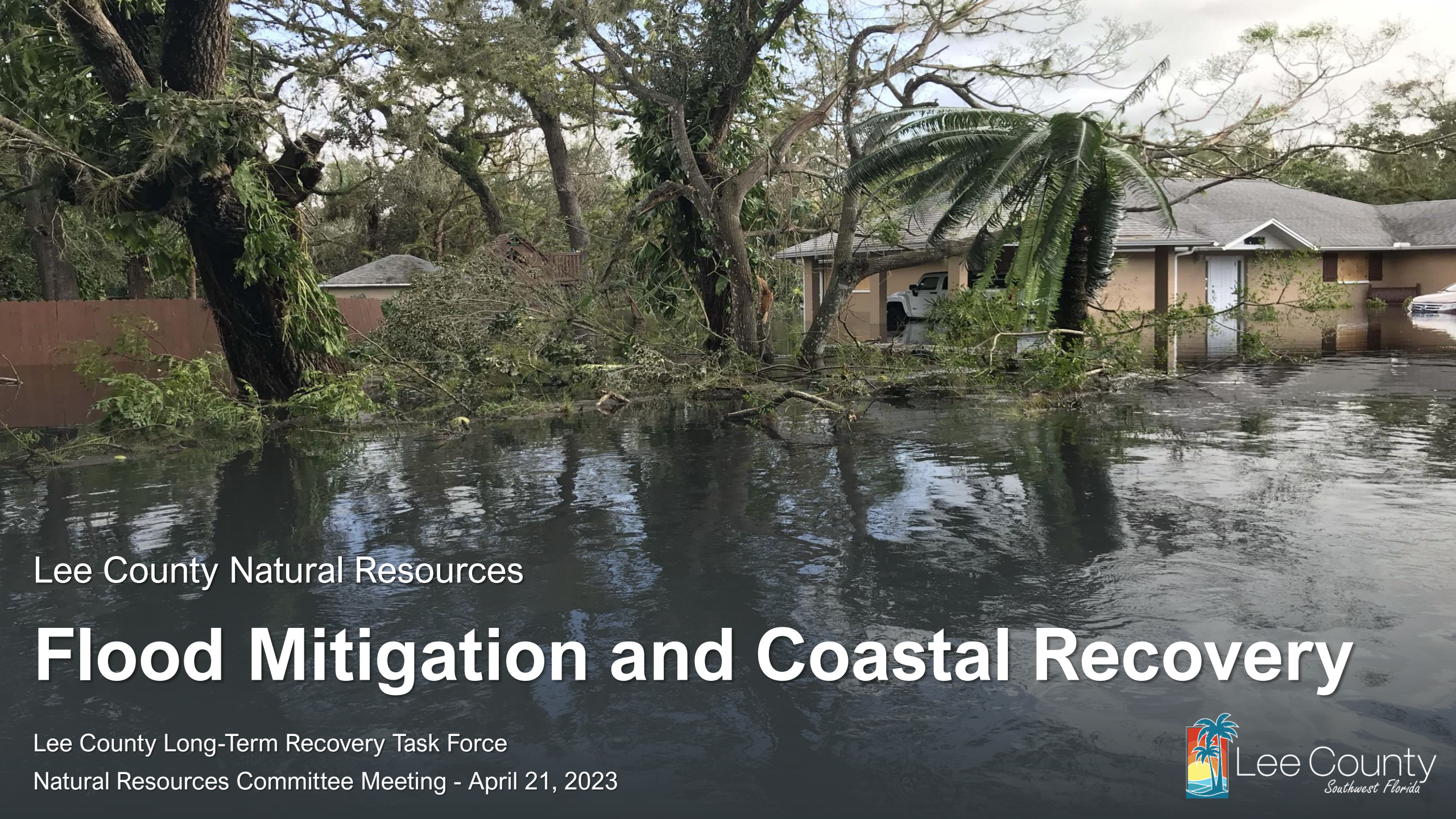




Lee County Natural Resources

# Flood Mitigation and Coastal Recovery

Lee County Long-Term Recovery Task Force  
Natural Resources Committee Meeting - April 21, 2023



# Invest 92L & IRMA 2017

August  
Invest 92L

September  
Hurricane Irma  
Category 2

15" - 30" of Rain within 20 Days

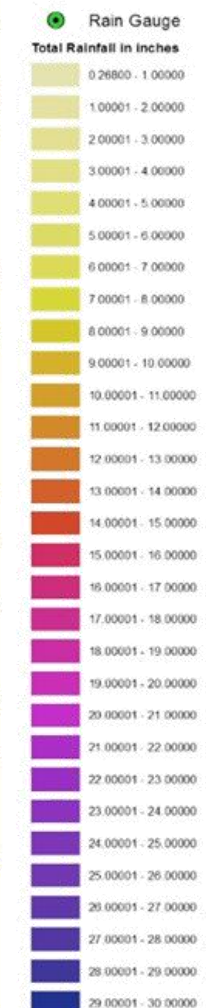
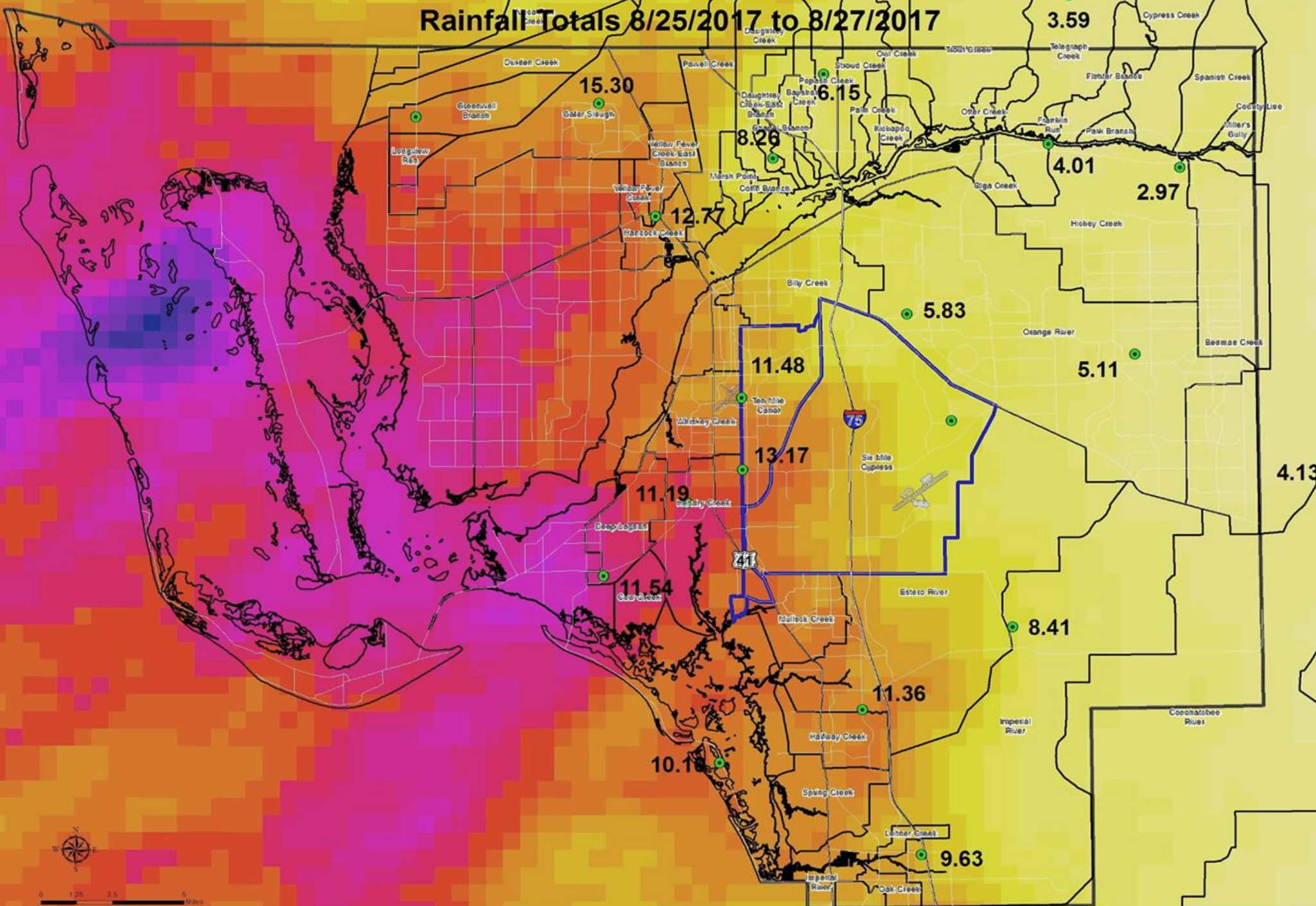
**Phase 1**  
Initial Clearing Flow  
Obstructions

**Phase 2**  
Flood Assessments  
& Remedial Work

**Phase 3**  
Long Term  
Plan



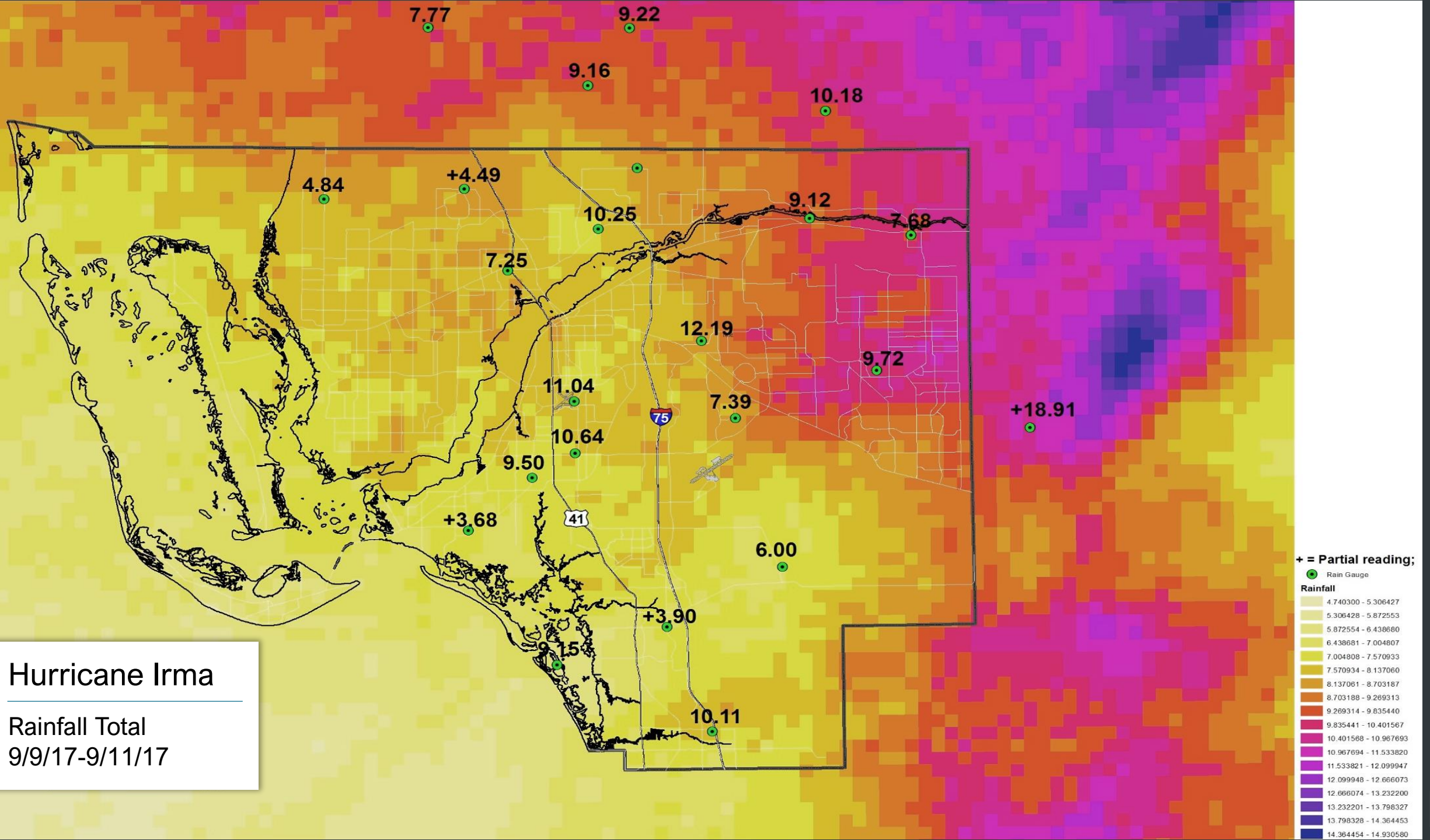
# Rainfall Totals 8/25/2017 to 8/27/2017





# Hurricane Irma

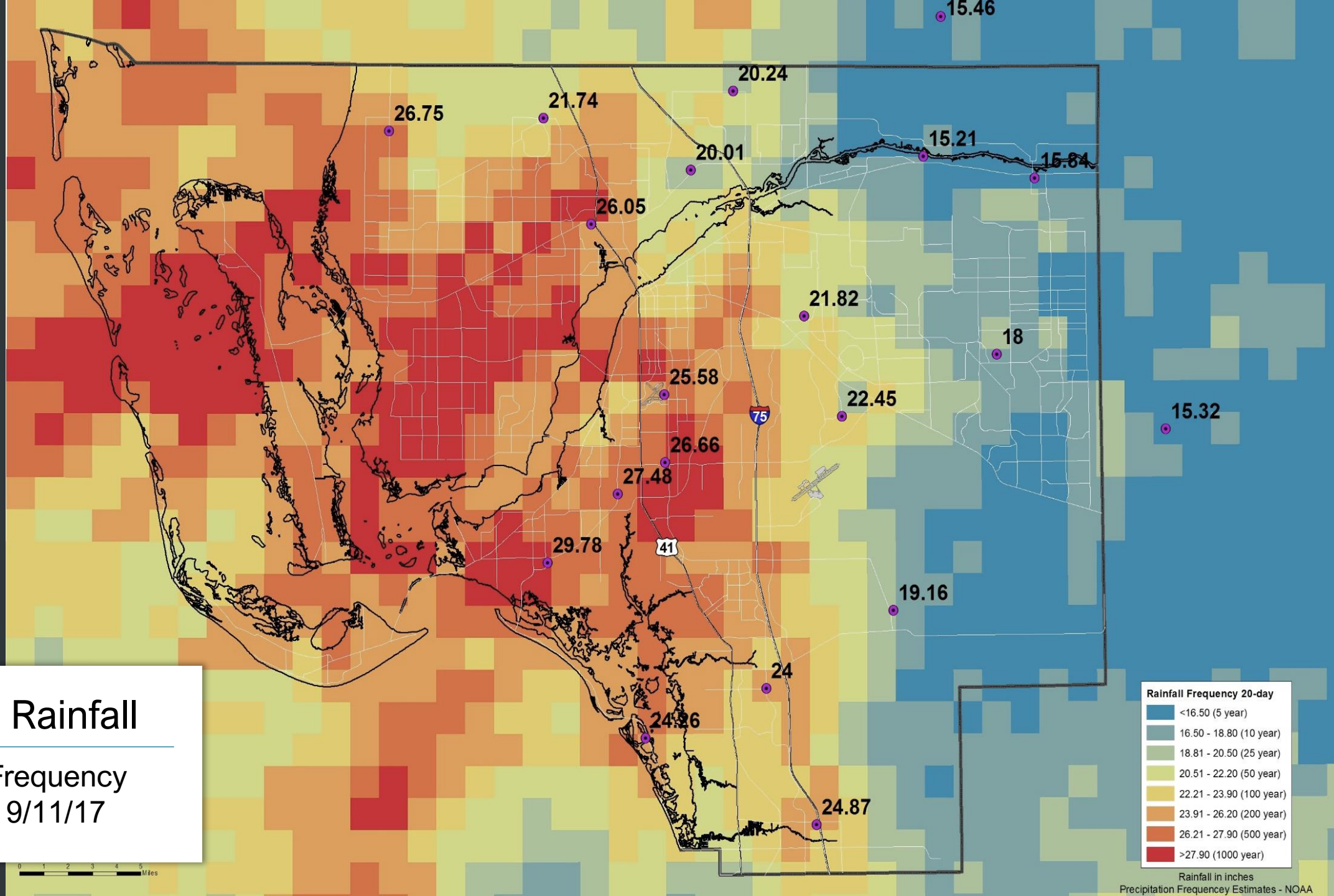
Rainfall Total  
9/9/17-9/11/17





## 20-Day Rainfall

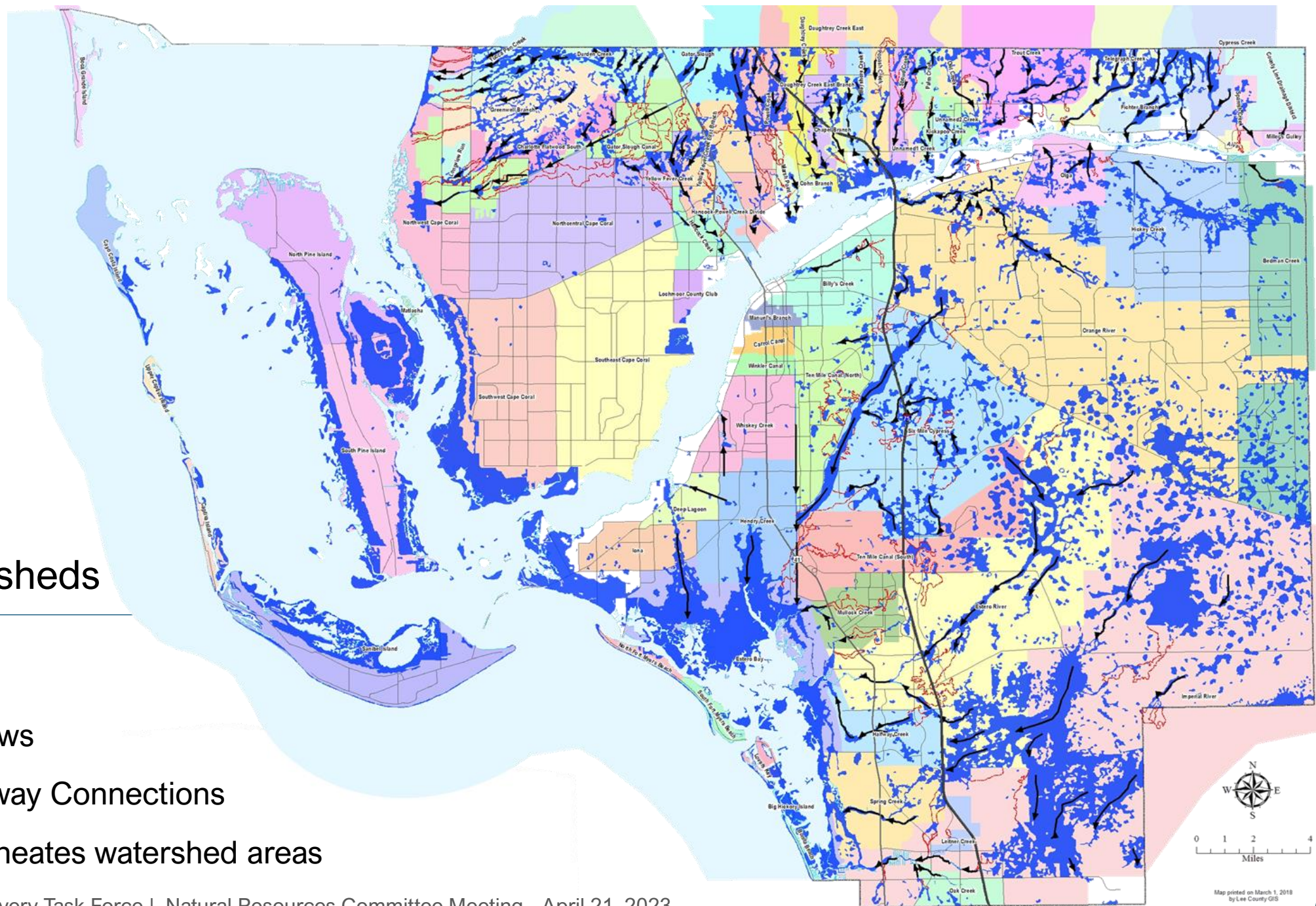
Totals & Frequency  
8/23/17 – 9/11/17





# Lee County Waterways & Historic Watersheds

-  Flowways
-  Flowway Arrows
-  Historic Flowway Connections
- \*Shading delineates watershed areas





## Post-Irma Maintained Creeks & Watercourses

(Completed & In-Progress)

### Lee DOT & Natural Resources

- Natural Creeks Exotic Vegetation
- Blockages Clean & Snag

### South Florida Water Management District

- Cooperative Agreement 10/2018
- Maintain 13 Lee County Waterways

- Lee DOT
- Lee Natural Resources
- SFWMD



10/29/2020





# PHASE 3: THE LONG-TERM PLAN



## Establish

Plan to Reduce  
Flooding on  
Larger Regional  
Scale

## Examine

Conceptual  
Projects

Future Build-out  
Conditions

## Evaluate

Current Flood  
Protection  
Regulations;  
Coordinate  
Findings With  
SFWMD

## Collaborate

SFWMD, Water  
Control Districts  
& Cities



# Expectations



Major tropical activity



Extraordinary events: Invest 92L & Irma



Overall land grade is very flat



Historic flow patterns relied on large expanses of floodplain



Tide & storm surge effects ability to drain

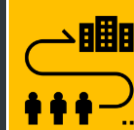


Cannot “flood proof” all property

# Priorities



Focus: Mitigate flood intrusion into homes



Evacuation & collector routes to provide safe passage





# ANALYSIS & PROJECT DEVELOPMENT

## 4 Regional Watersheds

### Complex Hydrologic Model

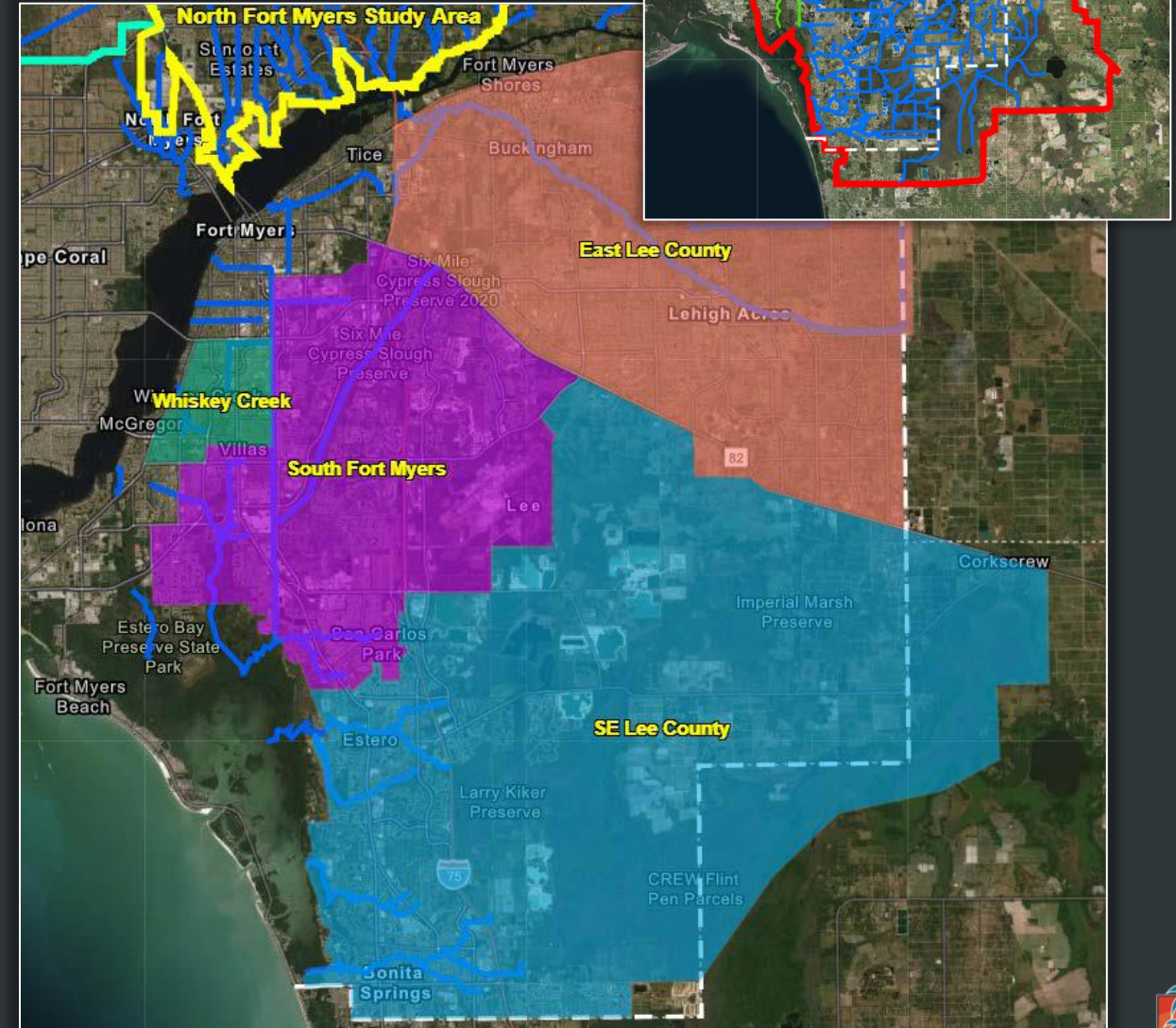
Examined existing conditions & proposed conditions with **conceptual** projects in-place: flood levels & duration

### Types of Projects

- Storage
- Conveyance/ Bypass
- Structure replacement

Evaluated Individually & as a System

**38 Conceptual Projects**





# BRANTLEY – DOVER CANAL IMPROVEMENTS

## Project Description:

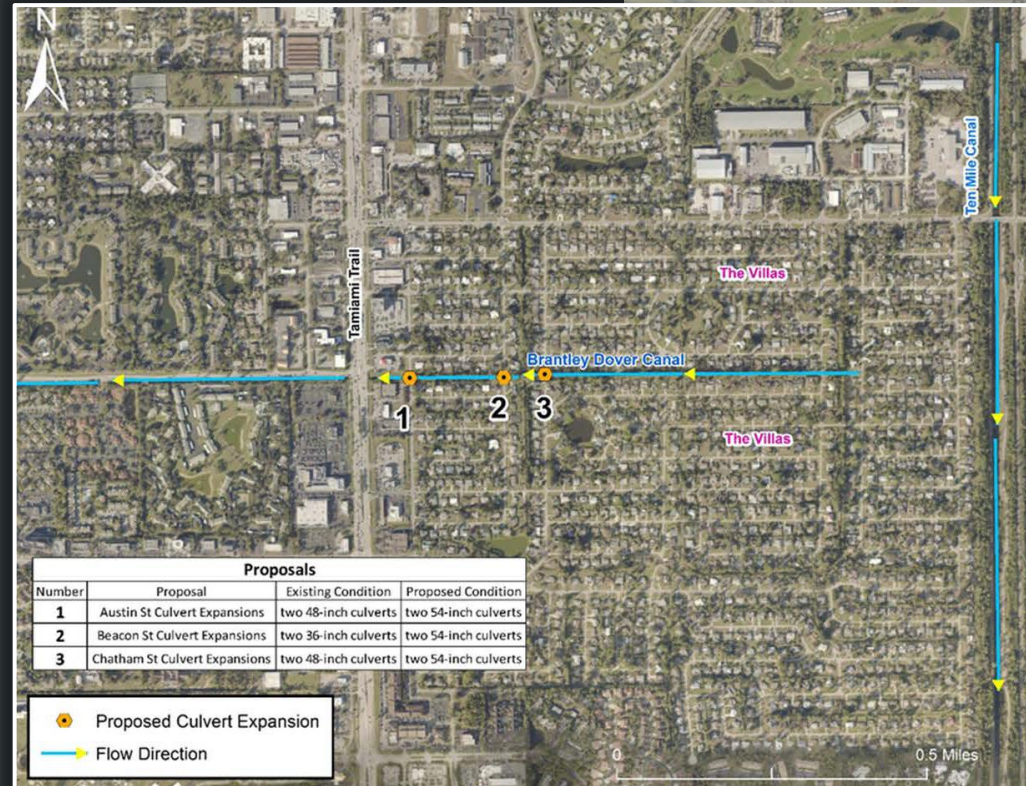
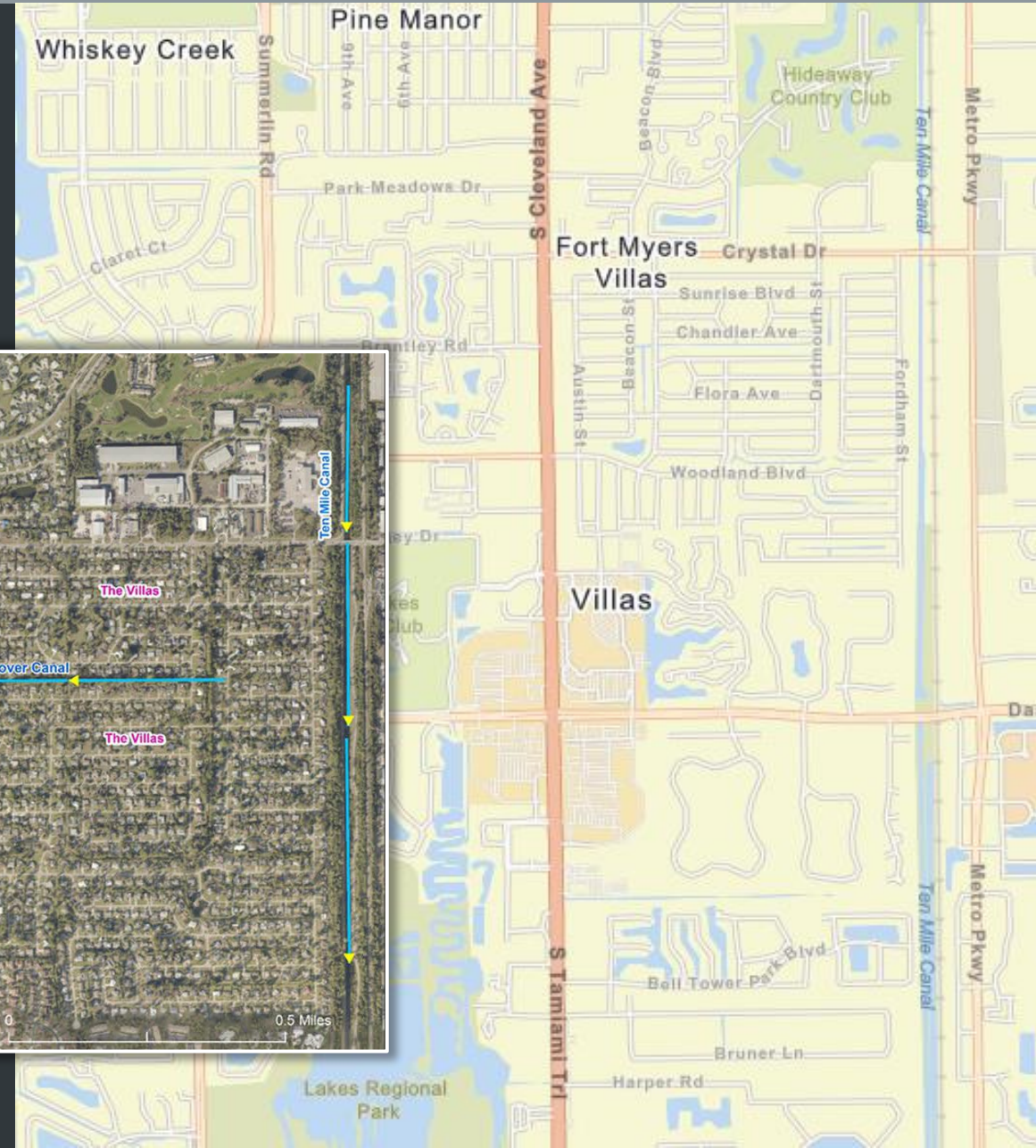
- Flood Mitigation
- Install larger culverts at 3 crossings along canal upstream of Tamiami Trail

## Estimated Project Cost:

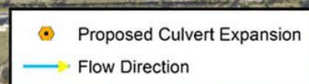
- \$400,000

## Funding Source:

- Capital Improvement Fund



| Proposals |                               |                      |                      |
|-----------|-------------------------------|----------------------|----------------------|
| Number    | Proposal                      | Existing Condition   | Proposed Condition   |
| 1         | Austin St Culvert Expansions  | two 48-inch culverts | two 54-inch culverts |
| 2         | Beacon St Culvert Expansions  | two 36-inch culverts | two 54-inch culverts |
| 3         | Chatham St Culvert Expansions | two 48-inch culverts | two 54-inch culverts |





# KIKER PRESERVE

## Project Description:

- Flood Mitigation, Water Conservation, Water Quality
- Create storage & manage stormwater flows in the Crew-Flint-Kiker Preserve area
- Perimeter berm and remotely operated weir gates

## Estimated Project Cost:

- \$83,000,000

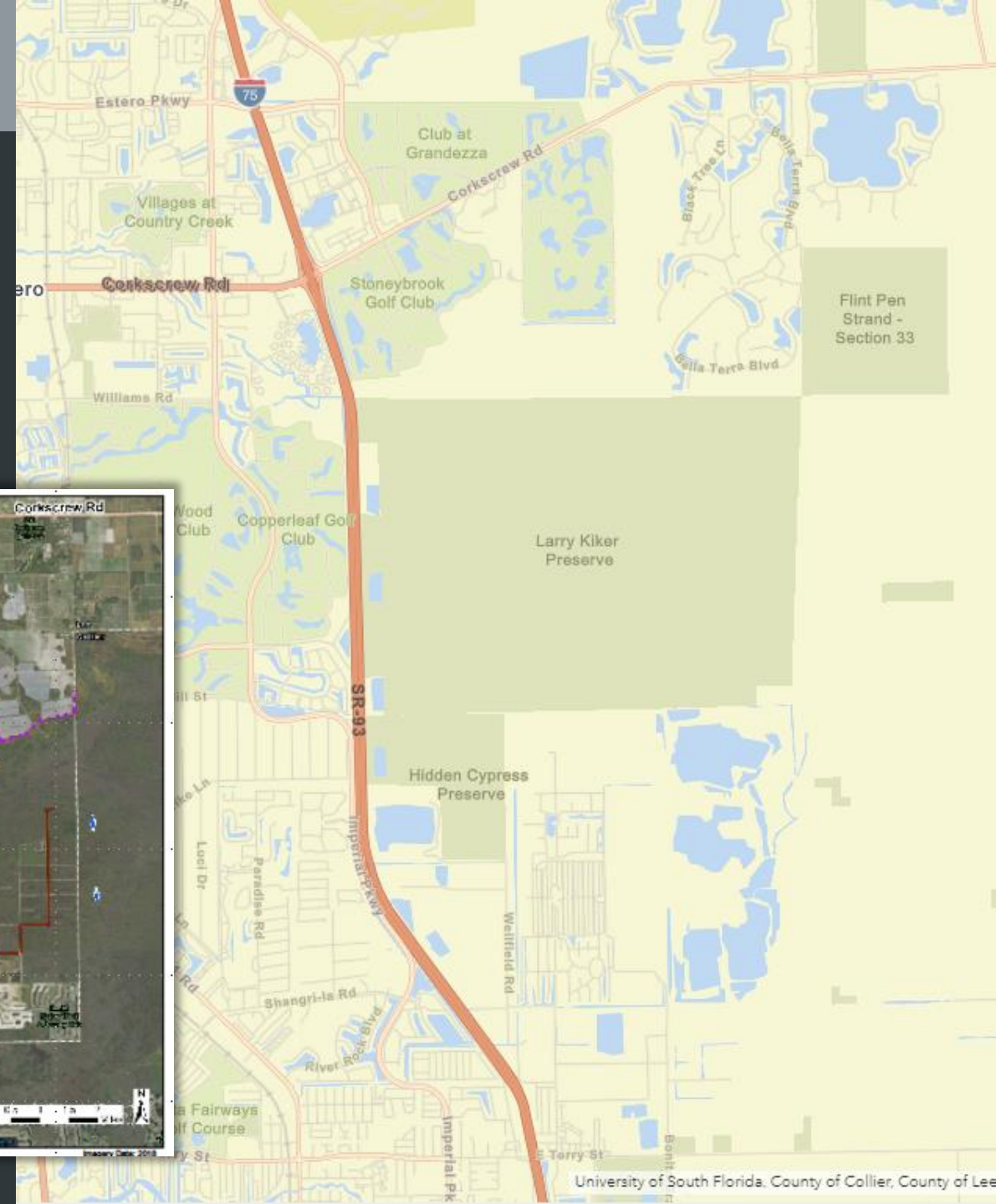
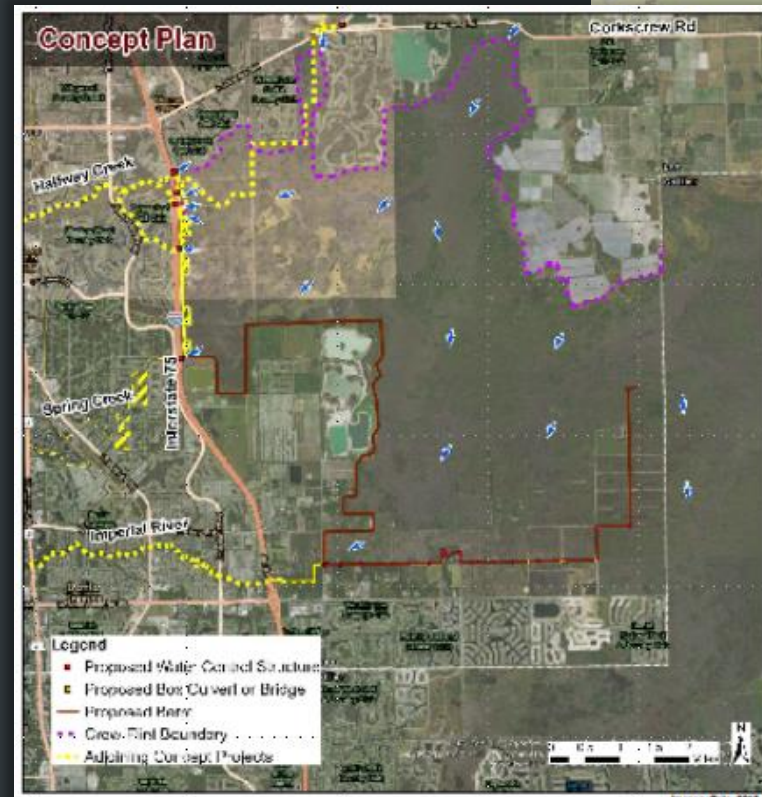
## Funding Source:

- General Fund Capital
- Grant Potential

13



Lee County  
Southwest Florida





# SIX MILE CYPRESS SLOUGH SOUTH

## Project Description:

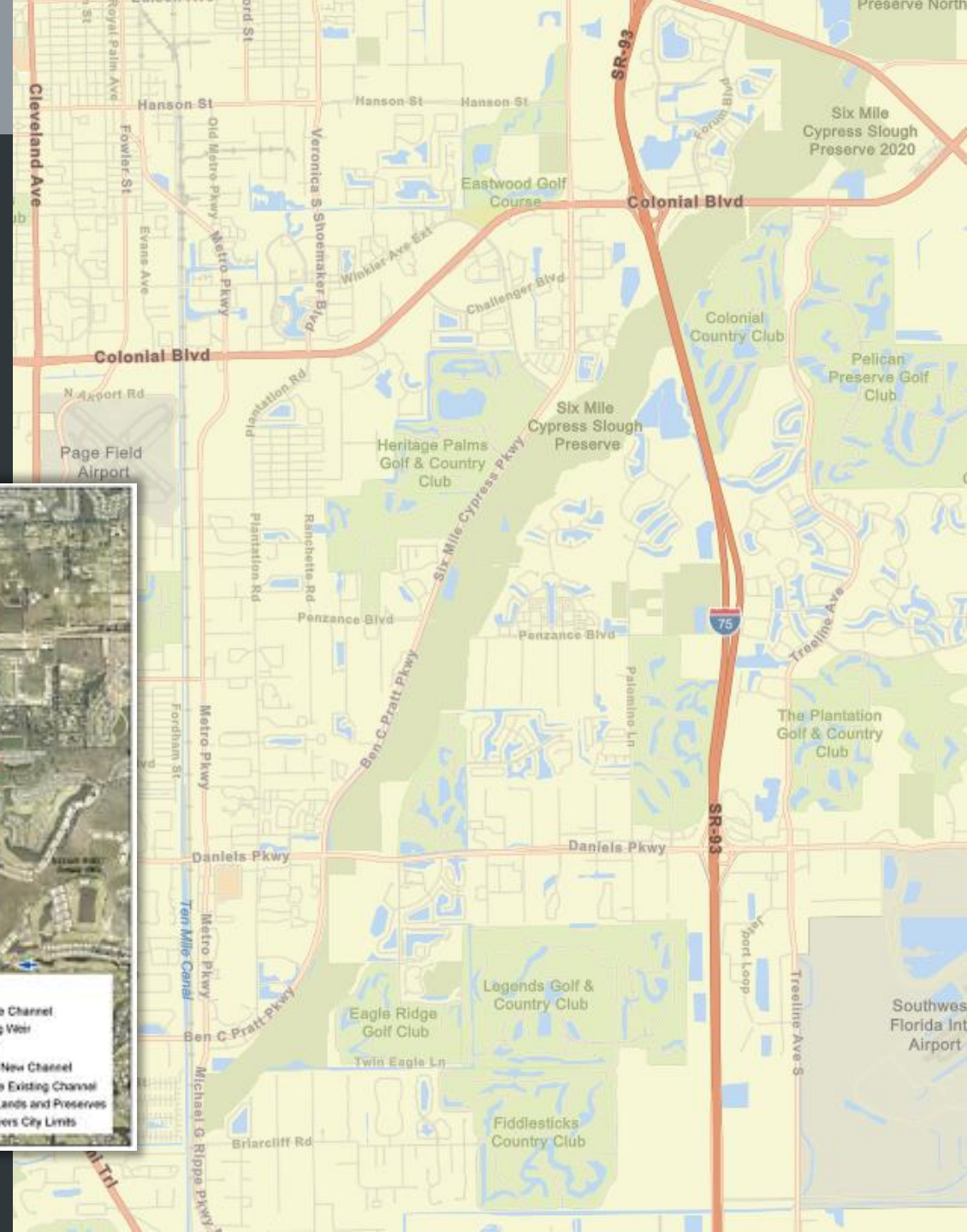
- Flood Mitigation
- Improve flow-way connection & management capabilities between Ten Mile Canal & Six Mile Cypress Slough along north side of Daniels Rd.

## Estimated Project Cost:

- \$2,200,000

## Funding Source:

- Capital Improvement Fund
- Grant Potential





# GS-10

## Project Description:

- Flood Mitigation
- Water Quality
- Water Conservation

## Estimated Project Cost:

- \$12,000,000

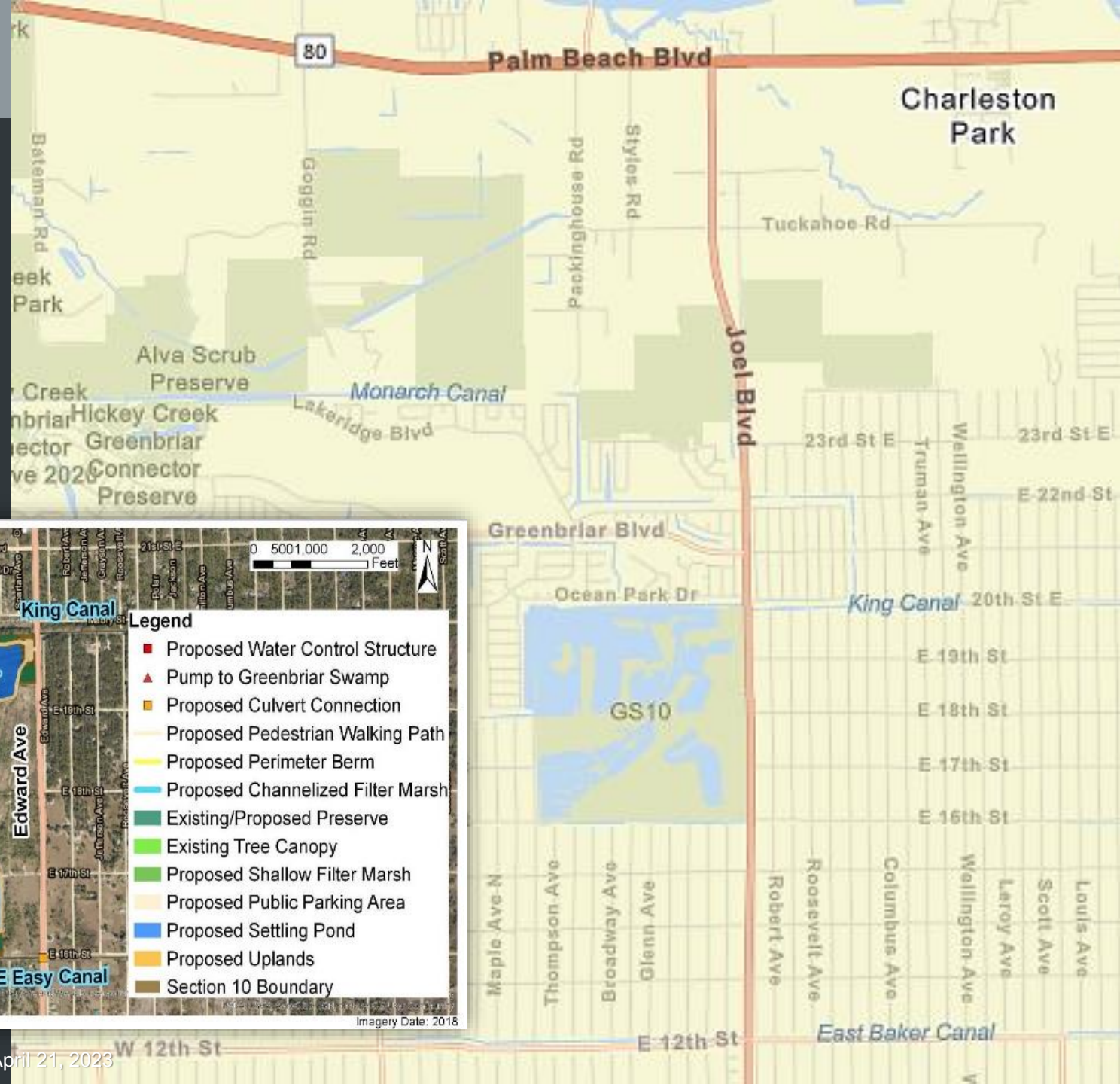
## Funding Source:

- LAMSID
- Grant Potential

15



Lee County  
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# TEN MILE CANAL SOUTH (b) (ISLAND PARK)

## Project Description:

- Flood Mitigation
- Restore Ten Mile Canal west berm - Island Park Road area
- Improve conveyance capacity, south of US41

## Estimated Project Cost:

- \$47,710,000

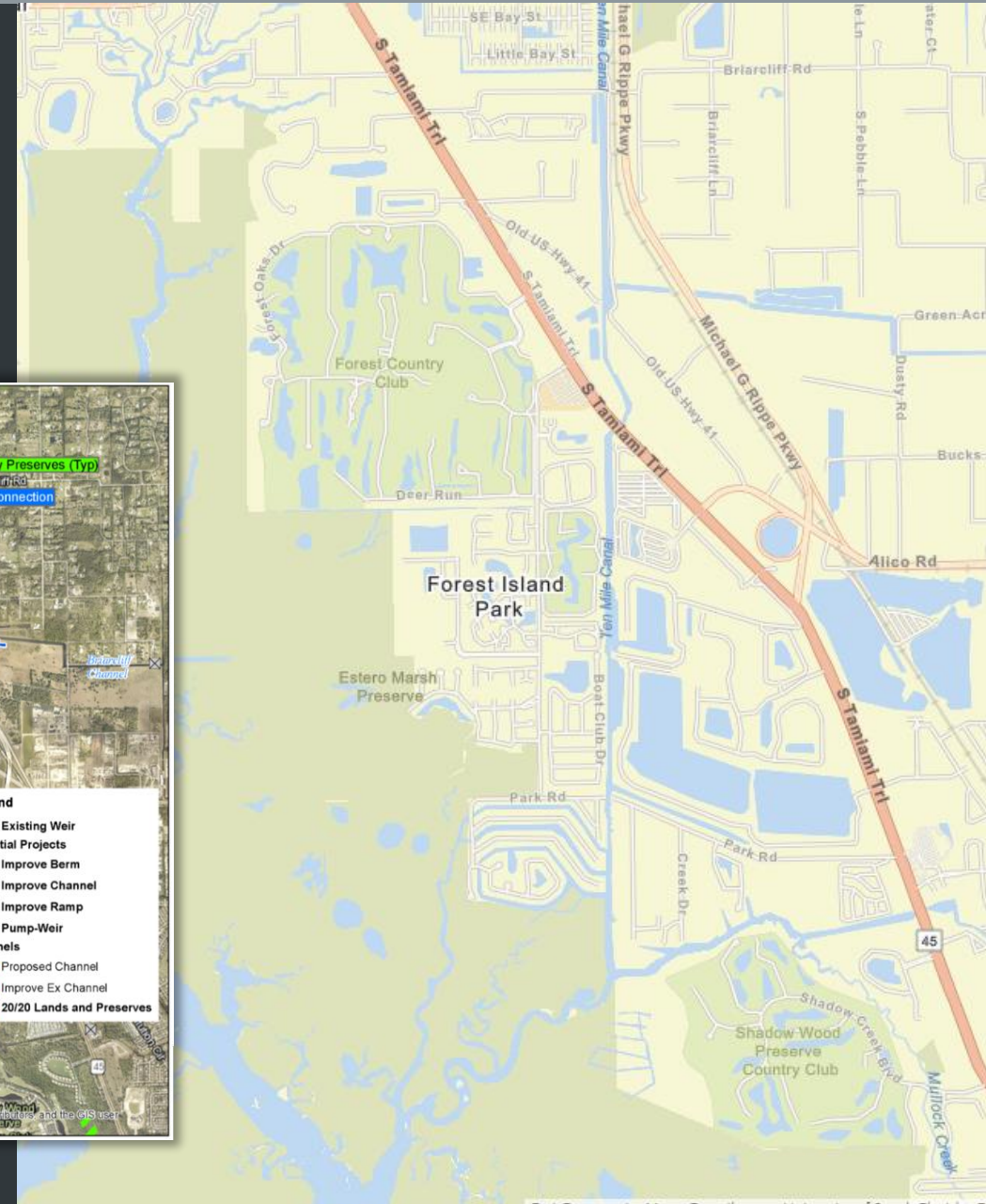
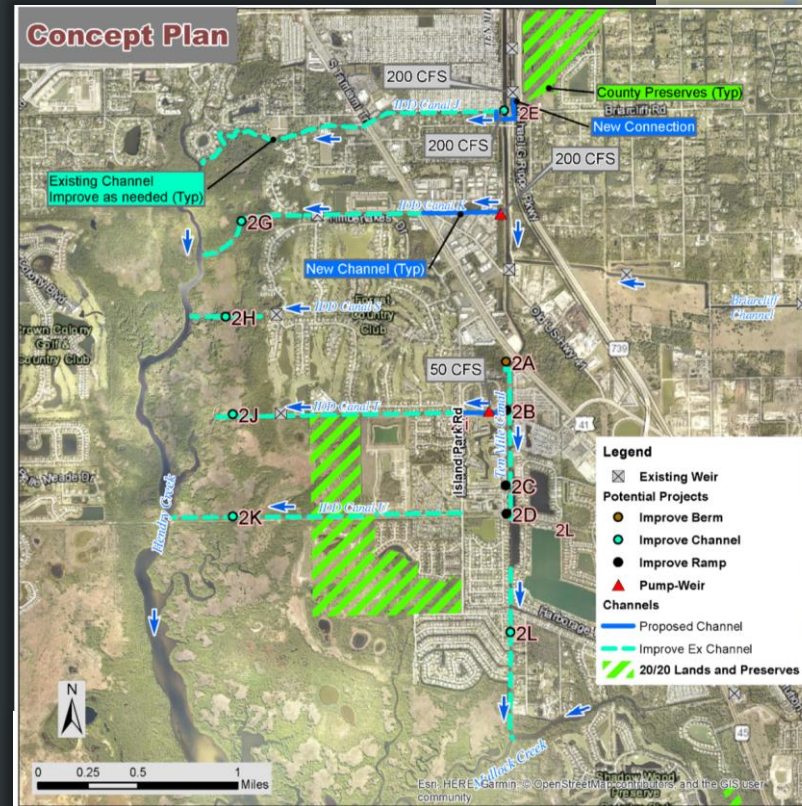
## Funding Source:

- Capital Improvement Fund
- HMGP
- SFWMD



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Lee County  
Southwest Florida





# Ian Response

Not a significant rainfall event

Most flooding due to tidal surge

Winds and surge left downed trees, debris, other restrictions in waterways

State mission requests

NRCS EWP

Legislative Requests

HMGP Grant Funds





# FDEM Vessel & Marine Debris Missions

| WET DEBRIS                        |                               |                           |             |
|-----------------------------------|-------------------------------|---------------------------|-------------|
| 570,000<br>Cubic Yards<br>Removed | 614<br>White Goods<br>Removed | 58<br>Crews<br>Operating  |             |
| WATERWAY<br>VESSELS               |                               | UPLAND<br>VESSELS         |             |
| 240<br>Removed                    | 301<br>Total                  | 30<br>Removed             | 81<br>Total |
| SHRIMP<br>TRAWLERS                |                               | WETLAND<br>VESSELS        |             |
| 32<br>Refloated                   | 6<br>Demolished               | 91<br>Under Investigation |             |





# Beach Impacts and Recovery

**47 Miles**  
Gulf Beaches

**35 Miles**  
Major Beach And Dune

**4 Miles**  
Minor Beach Erosion

**6 Miles**  
Minor Beach / Dune Erosion

**1 Miles**  
Moderate Beach / Dune  
Erosion

**\$118M**

Countywide Erosion Damage

✓ Overwash Sand  
Sifted / Returned on  
Captiva, Sanibel, Fort  
Myers Beach &  
Bonita Beach

✓ Reducing Costs By  
Coordinating Projects  
✓ Anticipate USACE,  
FEMA, And State  
Funding

✓ \$17.4M Covered  
By Planned Project  
Budgets

✓ \$28.1M Awarded  
From Gov & Special  
Session

✓ \$20.5M Minimum  
Need Remaining

- Legislative Requests Pending
- FDEP Recovery Plan In Governor & Legislative Budget Proposals
- FDEP Beach Management Funding Assistance Program





140 Miles  
Natural Creeks, Streams, And County-  
maintained Canals

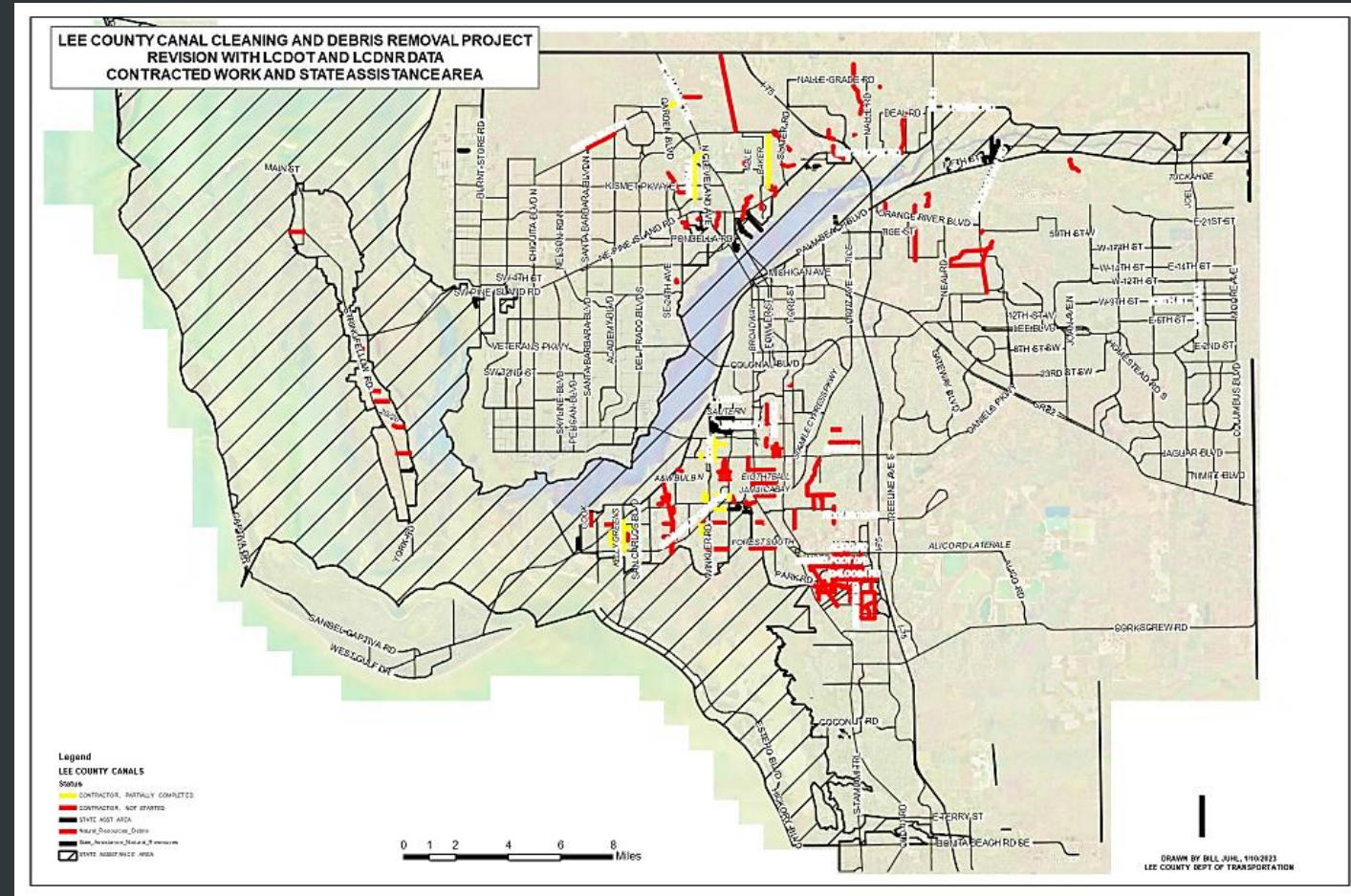
Balance Including Tidal Waters Part Of  
State Mission

FEMA Directed Funding Request To  
NRCS

NRCS Conducted Environmental  
Assessments To Confirm Emergency  
Watershed Program (EWP) Eligibility

Lee County Approved Grant  
Agreement with NRCS on April 18,  
2023 for \$18.7m

# Waterway Debris





# Comprehensive Vulnerability Assessment

Complies: Resilient Florida Standards (380.093, F.S.)

Assess Public Critical Assets Countywide:

Transportation, Utilities, Communications, Debris Management, Critical Community & Emergency Facilities

Flooding Model To 2070 Include Surge, SLR, Rainfall, Compound Events

Funded By CDBG-MIT (DEO) & FDEP

Includes Municipalities

Currently Finalizing Scope & Cost

Anticipate Completion 24 Months From NTP

