H	1.20
Lake Rosalie	G103 (Structure)	1.20
Lake Marian	G113	1.20
Lake Istokpoga	S68-H	1.20
Lake Okeechobee	Avg. (L001, L005, L006, LZ40, S4-T, S308-H, S352-H, S133-T)	1.25
WCA-1A	1-8C	1.50
WCA-2A	Site 2-17	1.50
	S11B-H	1.50
WCA-2B	S141-H	1.50
WCA-3A	Avg. 3-63, 3-64, 3-65	1.50
WCA-3B	Site 3-71	1.55
WCA-3A Gauge 62 (Deer Gauge)	Site 3-62	1.50
WCA-3A S333 (Floor)	S333-H	1.55

Approved on 10/5/2021



Lake Kissimmee (15 June 2023)



VDUP – Operational Decision Support System (ODSS) Conversion

- Operational Graphs
- Rules
- Stage Storage Curves
- Structure Information
 - Culvert
 - Gate
 - Lock
 - Weir
 - Weir Box Gate
 - Weir Box Weir

<u>Attribute</u>	<u>Count</u>
Culvert	298
Gate	175
HydraulicElementSet	261
Lock	3
Operational Graph	185
Rules	8
StageStorageCurve	18
WaterControlUnit	48
Weir	17
WeirBoxGate	25
WeirBoxWeir	4

Total = 1042

VDUP – Outreach

Outreach

- ✓ Informing and Training District Personnel.
- ✓ Partnering with the Stakeholders, 298 Districts, US Army Corps, local and state agencies on this transition.
- ✓ Preparing informational document on Vertical Datum.
- ✓ Maintaining website on Vertical Datum:

SFWMD.gov/NAVD

Improving Accuracy of Water Level Data
SFWMD Upgrading from NGVD 29 to NAVD 88

OUR MISSION
To SAFEGUARD and RESTORE South Florida's water resources and ecosystems, PROTECT our communities from flooding, and MEET the region's water needs while CONNECTING with the public and stakeholders.

Background
Managing water levels in South Florida is critical to the South Florida Water Management District's (SFWMD) mission. Safeguarding and restoring South Florida's water resources and ecosystems, protecting communities from flooding, and meeting the region's water needs depends on knowing exactly how much water must be moved from one elevation to another.

To enhance data accuracy, SFWMD is upgrading the measuring standard used to record water levels throughout its 16-county region. The vertical datum, or starting point, used to record water levels at all SFWMD reporting sites will be upgraded from the National Geodetic Vertical Datum of 1929 (NGVD 29) to the North American Vertical Datum of 1988 (NAVD 88).

What does the upgrade mean for the public and stakeholders?
The numbers that SFWMD associates with the elevation in lakes, canals and other bodies of water will change. Depending on the location within the SFWMD's boundaries, measurements of water levels in NAVD 88 will be approximately 0.6 feet to 1.6 feet lower than they are in NGVD 29. For example, the difference between the two measuring standards on Lake Okechobee is 1.25 feet, so a water level of 12.5 feet NGVD 29 is 11.25 feet NAVD 88. This variation affects only the numerical value for the elevation point. The volume of water and water depth remains the same.

Why is the measuring standard being upgraded?
Technological advancements incorporated into the newer NAVD 88 standard have created the ability for greater accuracy when measuring water levels. The NAVD 88 upgrade allows for more precision when determining how much water must be moved from one elevation to another. The NAVD 88 standard was affirmed in 1993 as the official vertical datum in the National Spatial Reference System for the United States. A federal mandate requires government agencies using or producing vertical height information to make the transition to NAVD 88.

3301 Con Club Road
West Palm Beach, FL 33406
561-488-8800
sfwmd.gov

it's just a new *Ruler...*
so it's time to measure up!

To improve the accuracy of the land and water elevation measurements, the South Florida Water Management District is upgrading to the North American Vertical Datum of 1988 (NAVD 88).

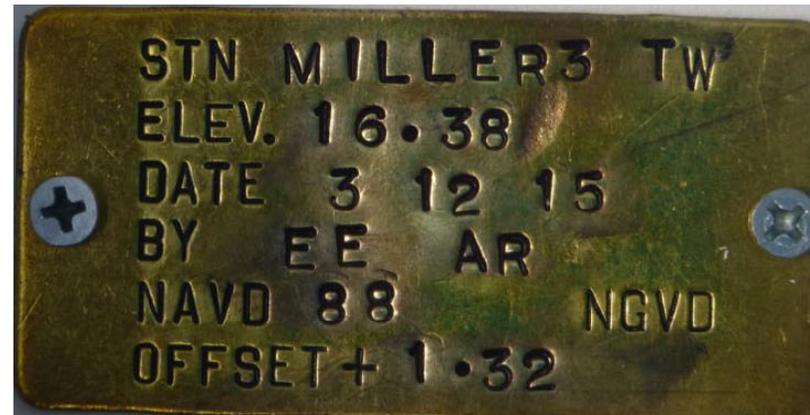
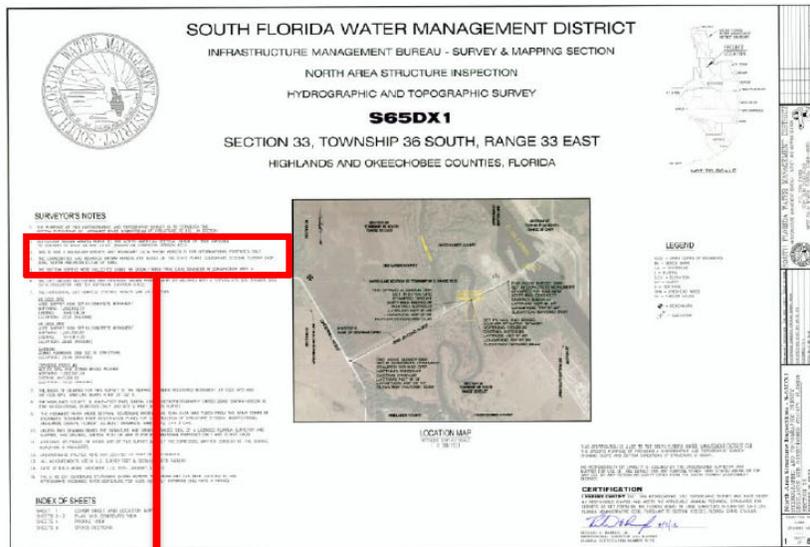
This produces more accurate measurements needed for flood control efforts, land and waterway maintenance and environmental restoration.

For more information, please visit our website at: www.sfwmd.gov/vdup

sfwmd.gov

Vertical Datum Rollout

- ✓ Survey is conducted fully in NAVD88.
- ✓ Engineering design and construction is conducted fully in NAVD88.
- ✓ Elevation related data is collected in the field in NAVD88.



2. ELEVATIONS SHOWN HEREON REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). TO CONVERT TO NGVD 29 ADD +1.20'. (BASED ON CORPSCON VERSION 6.0.1)

Vertical Datum Rollout - next

- ✓ Elevation related data will be reported in DBHYDRO in NAVD88 in early 2024.
- ✓ Users can extract data in DBHYDRO in both NAVD88 and NGVD29.

sfwmd.gov

Time Series Data

DBKEY	STATION	AGENCY	COUNTY	TYPE	UNITS	STAT	FQ	RECORDER	START	END	LAT	LONG	SECTION	TOWN	RANGE	ALTERNATE	ID	OFFSET*
05760	S153_H	WMD	MAR	STG	ft NAVD88	INST	BK	TELE	2015	2016	265921	803616	14	40	37	S153-H		+1.19

* Offset value is used to convert to NGVD29

Date Time	DCVP	STATION ID	DBKEY	Data Value	Code	Quality Flag
01-SEP-2018 00:00:08		S153-H	05760	18.80		Provisional
01-SEP-2018 00:21:21		S153-H	05760	18.78		Provisional
01-SEP-2018 00:22:07		S153-H	05760	18.78		Provisional
01-SEP-2018 00:30:08		S153-H	05760	18.78		Provisional
01-SEP-2018 00:52:08		S153-H	05760	18.78		Provisional
01-SEP-2018 01:00:10		S153-H	05760	18.77		Provisional
01-SEP-2018 01:22:07		S153-H	05760	18.76		Provisional
01-SEP-2018 01:22:07		S153-H	05760	18.76		Provisional
01-SEP-2018 01:24:02		S153-H	05760	18.76		Provisional
01-SEP-2018 01:30:08		S153-H	05760	18.76		Provisional

Thank you!



More information on Vertical Datum: [SFWMD.gov/NAVD](https://www.sfwmd.gov/NAVD)

Data related questions can be sent to: DataRequests@sfwmd.gov

SFWMD Saltwater Interface Mapping – Data Request

SFWMD Resiliency Coordination Forum

August 30, 2023

Pete Kwiatkowski, PG

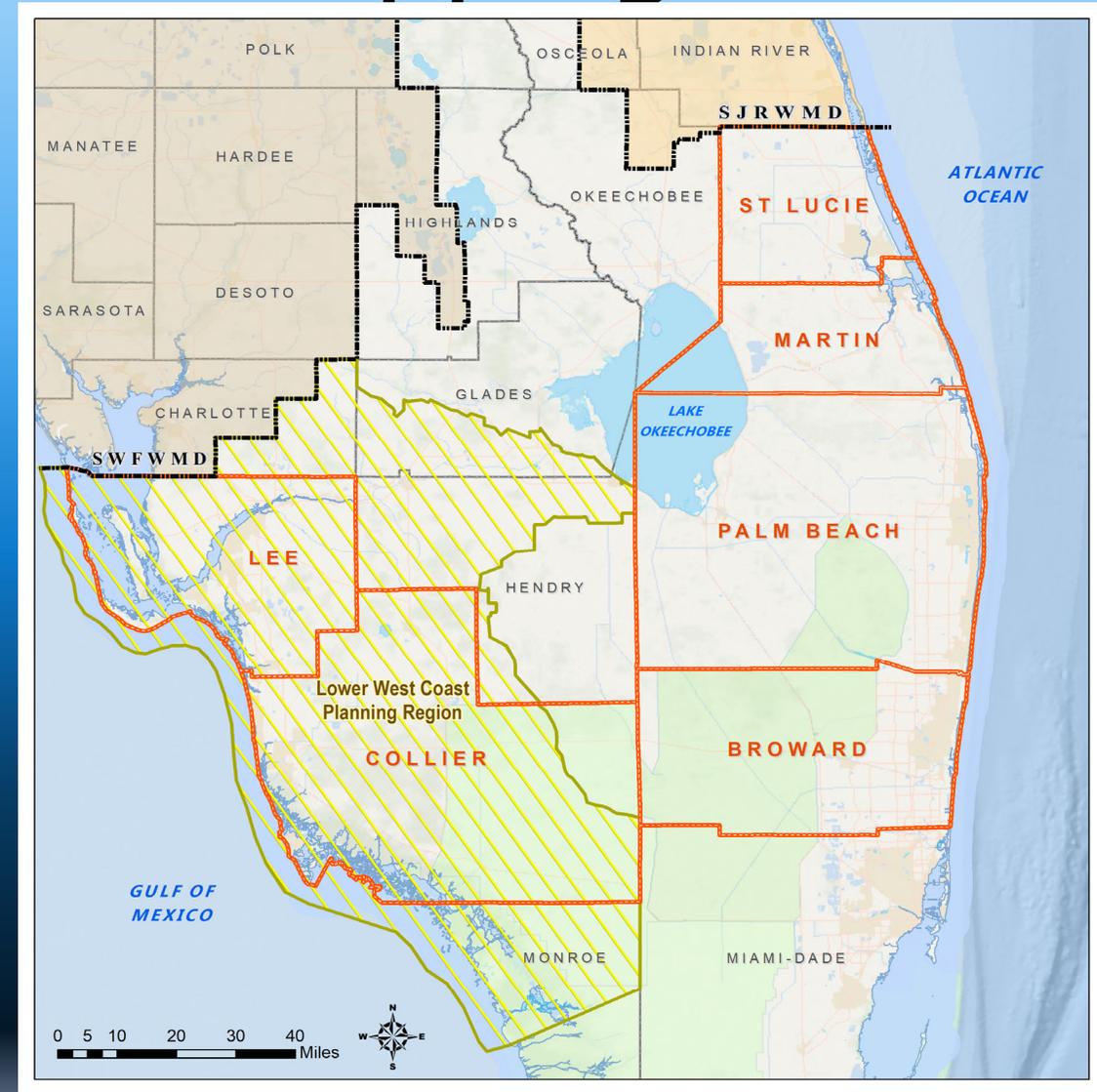
Section Administrator, Resource Evaluation

Water Supply Bureau, Resource Evaluation Section



Saltwater Interface Mapping

- **Project:** Map position of saltwater interface every 5 years in SFWMD's coastal, shallow aquifers
- **Purpose:** Track interface position, note areas of concern, increase monitoring where needed
- **Data:** SFWMD, USGS, utilities, etc. (chlorides, total dissolved solids, specific conductance) from water quality samples from wells
 - [Resilience Metrics Hub \(arcgis.com\)](https://arcgis.com)
- **Request:** Supplement this data with data from existing monitor wells owned by others (counties, local governments, etc.) at the next event (March/April/May 2024)



Questions and Discussion

2009, 2014 & 2019 maps available:

<https://www.sfwmd.gov/documents-by-tag/saltwaterinterface>

Merged Isochlor 2019: <https://geo-sfwmd.hub.arcgis.com/datasets/merged-isochlor-2019>

Chloride Data, 2019: <https://geo-sfwmd.hub.arcgis.com/datasets/chloride-data-2019>

pkwiat@sfwmd.gov

561-682-2547

Relationship Between Hazard Mitigation and Climate Adaptation

Hazard Mitigation Planning

Conditions of concern:

- Non-climate hazards (e.g., earthquakes)
- Cascading hazards, other hazards (e.g., dam failure)

Conditions of concern:

- Climate-related natural hazards (e.g., wildfires, sea level change)

Goal:

- Long-term risk reduction

Response type:

- Policies, projects, programs

Climate Adaptation Planning

Conditions of concern:

- Gradual or slow-onset climatic changes (e.g., greenhouse gas emissions)



FEMA

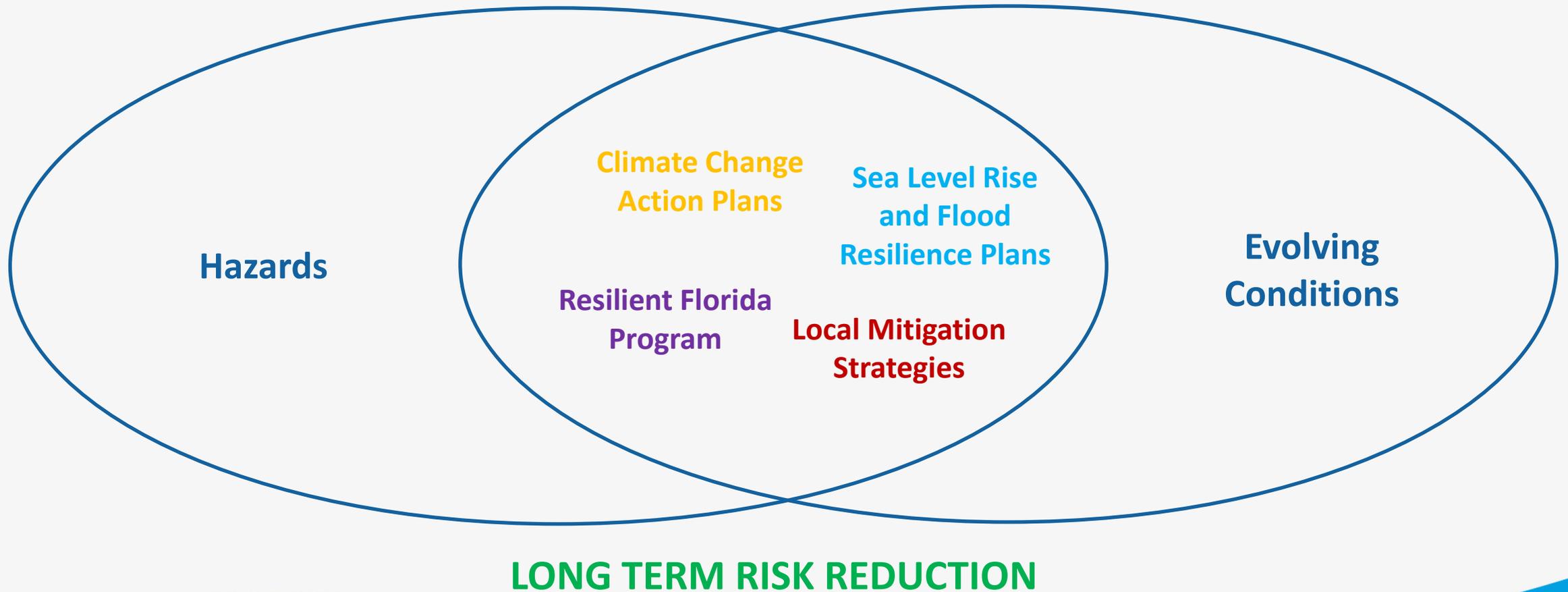
Federal Emergency Management Agency

7

**Graphic adapted from ICLEI-Local Governments for Sustainability USA.*



Hazard Mitigation and Resiliency Adaptation Planning





Thank You

Carolina Maran, P.E., Ph.D.

Chief of District Resiliency

cmaran@sfwmd.gov

www.sfwmd.gov/resiliency

RESILIENT MARTIN

PROGRAM OVERVIEW

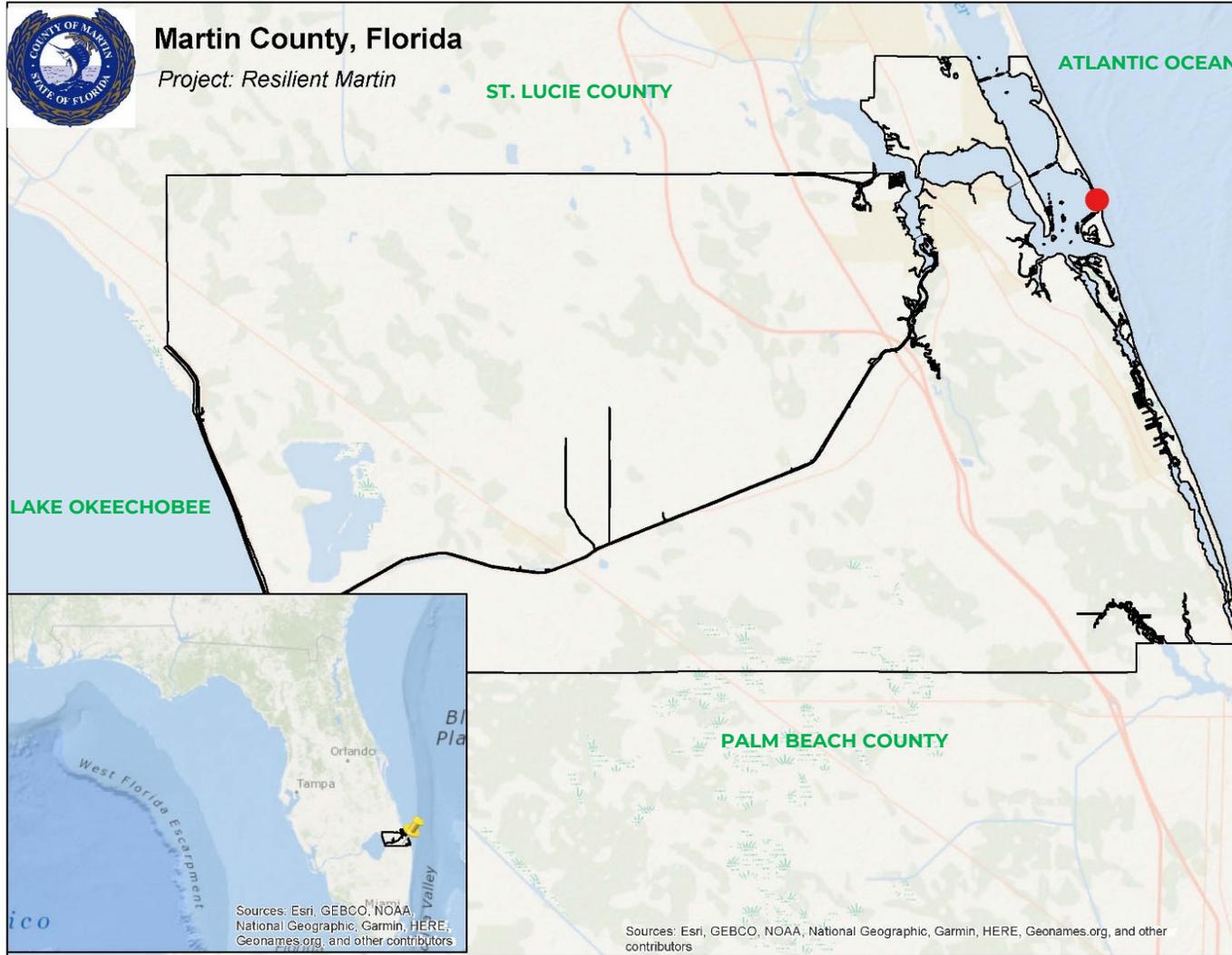


PRESENTATION OUTLINE

- ▶ Climate Impacts facing Martin County
- ▶ Resilient Martin
- ▶ What we are doing now
- ▶ Looking Forward
- ▶ Comments/Questions



WHERE ARE WE?



MARTIN COUNTY DEPENDS ON OUR ENVIRONMENT.





THESE ARE JUST SOME OF THE ISSUES CAUSED BY CLIMATE CHANGE.

- ▶ Stronger & More Frequent Storms
- ▶ Higher & More Frequent Flooding
- ▶ Saltwater Intrusion
- ▶ Impaired Water Quality
- ▶ Higher Insurance Costs
- ▶ Beach Erosion
- ▶ Decreased Tourism



LOCAL IMPACTS OF CLIMATE CHANGE



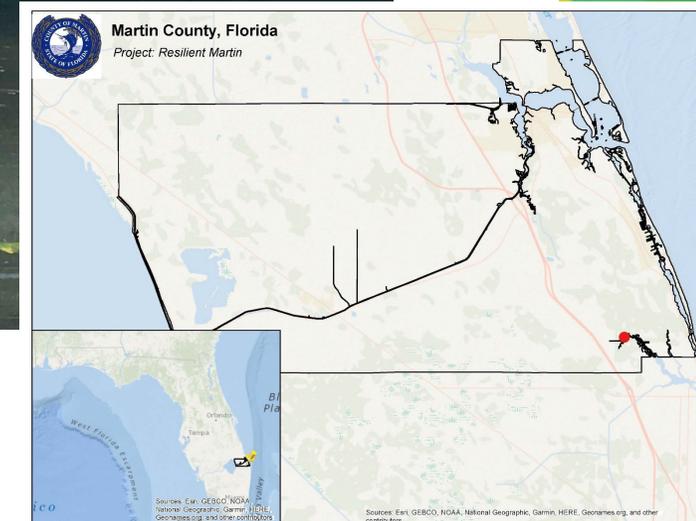
SE MERRITT WAY SEPTEMBER 2020 FLOODING



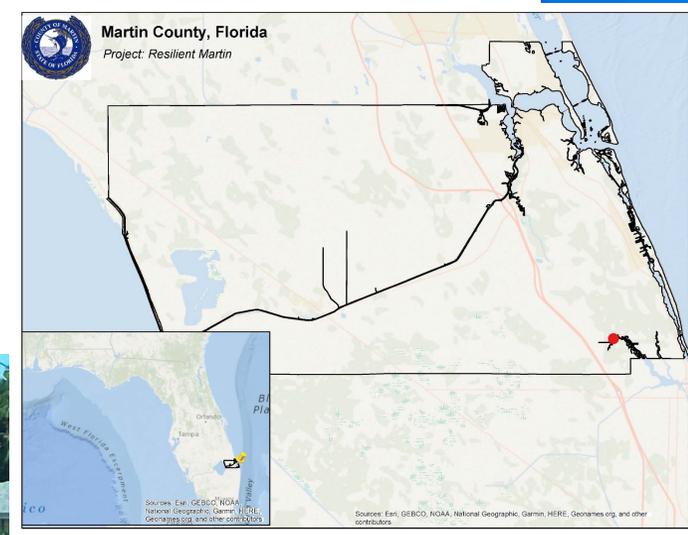
SE MERRITT WAY UNDER WATER SIGN



SE MERRITT WAY UNDER WATER SIGN
SEPTEMBER 22, 2020



SE COVE POINT SEPTEMBER 2020 FLOODING

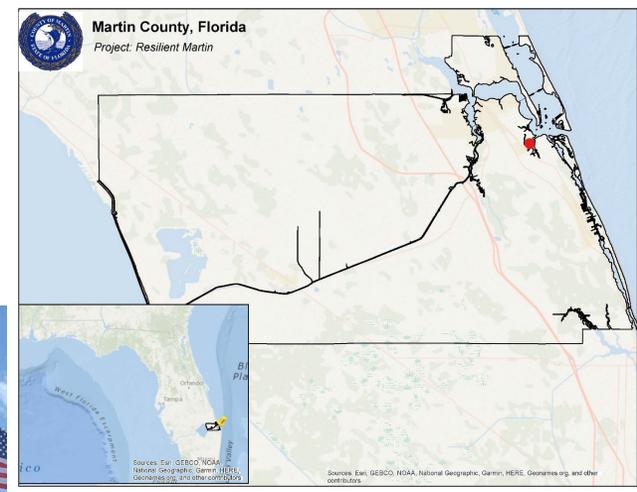


SEA WALL IS IN RED AND EDGE OF PAVEMENT IS YELLOW

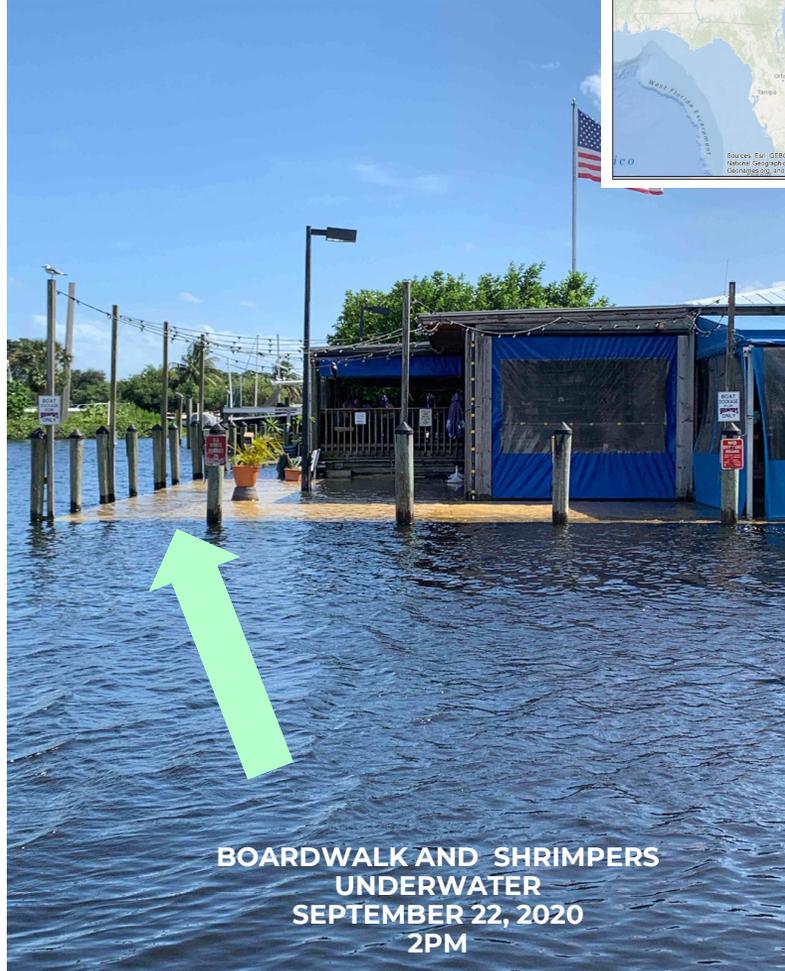
RESILIENT MARTIN



PORT SALERNO SEPTEMBER 2020 FLOODING



MANATEE POCKET BOARDWALK
SEPTEMBER 22, 2020
2PM



BOARDWALK AND SHRIMPERS
UNDERWATER
SEPTEMBER 22, 2020
2PM



CHASTAIN BEACH PARKING LOT SEPTEMBER 2020 FLOODING



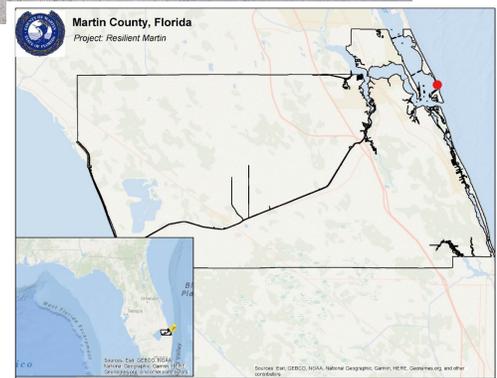
Chastain parking lot. Note the time.



Chastain parking lot. Note the time.



Chastain parking lot. Note the time.





(November 2018)
Received FDEP Resilient Coastlines Program grant funding for initial SLR vulnerability maps

(November 2018 - April 2019)
Developed SLR projections and initial SLR vulnerability maps

(August 2019)
Awarded FDEP Resilient Coastlines Program grant funding to develop a Resilience and Watershed Management Plan



(October 2019)
Hosted NOAA's Adaptation Planning for Coastal Communities training

(May 2020)
Released new Resilient Martin web page

(September 2020)
Presented Martin County's Resilient Martin Sea Level Rise Summary Report to the Martin County Board of County Commissioners



(Fall 2017)
Established an internal Martin County staff Resilience Working Group to coordinate project and planning efforts



(Ongoing)
Mapping flooding complaints and identify chronic problem areas

(May 10, 2019)
Submitted final Resilient Coastlines report to FDEP



(August 2019 - June 2020)
Developed Resilience and Watershed Management Plan

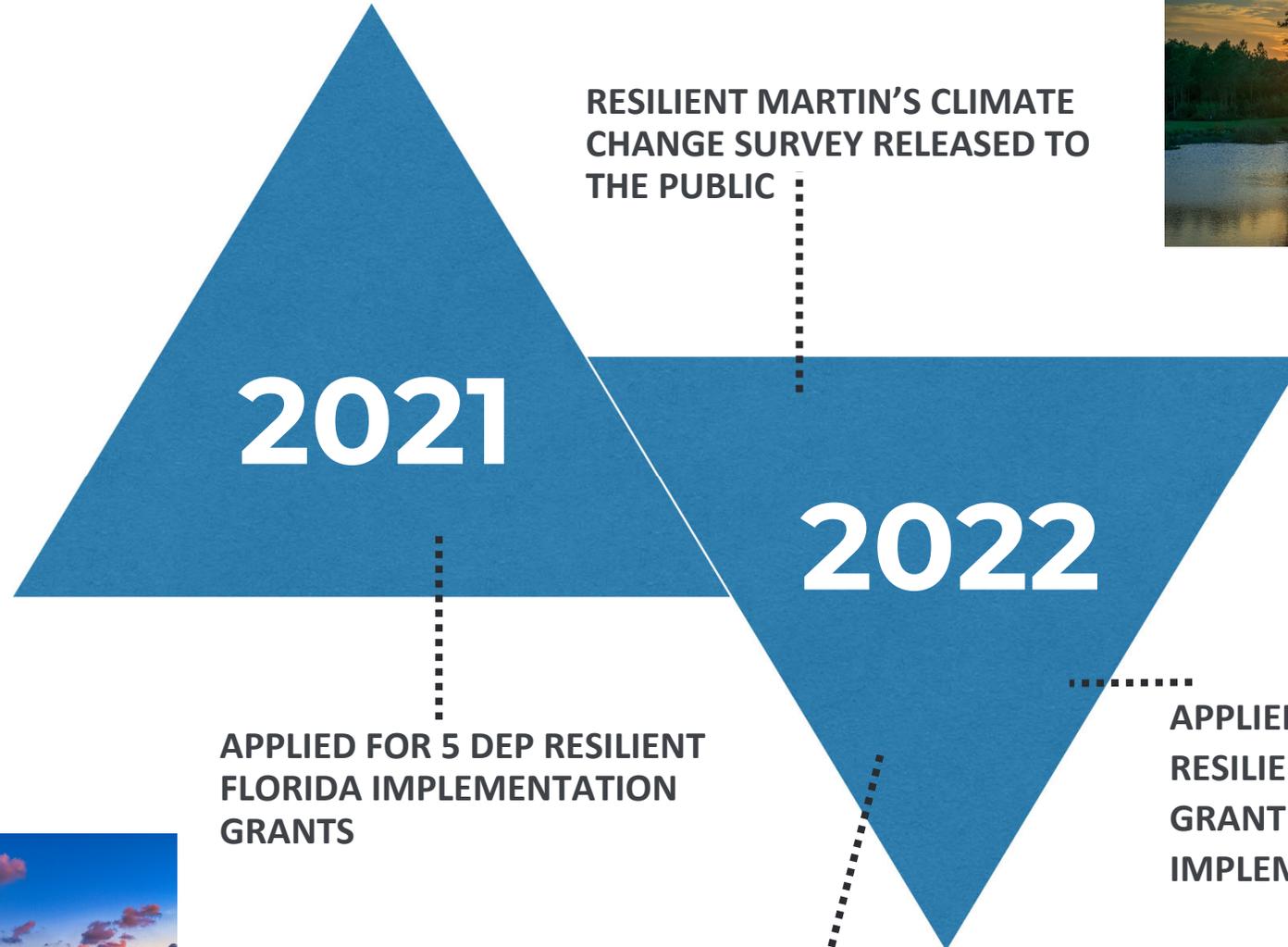
(October 2019)
Established king tide water elevation documentation program to survey flooding at specific, known vulnerable locations



(June 2020)
Conducted Resilient Martin Facebook Live events for the public



RESILIENT MARTIN



RESILIENT MARTIN'S CLIMATE CHANGE SURVEY RELEASED TO THE PUBLIC



APPLIED FOR 5 DEP RESILIENT FLORIDA IMPLEMENTATION GRANTS



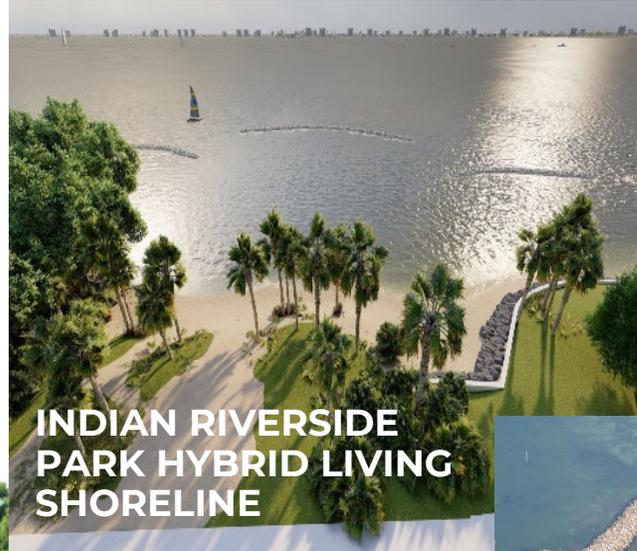
APPLIED FOR AND AWARDED RESILIENT FLORIDA PLANNING GRANT & AWARDED IMPLEMENTATION GRANTS

APPLIED FOR 5 IMPLEMENTATION GRANTS & 2 PLANNING GRANTS FOR 2023 GRANT CYCLE



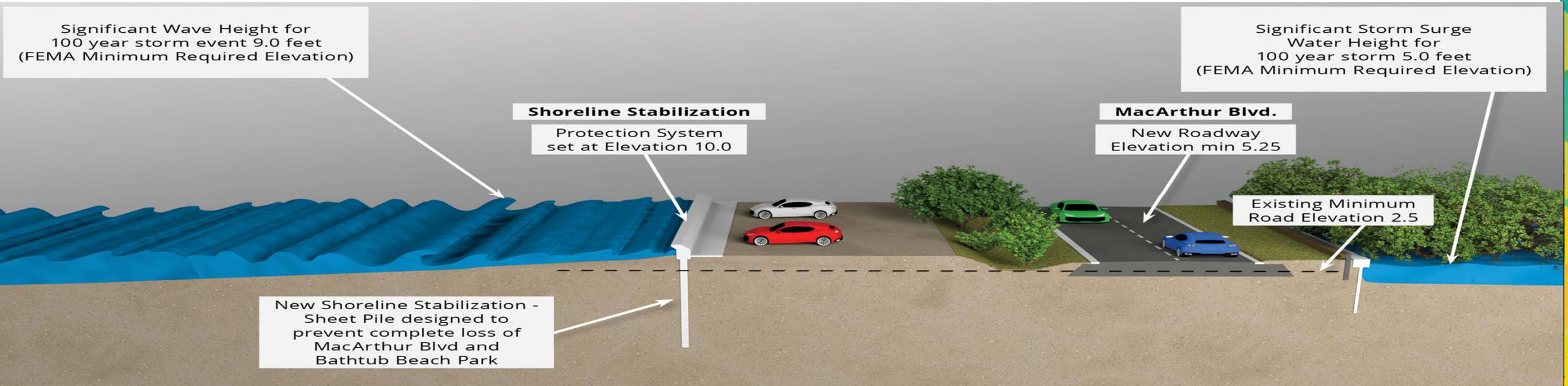
WHAT ARE WE DOING RIGHT NOW?

MARTIN COUNTY PROJECTS



RESILIENCE IN ACTION

Protecting the Community from Coastal Flooding





RESILIENCE IN ACTION

Project Overview



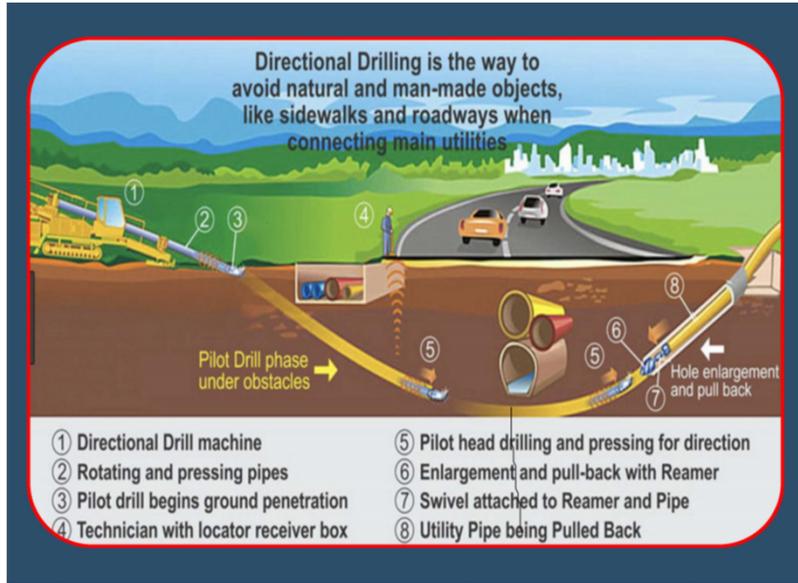
BEACH RESTORATION AND MAINTENANCE

RECONSTRUCTION PROJECT FOR CRITICAL STRETCH OF BEACH

Storm protection, ecosystem conservation, and preservation of a popular recreation destination all in one project.

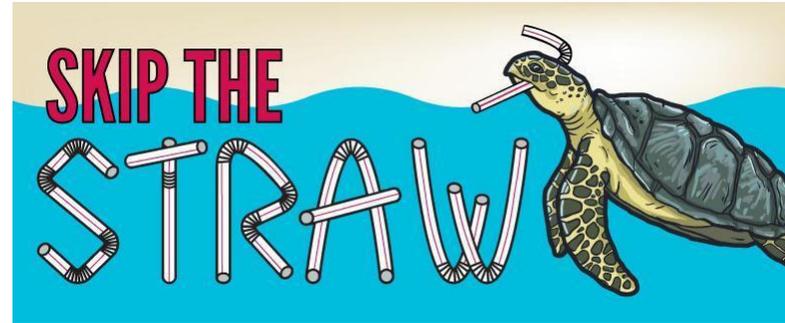


CONNECT TO PROTECT PROGRAM



This program was created to assist
 keep how gas is being drilled with
 connecting the utility lines to the
 dig #10 is ready to start #11 is the
 tanks #12 is the #13 is the #14 is the
 Enxq #15 is the #16 is the #17 is the
 system #

PROTECT OUR PARADISE



THE PROTECT OUR PARADISE WEBSITE

Serves as a portal for visitors and residents to learn more about environmental conditions, initiatives, and issues taking place in Martin County. The website, operated by the Martin County Office of Tourism & Marketing, includes various resources and points of focus





LOOKING FORWARD

- ▶ Update to Vulnerability Assessment
- ▶ New Implementation Projects & Grant Submittals
- ▶ Public Presentations - Public Input
- ▶ Building Collaborations
- ▶ Development of Climate Action Plans for Priority Areas



QUESTIONS/COMMENTS?



Building Resilient Infrastructure and Communities

BRIC Direct Technical Assistance – South Florida Water Management District
RESILIENCY COORDINATION FORUM

August 30, 2023



FEMA



Our Goals for today:

- Learn about the:
 - Building Resilient Infrastructure and Communities (BRIC) Non-financial Direct Technical Assistance (DTA)
 - Community Needs Assessment
 - Direct Technical Assistance Plan (DTA Plan)
 - Learn about [resources](#) and types of DTA assistance

BRIC

Vision

A Nation of communities **resilient** to natural hazard events.

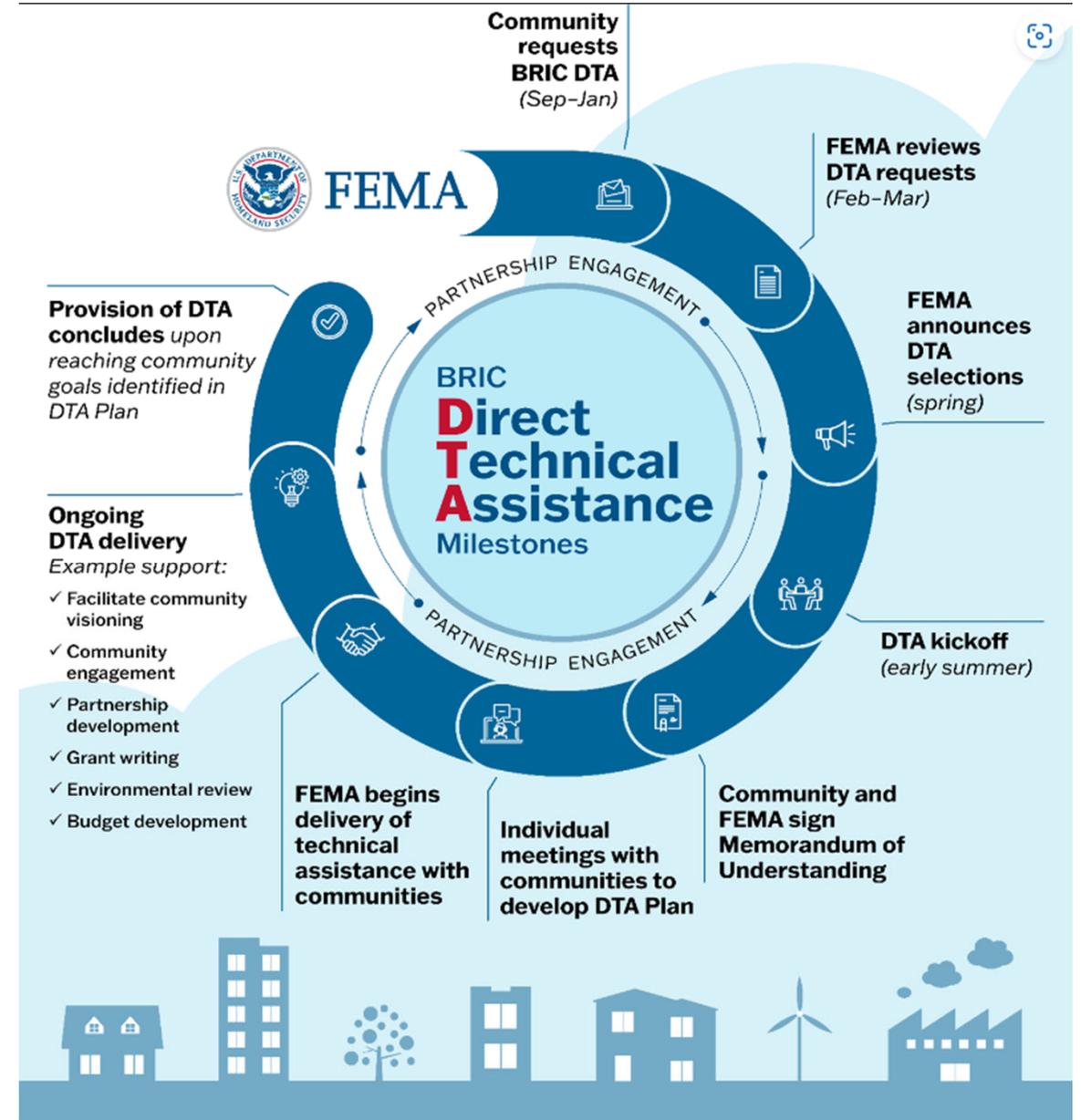
Mission

Empowering communities through **partnerships** and mitigation **investments** to advance natural hazards resilience.



FEMA

BRIC DTA Milestones



BRIC Direct Technical Assistance (DTA)

BRIC Goal: To increase the climate and hazard resilience of underserved and disadvantaged communities and Tribal Nations through technical assistance that focuses on holistic community planning, project development and facilitating access to multiple hazard mitigation funding sources and leveraging partnerships.



Direct Technical Assistance Mitigation Outcomes



FEMA

Benefits of Participating in BRIC DTA

Tribal Nation or Community

- Tell a compelling story
- Increase understanding of integrated or equity based solutions
- Access to climate risk tools and risk reduction solutions
- Expand partnerships
- Identify funding sources
- Belief in ability to combat climate change and advance well-being



BRIC DTA Facilitator

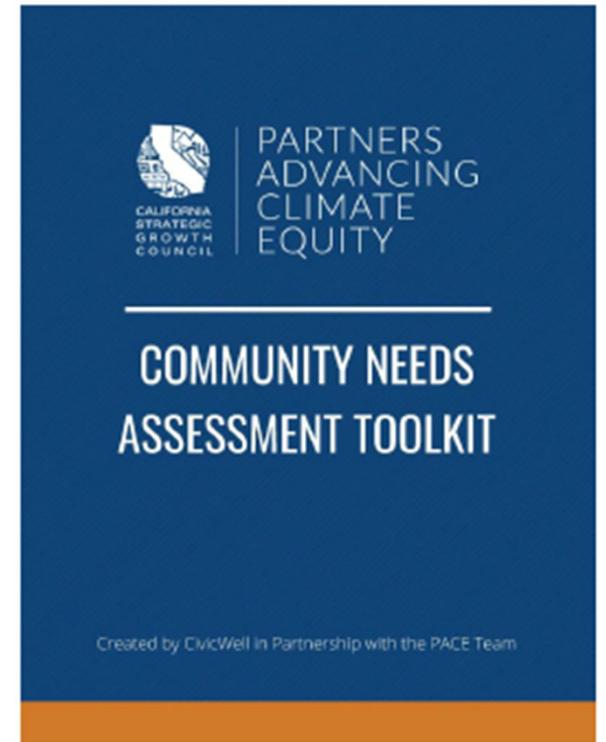
- Increase FEMA Regional capacity and skills
- Build internal relationships and expand partnerships
- Support continuous improvement by understanding gaps or barriers
- Learn about holistic climate resilience solutions
- Help FEMA center equity at the heart of our programs



FEMA

What is a Community Needs Assessment

- A tool to engage stakeholders to determine the nature and extent of community or tribal needs and resources to inform the BRIC DTA process.
- Includes an **assessment of community demographics** and underserved populations to promote equitable participation in BRIC DTA.
- A **living document** that can be built on throughout the BRIC DTA process.
- Needs Assessment findings can be used to articulate community needs, **identify** strategies to **build** capacity and **support** development of a community vision for resilience.



FEMA

Elements of a Needs Assessment



FEMA

Federal Emergency Management Agency

What is a BRIC DTA Action Plan?

A community or tribal nation driven document that:

- Describes the process to achieve BRIC DTA goals and address needs identified in the Needs Assessment
- Includes tasks and activities that will build capacity and capabilities among partners
- Connects and includes activities that facilitate systems change



FEMA

The Region 4 Team



FEMA

Types of Assistance

Hazard Mitigation Technical Assistance (HMTAP)

- Mitigation plan development/updates
- Data analysis
- Project scoping
- Project benefit-cost analysis
- Grant application assistance
- Geographic Information Systems (GIS) story maps
- Report/ Presentation creation
- Site visits and local assessments

Community Engagement and Risk Communication (CERC)

- Community Outreach
- Communications and Strategic Coordination
- Partnership Building

MSI STEM Research & Development Consortium (MSRDC)

- Connect local BRIC DTA communities and Tribal Nations, with research needs to support their mitigation, resilience, and climate adaption goals, with minority-serving colleges and universities.
- BRIC DTA Communities and Tribal Nations can collaborate with existing MSRDC academic institutions.
- Colleges and Universities must be members of MSRDC to participate, but MSRDC can establish relationships with additional academic institutions as requested.



FEMA

Region 4 FY-22 BRIC DTA Roll Out



Legend

- Incomplete
- Complete
- Pending



REMINDERS:

Notice of Interest to Florida Division of Emergency Management (FDEM):

Ahead of the FY 2023 Application Period for the Building Resilient Infrastructure and Communities (BRIC) programs, the Florida Division of Emergency Management Mitigation Bureau is **requiring** the submittal of the Notice of Interest (NOI) Form. All subapplicants interested in submitting a subapplication for FMA and/or BRIC **MUST** fill out the NOI Form and submit it to the Non-Disaster Programs email, non-disasterprograms@em.myflorida.com, by **5 PM EST on August 31, 2023**.

<https://www.floridadisaster.org/globalassets/fy-2023-notice-of-interest-form-bric.pdf>

Webinar: BRIC Direct Technical Assistance

This webinar provides an overview of and guidance on how to request Building Resilient Infrastructure and Communities Direct Technical Assistance in fiscal year 2023.

<https://www.fema.gov/event/webinar-bric-direct-technical-assistance-fiscal-year-2023>



FEMA

Questions?



FLOOD OBSERVATION TOOLS AND ENGAGEMENT WITH LOCAL GOVERNMENTS & 298 DISTRICTS



PRESENTED BY:

Libby Pigman

External Affairs Director

South Florida Water Management District

August 30, 2023



Welcome Partners

Join us in the collaboration of this new flood documentation tool.

Today we will be:

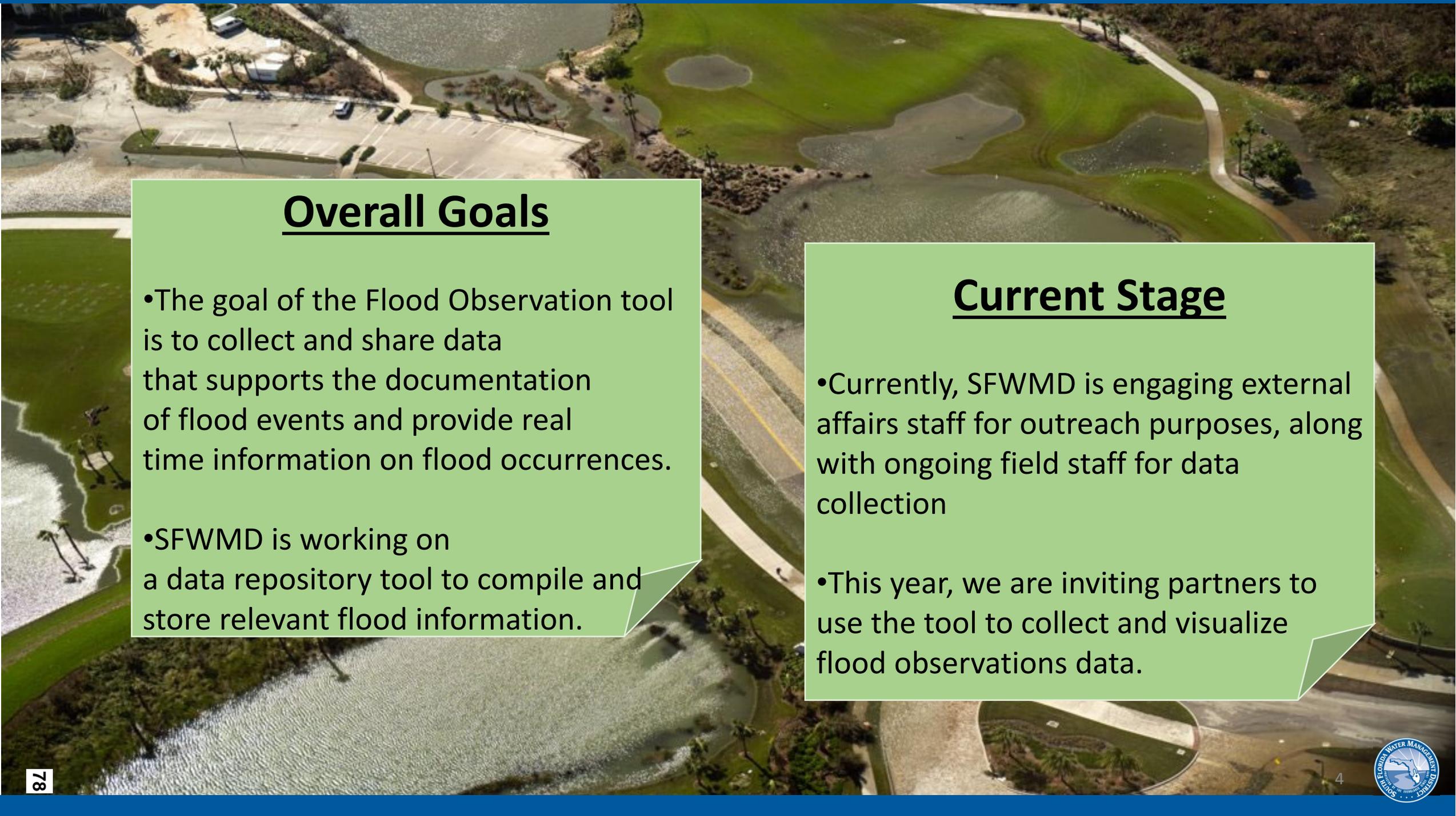
- Going through the "Document the Flood" survey step-by-step.
- Discussing the importance of this tool and why we are looking for collaboration.
- Discussing what we will do with this data.

SFWMD.GOV/FLOODINGAPP



77





Overall Goals

- The goal of the Flood Observation tool is to collect and share data that supports the documentation of flood events and provide real time information on flood occurrences.
- SFWMD is working on a data repository tool to compile and store relevant flood information.

Current Stage

- Currently, SFWMD is engaging external affairs staff for outreach purposes, along with ongoing field staff for data collection
- This year, we are inviting partners to use the tool to collect and visualize flood observations data.

SFWMD.GOV/FLOODINGAPP

- All required questions are symbolized with a red asterisk “*”
- Pictures can be taken directly from your mobile device by selecting the camera icon or photos can be uploaded by selecting files from your device or camera roll.

Document the Floods



Questions with a red * are required.

Photos (1 required)*

Submit up to 3 photos.

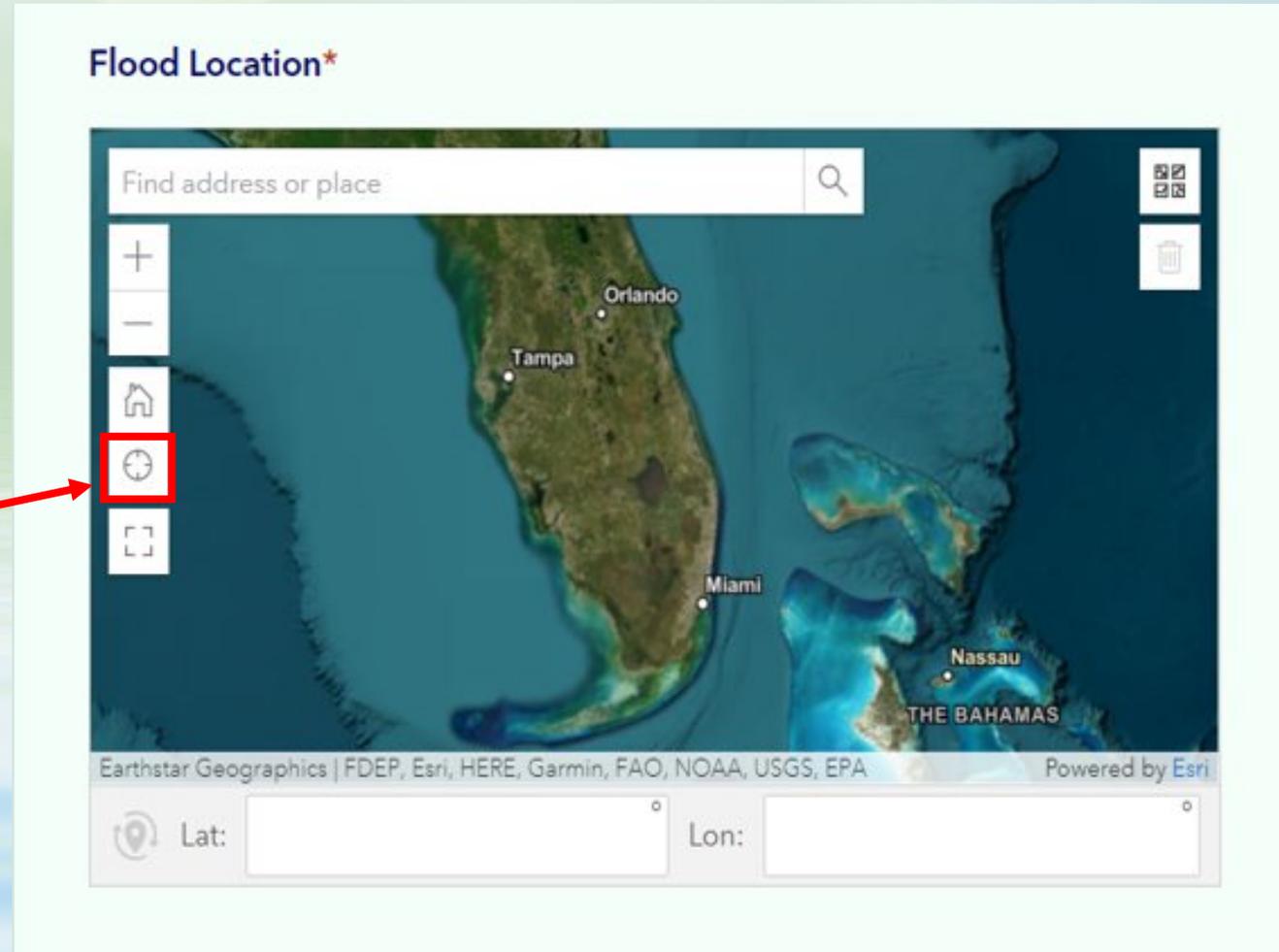
1 Drop image here or select image (maximum number of files allowed: 3)



SFWMD.GOV/FLOODINGAPP

Identify the Flood Location

- Use the camera icon to take a picture. If location services are on for the camera device, the location will automatically be uploaded.
- Use the "Find My Location" icon then accept or adjust pin location.
- Enter an address or street crossroads then place a pin once location is verified.
- Use navigation tools to zoom in and out to identify the flooding location.



SFWMD.GOV/FLOODINGAPP

- Select one of the corresponding circles based on how deep the water is and if the location has flooded before.
- If you aren't sure of either of these answers, select "Don't Know".

Select water depth*

Don't know Ankle deep Knee deep Greater than knee deep Other

Has this location flooded before?*

Don't know No, never Once or twice Sometimes Often Yes, it always floods here

SFWMD.GOV/FLOODINGAPP

- High tide flooding is the overflow or excess accumulation of water that covers typically dry coastal land and occurs during high tides.
- Flooding typically occurs when prolonged rain falls over several days, when intense rain falls over a short period of time.
- Storm surge is the abnormal rise in seawater level during a storm, measured as the height of the water above the normal predicted tide.
- If it is both high tide and rainfall flooding, select the last option.

Flood type

High Tide / Tidal Flooding

Extreme or Heavy Rainfall Event

Storm Surge

SFWMD.GOV/FLOODINGAPP

What properties are flooded?

-Please select-

- To go through the different options of properties select the drop-down menu by clicking “Please Select.”
- The drop-down menu should pop-up and you can utilize the scroll bar on the right.
- Select the option that best describes the property type.

What properties are flooded?

-Please select-

Agriculture

Airport

Commercial

Correctional

SFWMD.GOV/FLOODINGAPP

- Select the circle that best identifies the affected area.
- If none of the available options seem to fit, please select Other and provide additional details when the text box appears.
- We are interested in other information you can provide about flooding that was not provided in the survey questions above. Please use the Comments box to convey this information and provide your email if you would like it associated with your survey submittal.

Affected areas

Parking Lot Road Seawall Storm Drain

Swale Yard Driveway Building/Structure

Other

Comments

1000 ↕

Email

Submit



WHY IS THIS IMPORTANT?



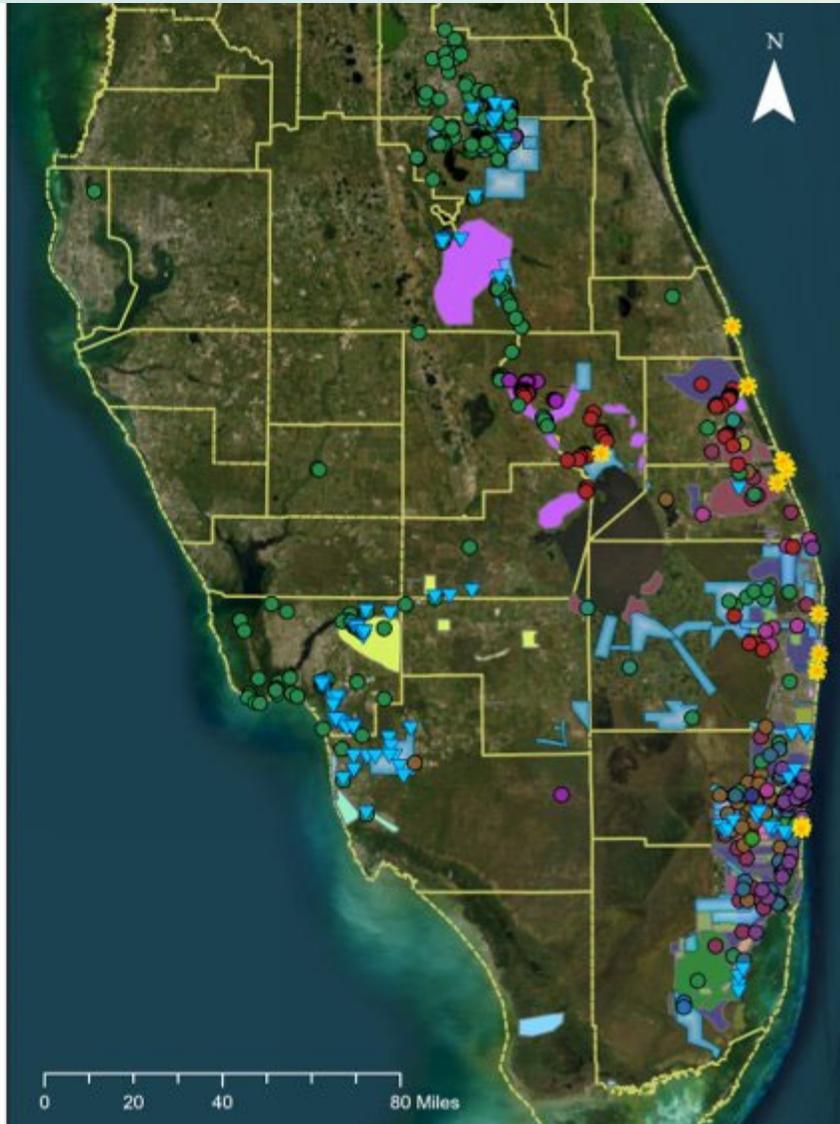
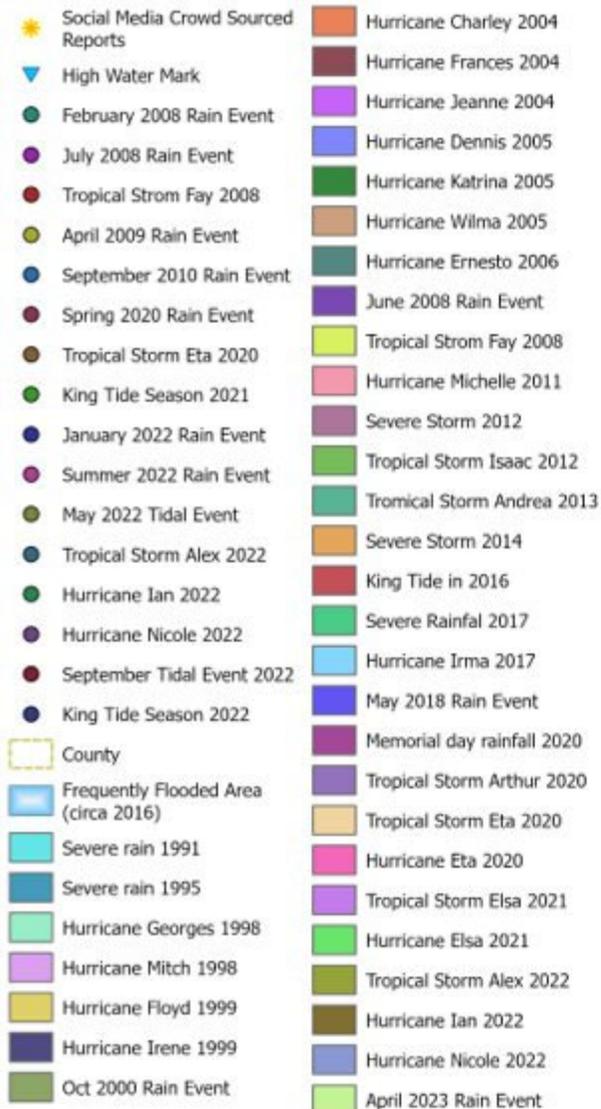
- As flood occurrences increase, the SFWMD is looking for better ways to know where it is occurring and how often.
- SFWMD is seeking improved insights into how frequently and under what types of conditions flooding occurs.
- SFWMD wants to improve communication, collaboration and coordination between Water Managers, county and city governments and local drainage districts on reported emerging conditions.
- SFWMD wants to provide resources to assist stakeholder agencies in the evaluation of conditions and the collection of information to assist with mitigation project planning and documentation.

HOW WILL SUBMITTED FLOOD OBSERVATION INFORMATION BE USED?

- This information will be used to deploy additional resources to evaluate flood conditions and if appropriate mark and measure elevations associated with high water.
- This information will be incorporated into a new SFWMD flood information repository. This repository will include an inventory of the best available information on flood locations dating back to 1991 as well as the new information acquired going forward.
- Location information will be used in the Flood Protection Level of Service (FPLOS) modeling to calibrate and validate model simulated overland flood levels and in remote sensing analyses to validate estimated flood extension.
- Location information will be used in planning to identify areas most vulnerable to recurrent flooding.
- Flood Repository information will be made available to support grant applications and other initiatives that require documentation of past flood occurrences.



SOUTH FLORIDA FLOOD INFORMATION RESOURCES



Flood Data and Information

- Inventory of past flood documentation
- High Water Marks
- Flood Photos and Survey Information
- Estimated Flood extents mapped from satellite or other remotely sensed products

Real-Time Access to Information

- Emerging Conditions
- Stakeholder submitted flood observations

Provide Regional Insights

- Flood Occurrence and Recurrence
- Communities most vulnerable to flooding

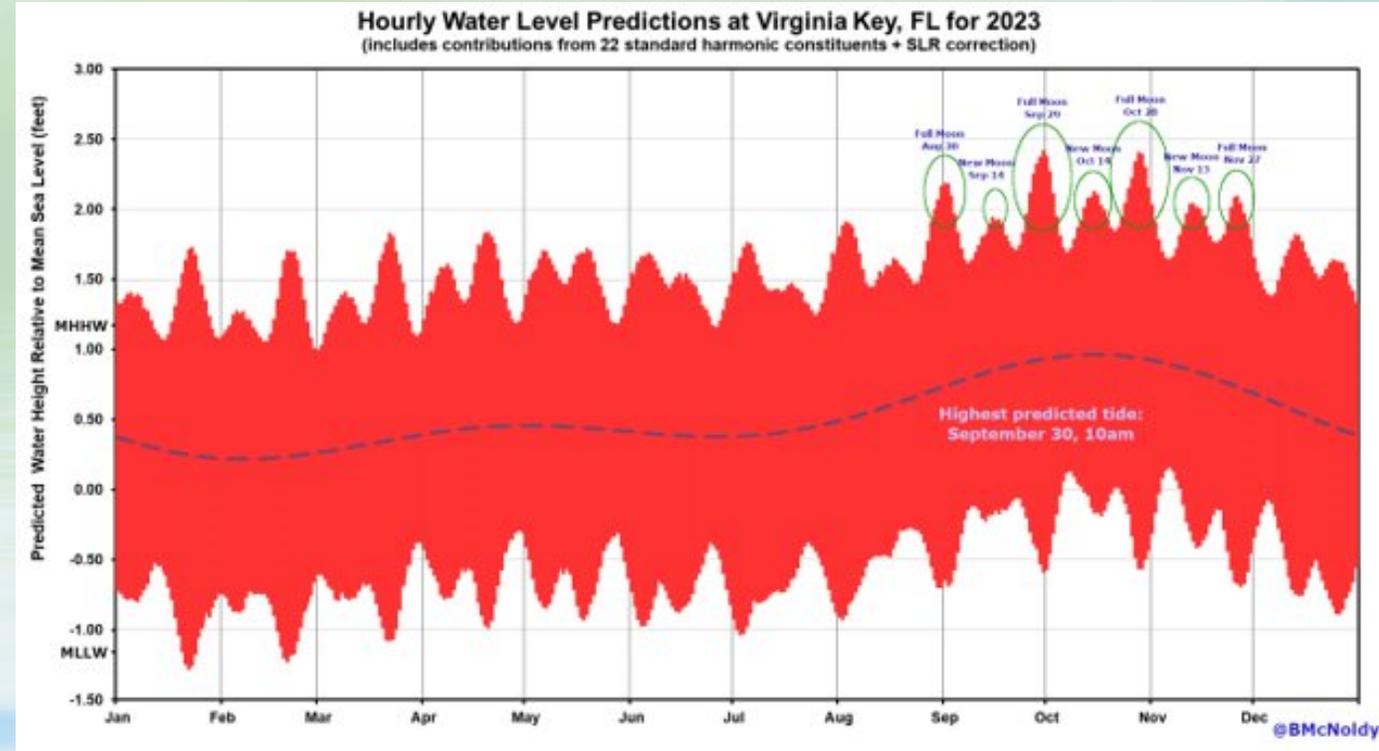
Provide Documentation

- Mitigation Grants
- Model Calibration and Validation
- Mitigation Project Planning

SFWMD.GOV/FLOODINGAPP

This survey can be used to document any flood event including King Tide

- As the 2023 King Tide Season approaches, SFWMD is initiating efforts for the monitoring, operational response, and documentation of these events.
- SFWMD staff employs advanced tools, user-friendly apps, latest technology, and traditional methodologies to collect data, photos, and high-water marks to document flood conditions.





QUESTIONS?



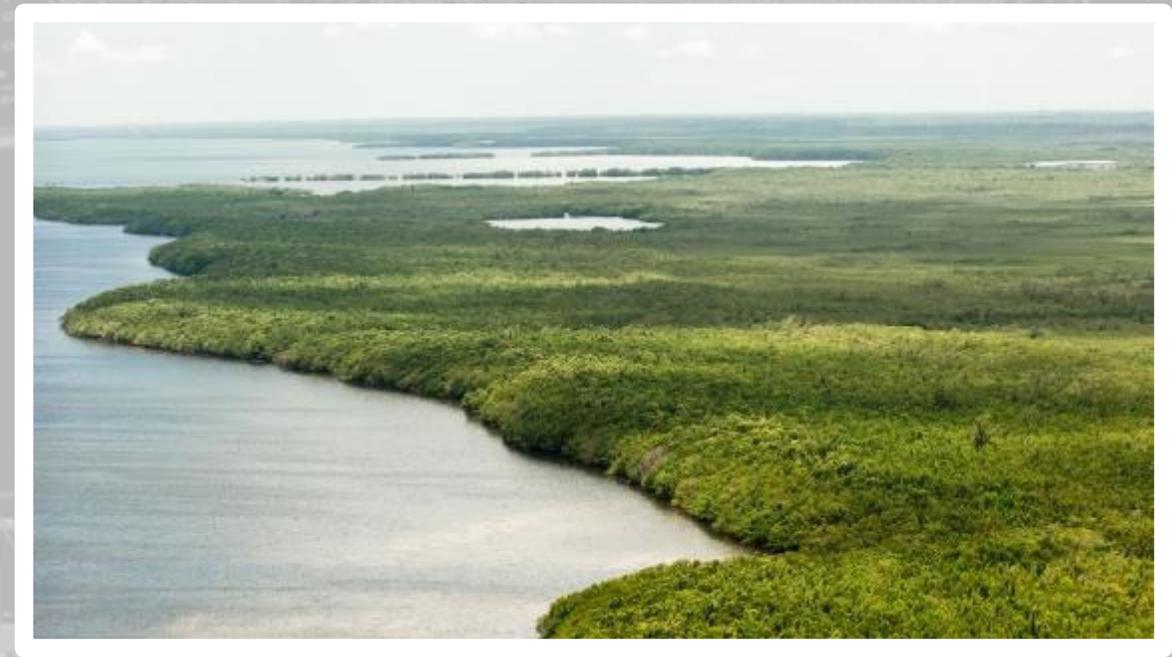
C&SF FLOOD RESILIENCY STUDY

UPDATE FOR RESILIENCY COORDINATION FORUM

30 August 2023

Eva B. Vélez, P.E.
Chief, Ecosystem Branch

E. Timothy Gysan, P.E., PMP
Resilience Senior Project Manager
Jacksonville District
U.S. Army Corps of Engineers





C&SF FLOOD RESILIENCY STUDY OVERVIEW

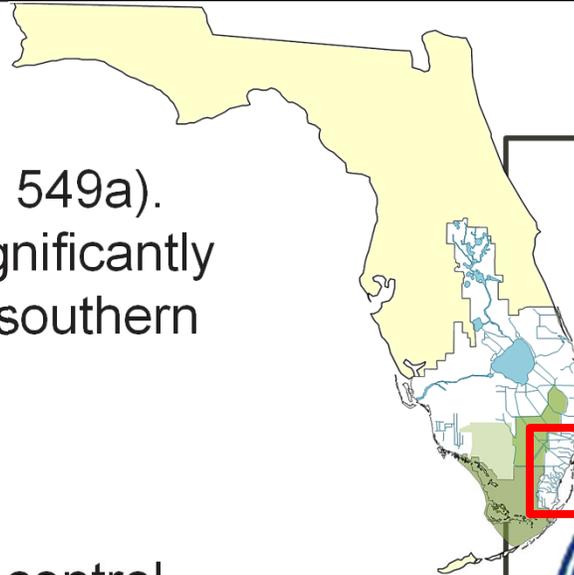


Authority

- Section 216 of the Flood Control Act of 1970 (33 U.S.C. 549a).
- Review of the existing C&SF infrastructure that have significantly changed due to physical or economic conditions within southern Palm Beach, Broward and Miami-Dade .

Objective

- Enhance aging C&SF system water control and salinity control structure's functionality and capacity to reduce flood damages and improve resiliency caused by inland inundation and changed conditions.



Non-Federal Sponsor





C&SF FLOOD RESILIENCY STUDY

PROJECT MILESTONES



Milestone	Date
Signing of Feasibility Cost Share Agreement	September 21, 2022 [A]
Alternatives Milestone	June 20, 2023 [A]
Tentatively Selected Plan Milestone	April 2025 (S)
Draft Report Submittal to HQ	June 2025 (S)
Public Release of Draft	June 2025 (S)
Agency Decision Milestone	March 2026 (S)
Submit Final Report Package to Vertical Team	May 2026 (S)
Signed Chief's Report	September 2026 (S)

The schedule follows the USACE SMART (*Specific Measurable Attainable Risk-informed Timely*) planning process, a 3x3x3 policy waiver to extend the schedule and increase the budget has been submitted through the VTAM now at HQUSACE.

[A]=Actual/Completed (S) = scheduled



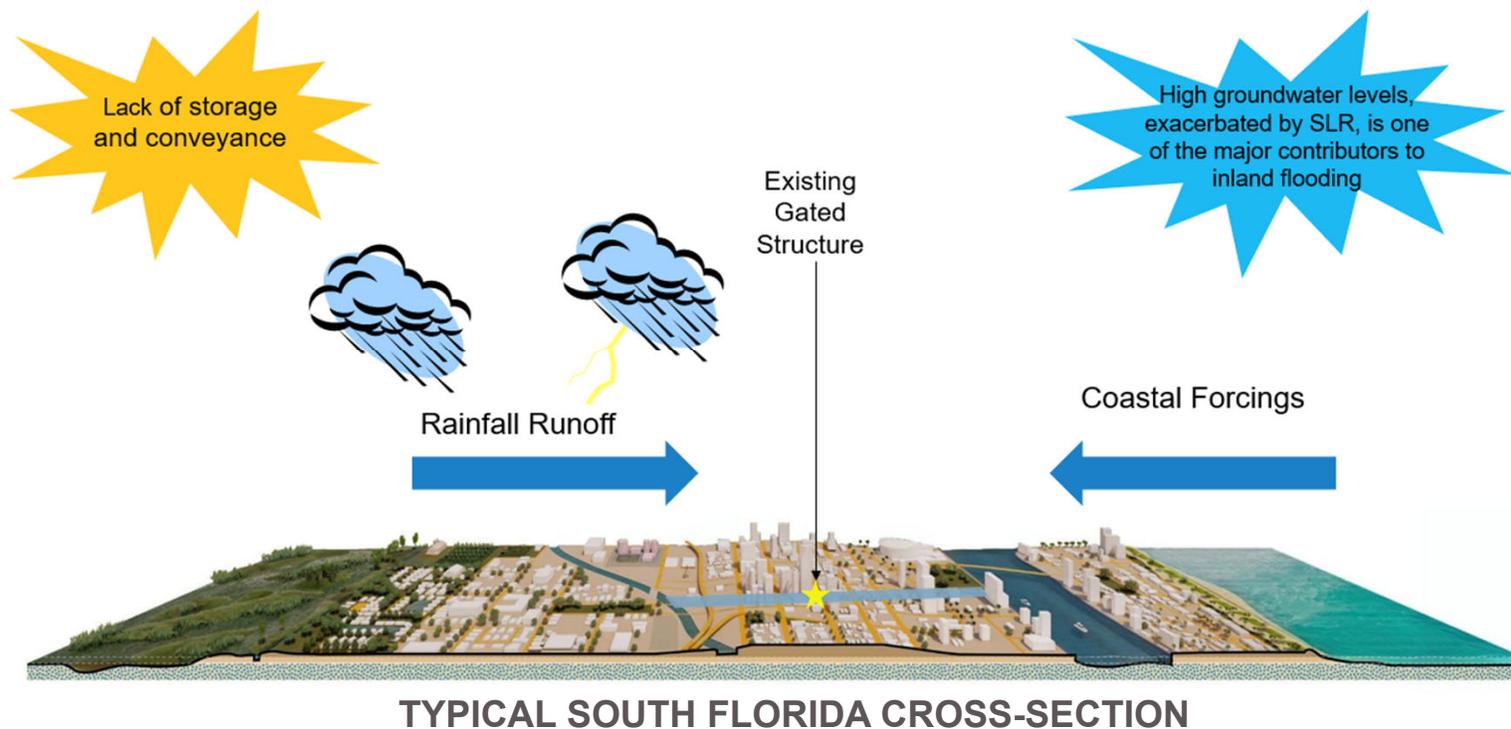
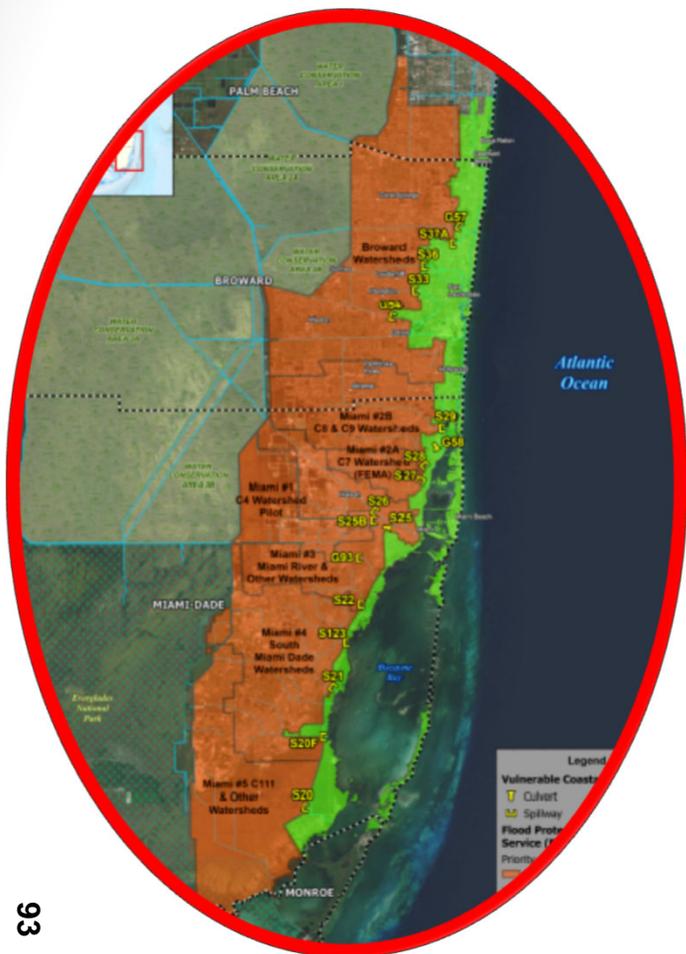
C&SF FLOOD RESILIENCY STUDY

FOCUSED SCOPE



Project Area

- Focus on the **highly vulnerable infrastructure including salinity control structures and associate primary canals** that can reduce the most immediate flood risks
- Lower East Coast – Southern Palm Beach, Broward and Miami-Dade counties.



Green = area downstream of coastal C&SF structures

Orange = area upstream of coastal C&SF structures



C&SF FLOOD RESILIENCY STUDY

WHERE WE ARE AT / NEXT STEPS



Plan Formulation & Modeling Teams:

- Development of assumptions tables to support model development
- Determination of performance metrics and screening criteria

Ongoing efforts and upcoming engagements

- Host sub team PDT meetings with partners (beginning in Sept TBD):
 - Share read-ahead materials
 - Obtain additional data
 - Request concurrence/comments
 - Answer questions
 - Provide updates
- Public Workshops in October (TBD)

Any questions can be submitted to the SFWMD at resiliency@sfwmd.gov or USACE at CSFFRSComments@usace.army.mil



USACE SOUTHEAST FLORIDA PROJECT INTEGRATION

All Projects Under One Umbrella



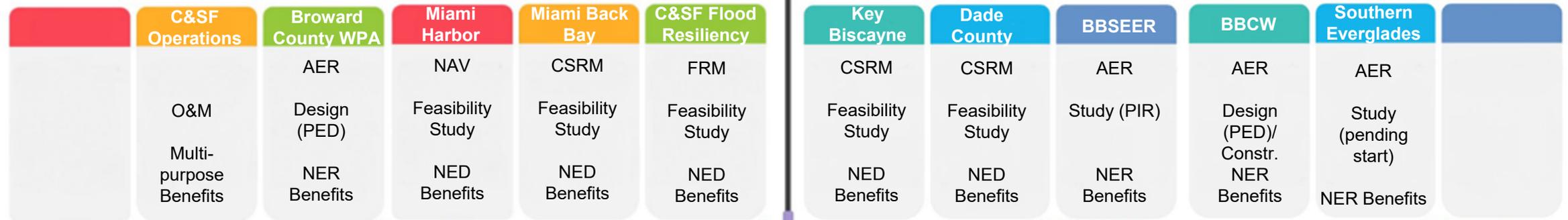
Integration Themes:

- Communication
 - Internal both between teams and with leadership
 - External with sponsors and stakeholders
- Technical
 - During Formulation including model assumptions and known features
 - After Formulation including comprehensive benefits

SAD & NAD

Program Oversight

Project Integration





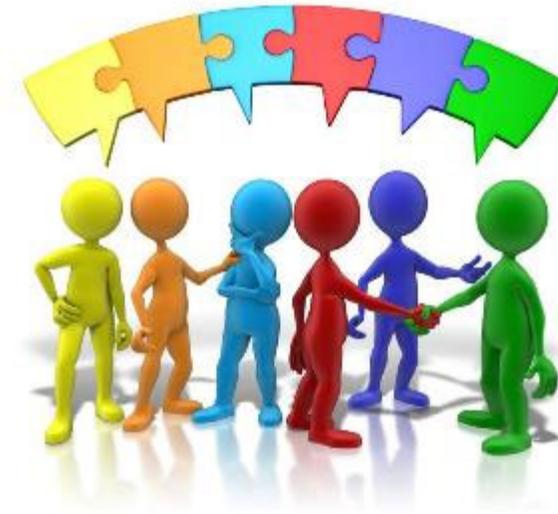
USACE SOUTHEAST FLORIDA PROJECT INTEGRATION

What is Integration?



How do we define project integration in southeast Florida?

- **Coordinate the planning of multiple USACE Civil Works projects across multiple mission areas to ensure functionality of all projects.**



What is successful integration?

- **Projects across multiple mission areas can be implemented and work in coordination to achieve each project's objectives and improve the resiliency of southeast Florida.**



USACE SOUTHEAST FLORIDA PROJECT INTEGRATION

Integration Focus for Studies in Planning Phase Projects Under One Umbrella



Science
Integration/
Adaptive
Management

Sea Level
Change

Future
Without
Project
Conditions

Sharing
Data Across
USACE
Business
Lines

Biscayne Bay & Southeastern Everglades Ecosystem Restoration
Miami-Dade Back Bay
Central & South Florida 216 Resiliency Study
Miami Harbor Improvements

Environmental
Justice

Joint
Project
Modeling
Efforts

Consultation
with other
Federal
Agencies

Comprehensive
Benefits

WE ARE HIRING!

Join the Jacksonville District Team

Seeking to fill multiple positions:

Biologist, Physical Scientist, Program Analyst, Engineers, Geologist, Chemist, Landscape Architect and many more.

Scan the QR Code



Or visit

www.saj.usace.army.mil/NowHiring



US Army Corps
of Engineers®

