

# Kissimmee River Restoration Project Update

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**Water Resources Accountability and Collaboration Forum  
West Palm Beach, FL  
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## RUNDOWN

- Project Overview
- Interim Period Ecological Responses (2001-current)
- Construction update (Phase II and III Repairs and S-69 Weir) and current access
- Current and future management challenges (e.g. invasive exotic grasses, prescribed fire, willow, hydrology)



## Kissimmee River Pre-channelization (1950's)



## Channelized Kissimmee River (C-38 Canal)





# APPROACH FOR THE KISSIMMEE RIVER RESTORATION PROJECT

Reconnect, reconstruct  
physical form of the  
river (**Backfilling C-38  
canal and degrading**)

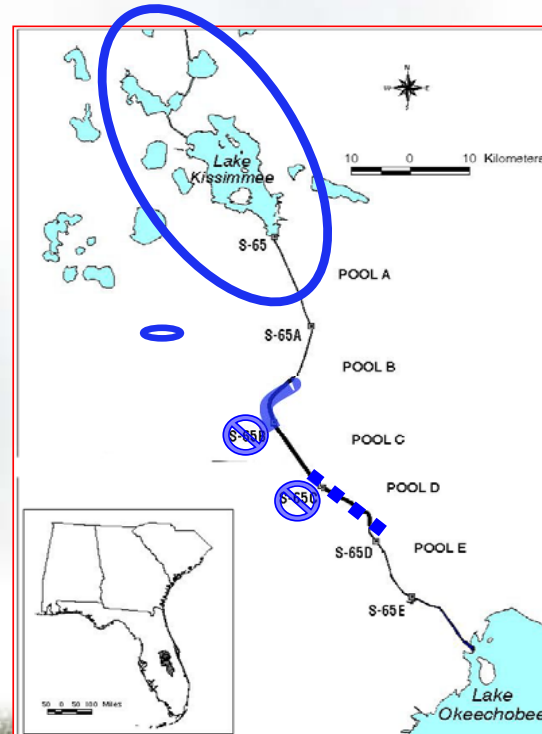
Modify headwater  
inflows to mimic  
historical  
patterns  
(**Headwaters  
Revitalization  
Schedule**)

Restoration of  
ecological  
integrity to  
central region of  
the Kissimmee  
River

# KISSIMMEE RIVER RESTORATION PROJECT

- **50/50 Cost share State/Federal**
  - USACE: Engineering planning and construction
  - SFWMD: Land acquisition and restoration evaluation
- **Backfill 22 miles of C-38 canal**
- **Reconnect 40 miles of river channel**
- **Remove 2 water control structures**
- **Mimic historic inflows (HRS) – 2021?**
- **Restoration Evaluation Program thru 2026**
  - **Evaluate project success**

SGB33331



## Slide 5

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**SGB33331** Mike, restoration evaluation will continue until responses stabilize. Only cost-crediting goes for five years, and that's negotiable.

Bousquin.3333, 3/13/2020

**SGB33332** Also, if 2021 is in doubt, so is anything dependent on it. My suggestion is to just say the projection has a restoration evaluation program. No need to say an end date.

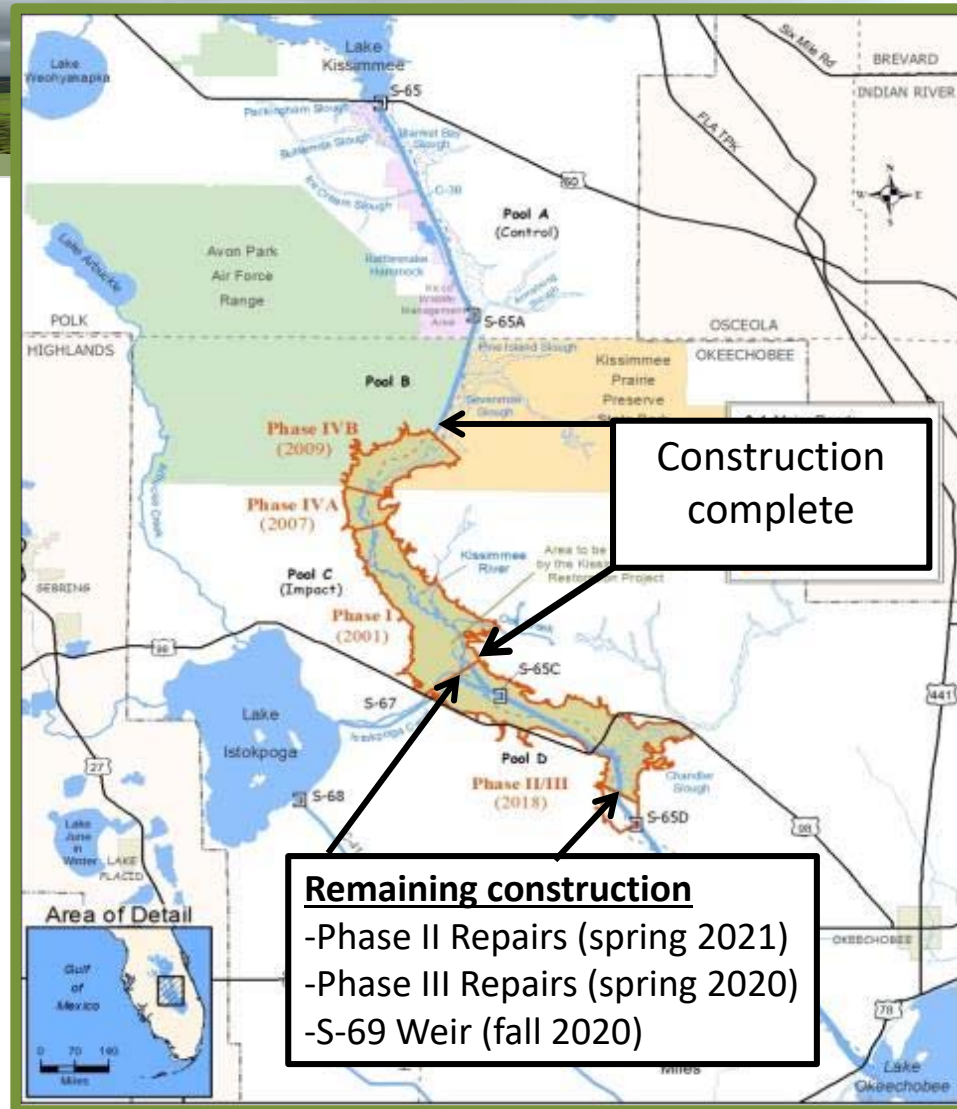
Bousquin.3333, 3/13/2020





## SOUTH FLORIDA WATER MANAGEMENT DISTRICT

RESTORATION  
CONSTRUCTION  
“INTERIM PERIOD”  
(2001-CURRENT)





# COMPREHENSIVE RESTORATION EVALUATION PROGRAM (25 EXPECTATIONS)

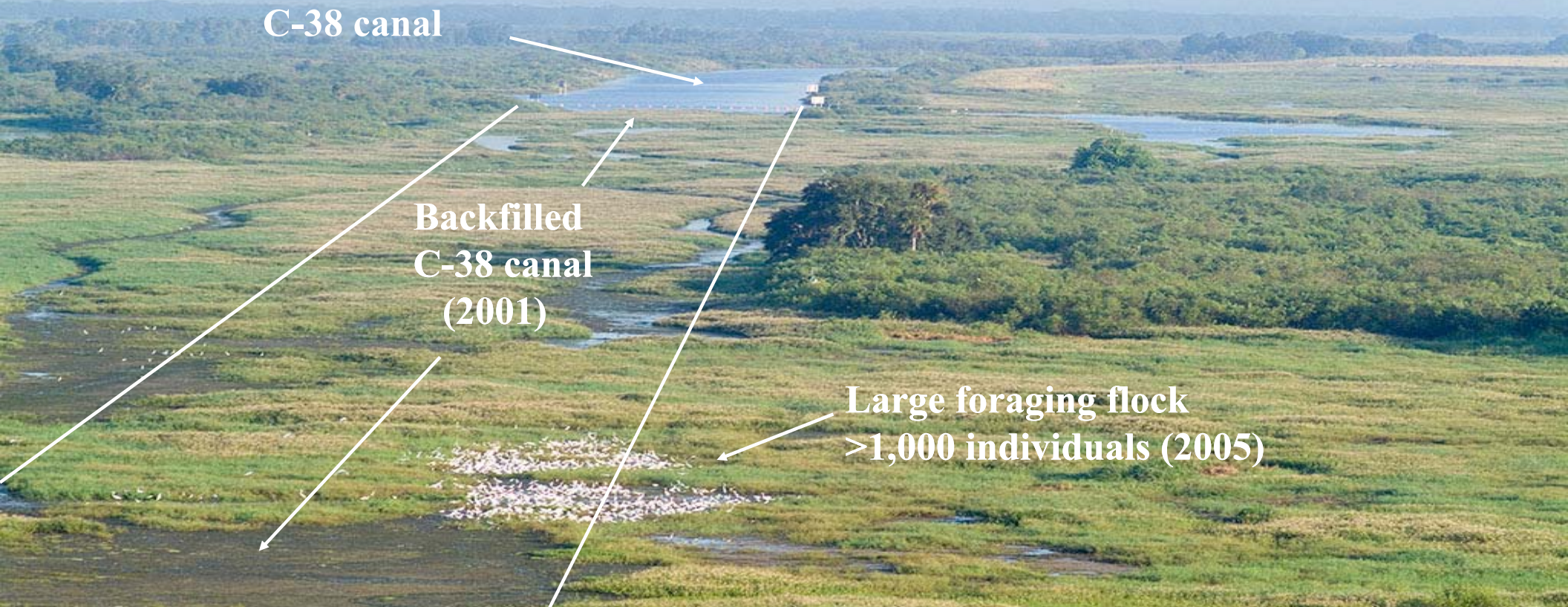
- Hydrology
- Geomorphology
- Dissolved Oxygen & Water Quality
- Plant Communities
- Invertebrate Communities
- Reptile and Amphibian Communities
- Fish Communities
- **Avian Communities**
- Threatened and Endangered Species

## 25 RESTORATION EXPECTATIONS MET?

YES	NO	Unknown (no Interim data)
6	10	9

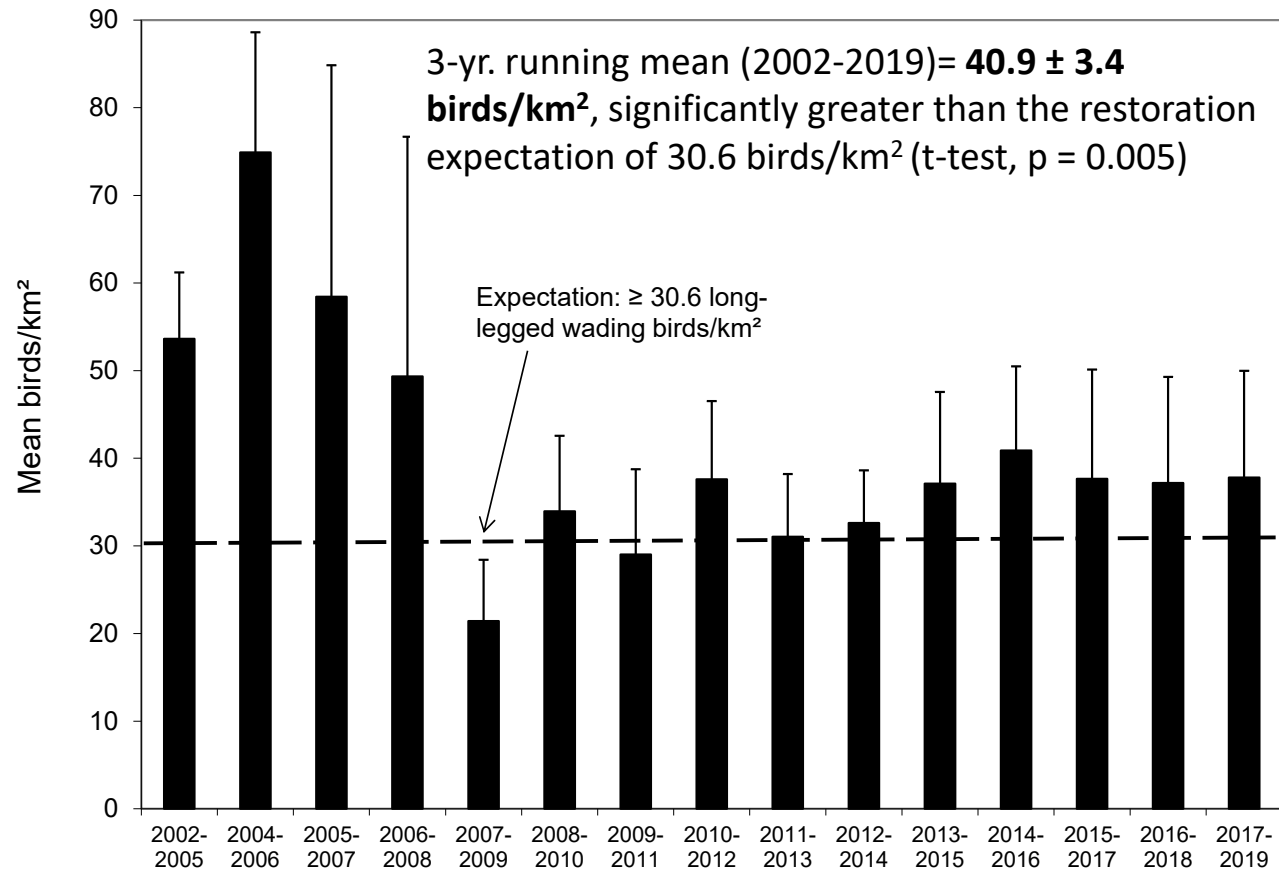


# Kissimmee River Restoration Project (Phase I Area)

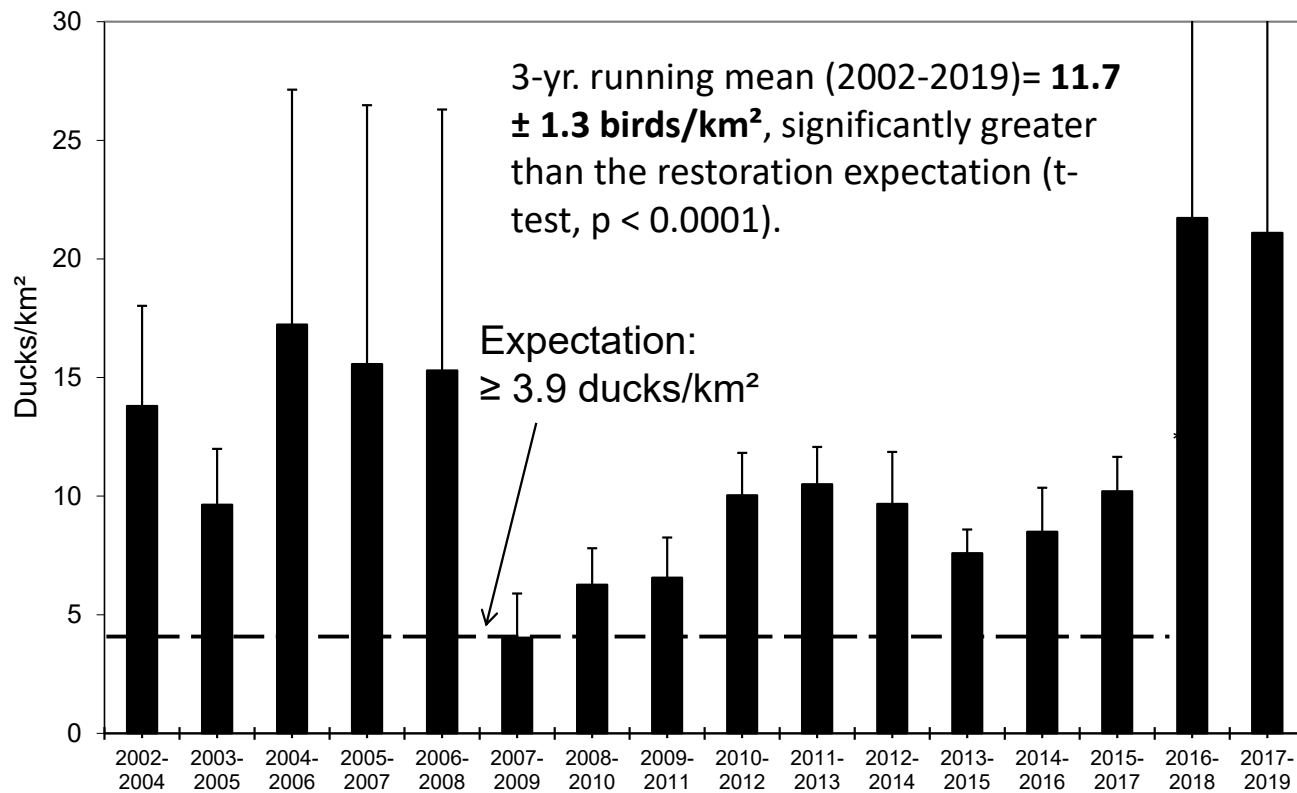




## INTERIM PERIOD 3-YEAR RUNNING MEAN AND RESTORATION EXPECTATION (WADING BIRDS)



## THREE-YEAR RUNNING MEAN RELATIVE TO RESTORATION TARGET (WATERFOWL)





## Initial Waterfowl Response to Restoration

Species	Before	After Phase 1 backfilling
Blue-winged Teal	Yes	Yes
Green-winged Teal	Yes	Yes
Mottled Duck	Yes	Yes
Wood Duck	Yes	Yes
Hooded Merganser	Yes	Yes
Fulvous Whistling Duck	No	Yes
Northern Pintail	No	Yes
Northern Shoveler	No	Yes
American Wigeon	No	Yes
Ring-necked Duck	No	Yes

## Returning Species



## INTERIM PERIOD (2001-2008) BIRD RESPONSE TO PARTIAL RESTORATION

- Not yet reaching waterfowl species richness restoration expectation of  $\geq 13$  spp.
- Only BWTE and MODU regularly seen



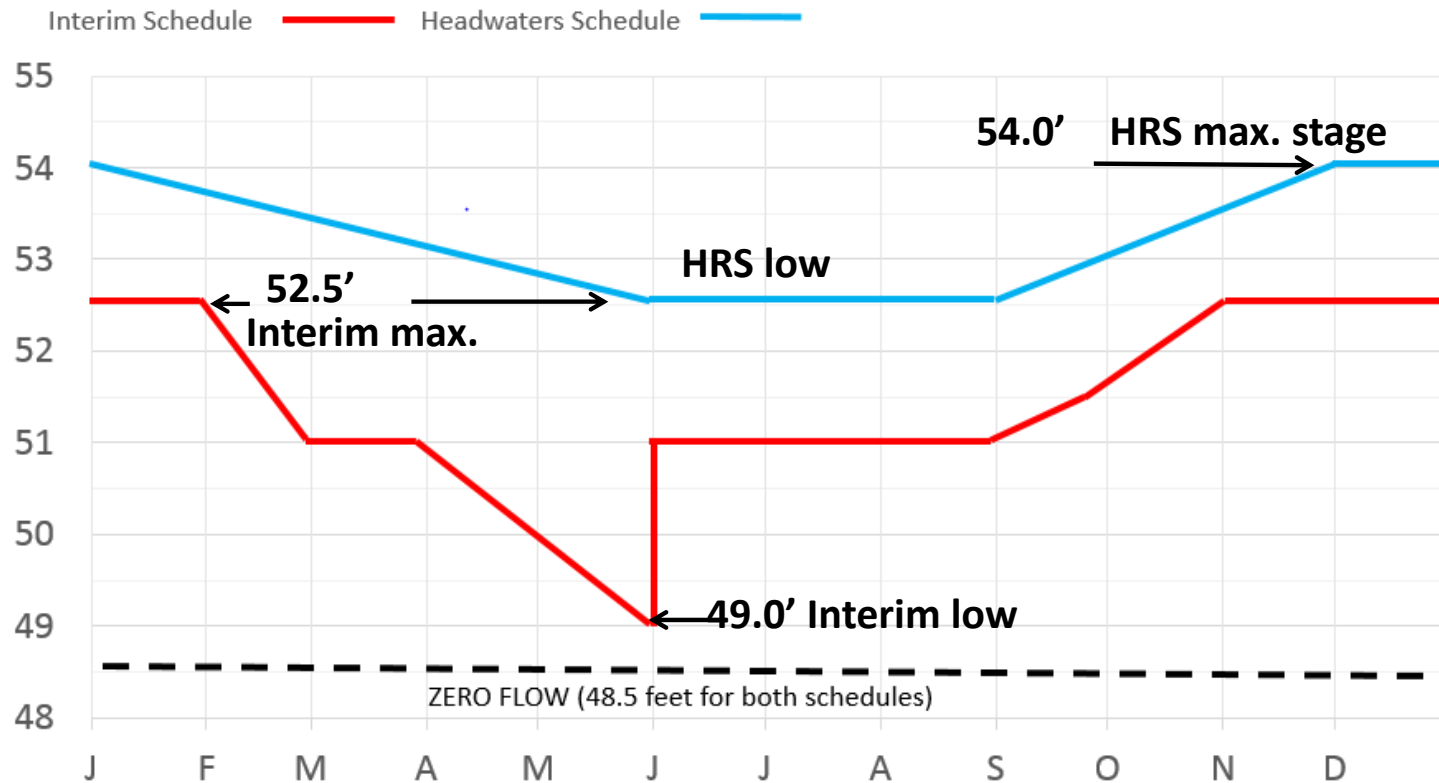


## WHY ARE WE NOT MEETING RESTORATION EXPECTATIONS ANNUALLY?

Hydrologic Restoration has not yet occurred  
Headwaters Revitalization Schedule  
(HRS) is missing link!

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# HYDROLOGICAL RESTORATION INTERIM VS. HEADWATERS REGULATION SCHEDULE @ S65





**AUGUST 19, 2014**  
**DISCHARGE  $\approx$ 2,900 CFS AT S65**



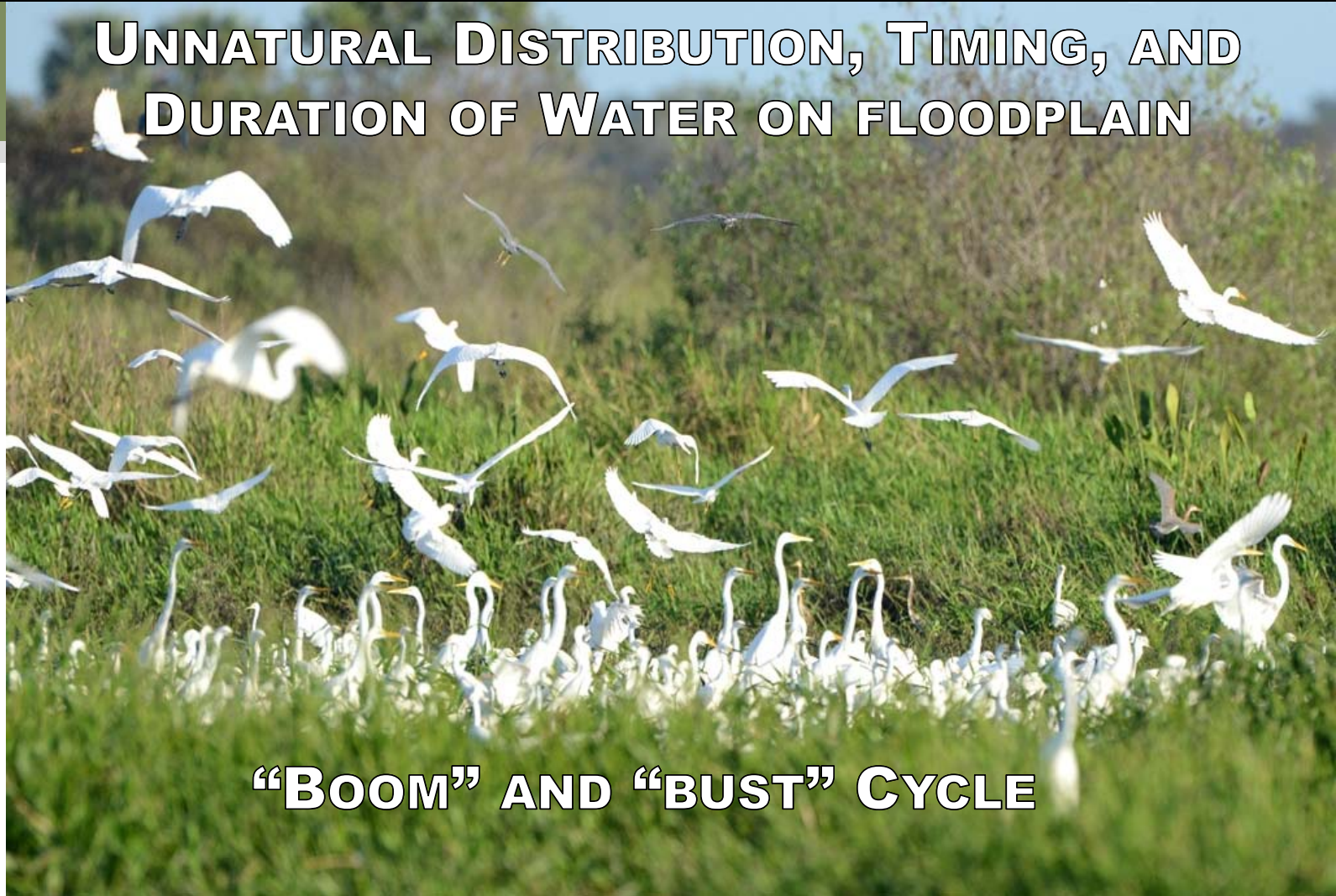
**AUGUST 29, 2014**  
**DISCHARGE  $\approx$ 313 CFS AT S65**  
**11 DAYS LATER**





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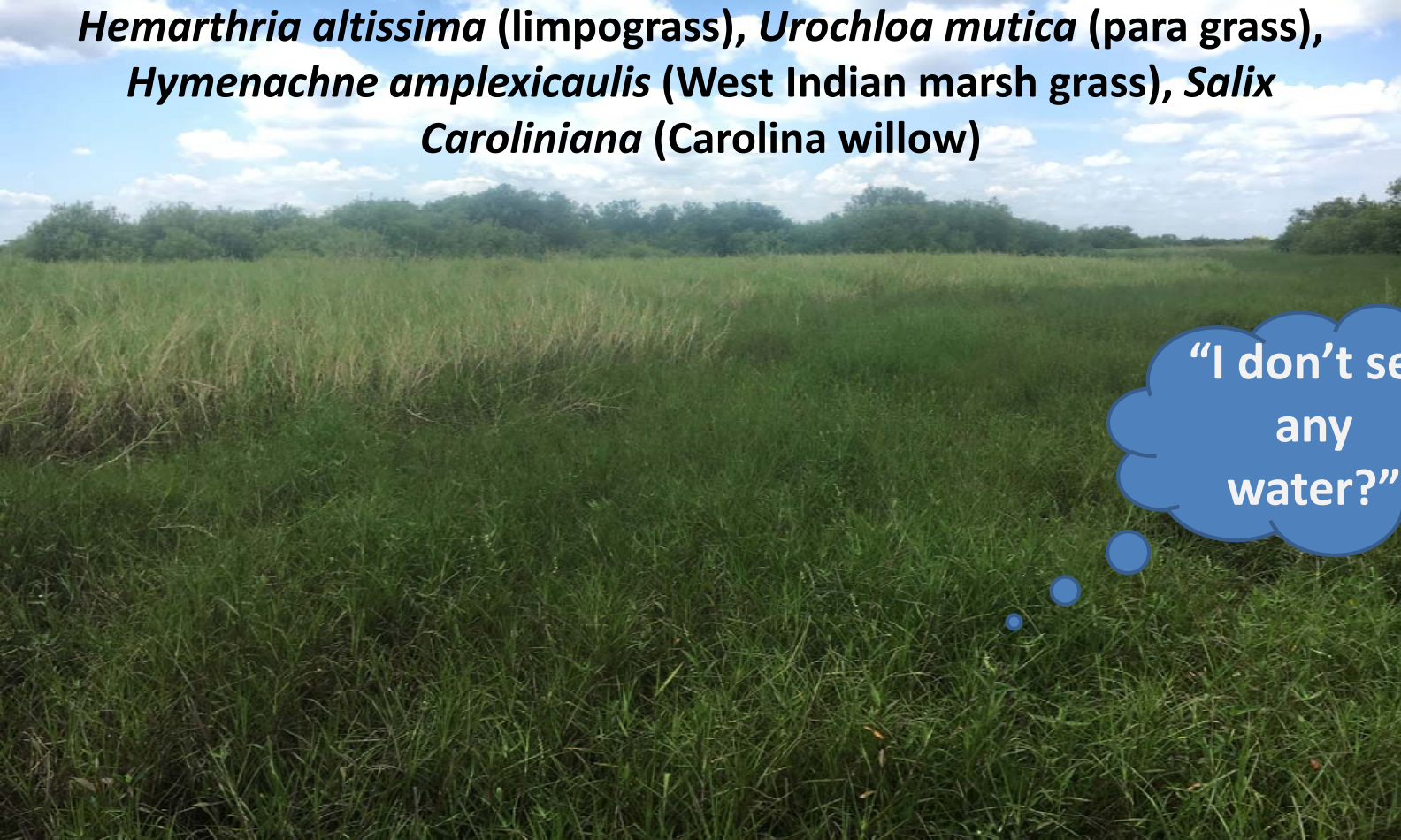
# UNNATURAL DISTRIBUTION, TIMING, AND DURATION OF WATER ON FLOODPLAIN



**“BOOM” AND “BUST” CYCLE**

## DENSE GROWTH OF INVASIVE SPECIES

*Hemarthria altissima* (limpograss), *Urochloa mutica* (para grass),  
*Hymenachne amplexicaulis* (West Indian marsh grass), *Salix*  
*Caroliniana* (Carolina willow)



"I don't see  
any  
water?"



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# WEST INDIAN MARSH GRASS (*HYMENACHNE AMPLEXICAULIS*)



PARA GRASS (*UROCHLOA MUTICA*)  
LIMPO GRASS (*HEMARTHRIA ALTISSIMA*)



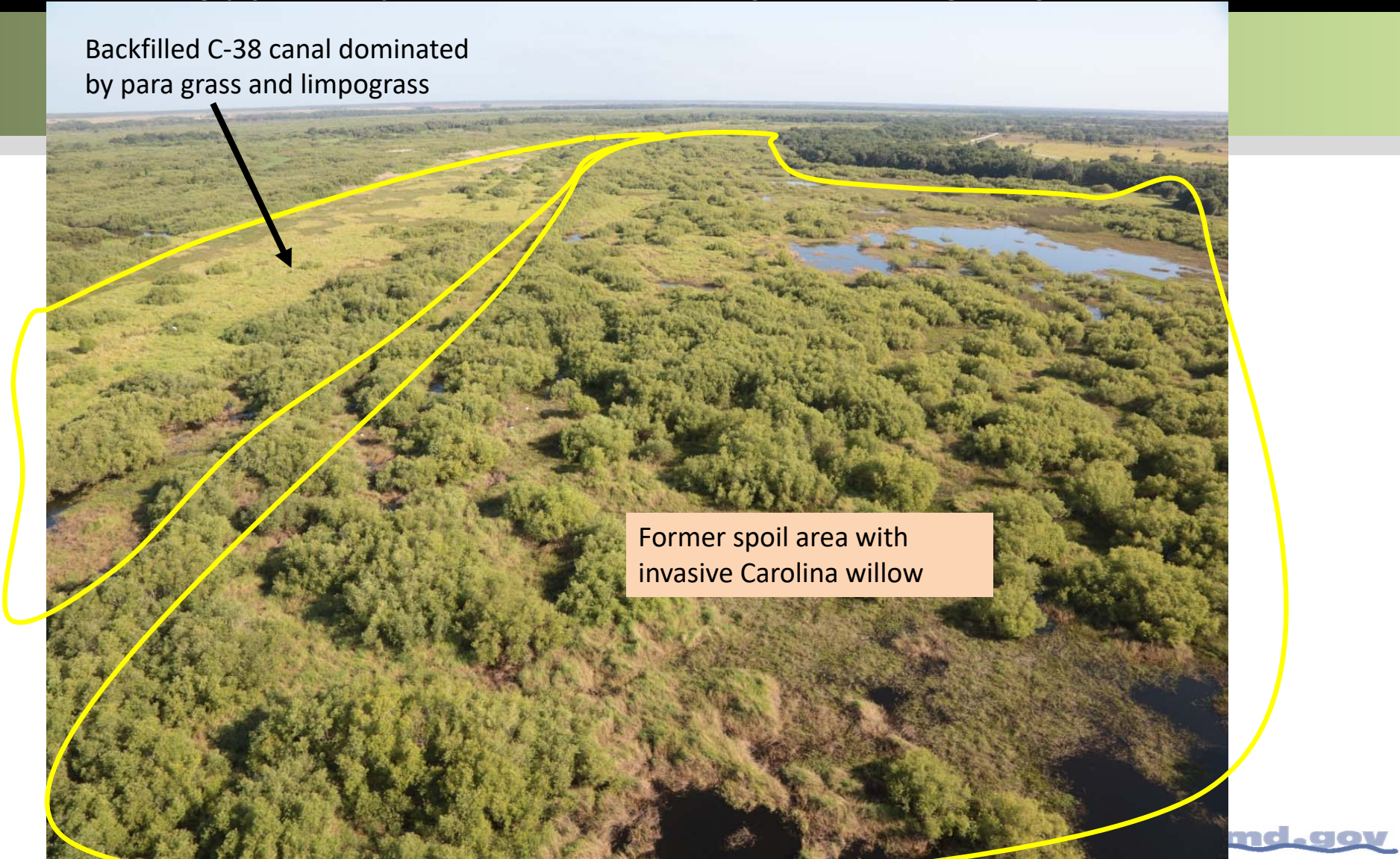


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Backfilled C-38 canal dominated  
by para grass and limpoglass

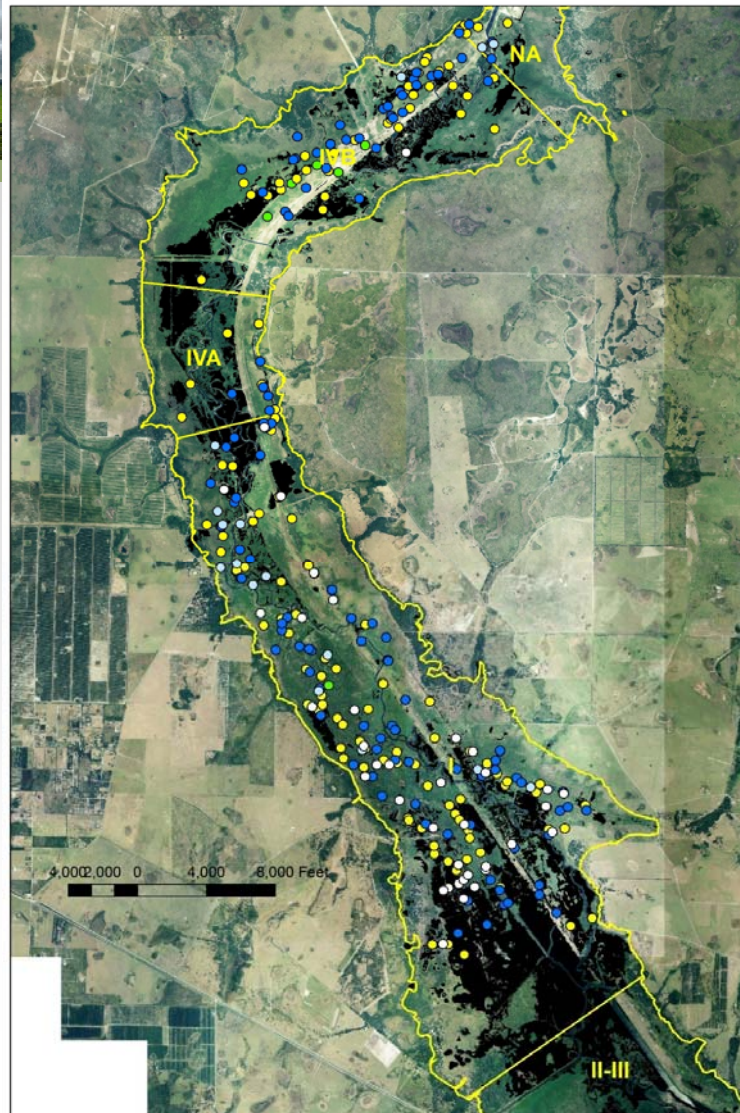


Former spoil area with  
invasive Carolina willow





**Foraging flock  
locations  
2011-2015,  
birds appear to  
avoid dense  
wet shrub and  
dense exotic  
grasses**



# HEMI-MARSH AFTER INITIAL PHASE I *LOOKED GOOD!*





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**PRESCRIBED FIRE EXCLUDED FROM THE  
FLOODPLAIN DURING PAST 16 YEARS...WE'RE  
REINTRODUCING IT AGAIN**

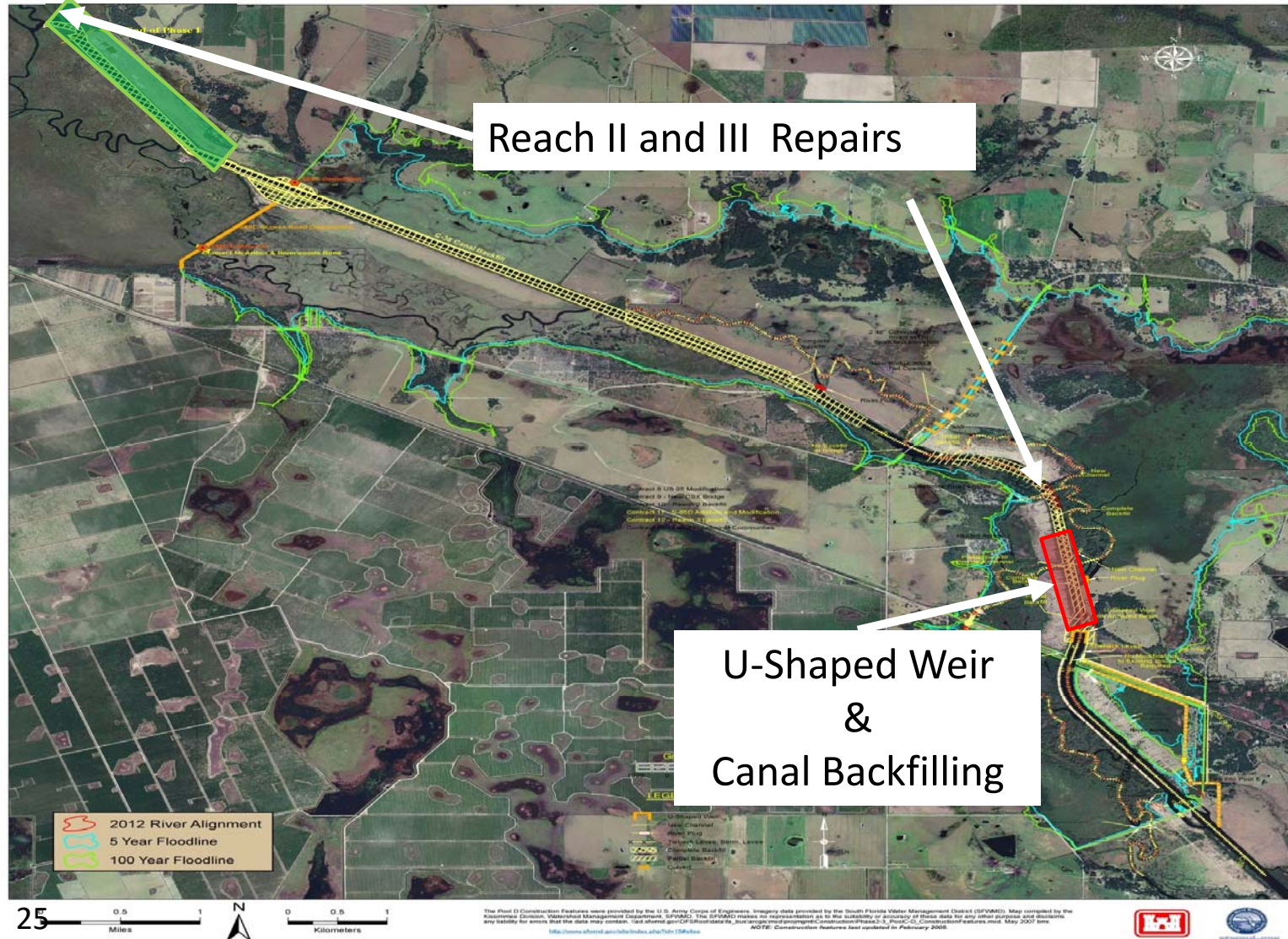




DRAFT

## Phase II/III ~ Pool C and D Construction Features

DRAFT





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## Kissimmee River Restoration Project (Reach II Repair of Backfill Washout from Hurricane Irma, Sep. 2017)





Kissimmee River  
Restoration Project  
(Reach II Backfill  
Repair, Long Haul  
Road, March 2020)







Kissimmee River Restoration  
Project (Reach II Repair, S-65C  
Locks Access Road Degrade,  
Feb 2020





Spoil Degrade

Backfilled C-38 Canal  
(washed out)

Spoil Degrade

Return  
Ditch  
backfill

Kissimmee River Restoration Project  
(Reach III Repairs, Return Ditch Backfill)  
Feb 2020



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Kissimmee River Restoration Project (Reach III  
South Backfill, El Niño 5/18/16)



Degraded Spoil



Backfilled C-38 Canal



Discharge = 1,900 cfs





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Kissimmee River Restoration Project (Reach III)  
Backfill Washout, El Niño 5/25/16)



Backfilled C-38 Canal

Degraded Spoil

Discharge = 7,300 cfs





Kissimmee River Restoration Project (Reach III)  
Backfill Washout, Post-El Niño, Fall 2016



Degraded Spoil

Backfilled C-38 Canal





Kissimmee River Restoration Project (Reach III)  
Backfill Washout, Post-Hurricane Irma, 2018



Backfilled C-38 Canal  
(mostly washed out)

Degraded Spoil





Kissimmee River Restoration Project (Reach III  
Repairs, March 2020)

Backfilled C-38 Canal  
(repaired washout)

Degraded Spoil

↑ N





Kissimmee River Restoration  
Project (S-69 Weir, Southern  
Terminus of Restoration  
Project, Feb 2020

Historical  
River Channel

N

Bypass canal

S-69 Weir









## CURRENT BOAT ACCESS

No USACE  
Restrictions  
Continue  
Upstream



Istokpoga  
Boat Ramp

### KISSIMMEE RIVER RESTORATION

-  Barrier (existing or new)  
Barriers are placed as construction progresses.
-  Navigation not allowed
-  No restrictions by USACE
-  Structure number



4 E's  
Canoe/Kayak  
and Airboat  
Launch

3.00 mi

© 2018 Google

S-65D

No USACE  
Restrictions  
Continue  
Downstream





## CONCLUSIONS AND DISCUSSION

- Some Hydrological, Vegetation, Fish, and Avian Restoration Expectations are not currently being met annually
- Physical Restoration is wrapping up by end 2020
- Implementation of new **Headwaters Regulation Schedule** by 2021 wet season
- Evaluate project success following Headwaters for at least five years through 2026



QUESTIONS?

THANK YOU!