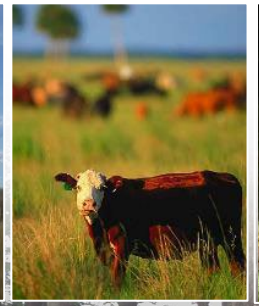
ANTICIPATED BENEFITS FROM THE WESTERN EVERGLADES RESTORATION PROJECT (WERP)




Bradley Foster Ph.D., Presenter; Melissa Nasuti; Zulamet Vega-Liriano;
James Bradshaw Ph.D.; and Stephen Baisden PE, PMP
U.S. Army Corps Of Engineers, Jacksonville District

Greater Everglades Ecosystem Restoration Conference
April 2025

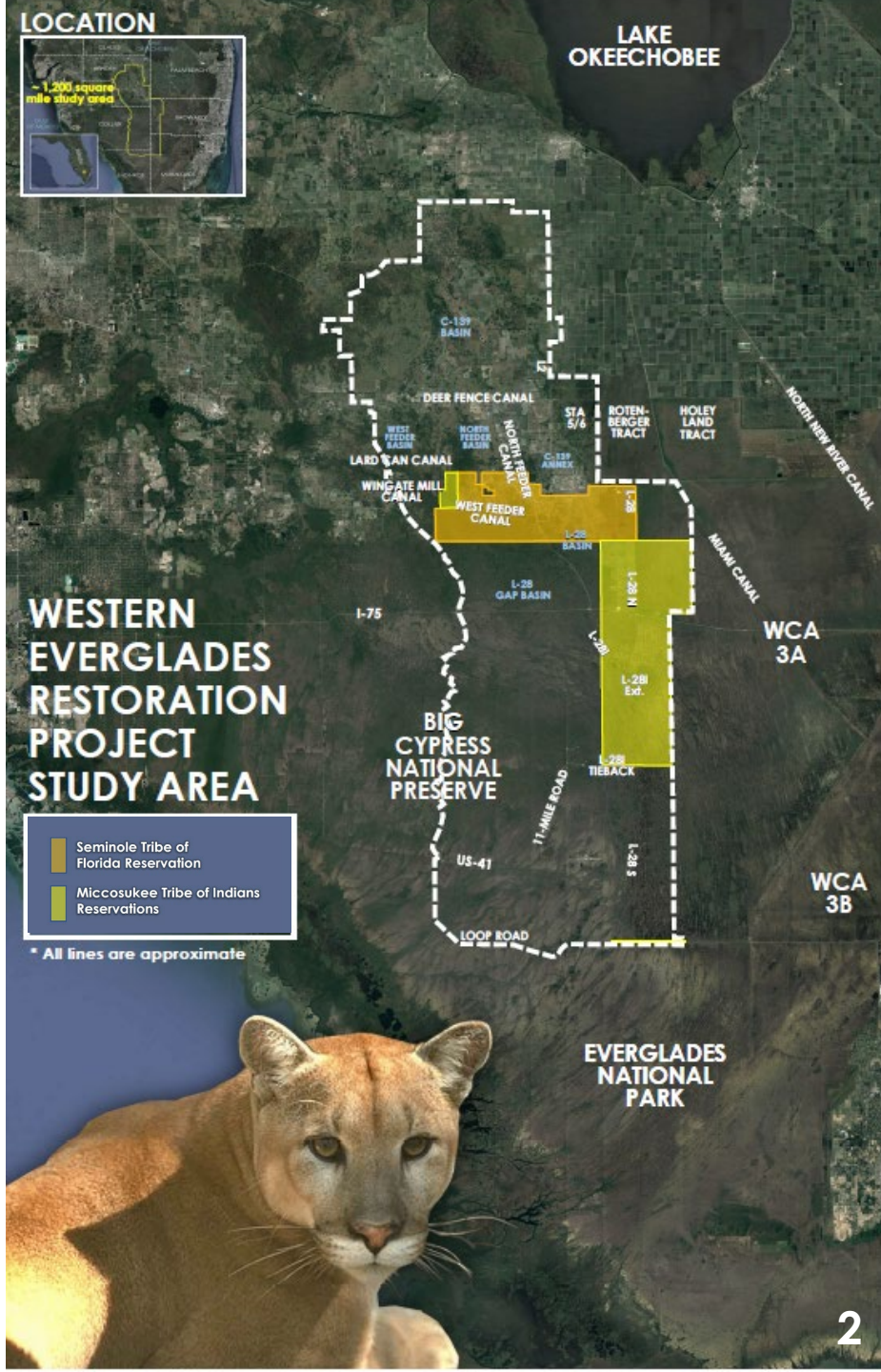
U.S. ARMY

US Army Corps of Engineers

PROBLEMS IN THE WERP STUDY AREA

Image credit: Henkel, USGS

- Ecological connectivity of wetland and upland habitats disrupted by C&SF canals and levees, roadways, and other canals and levees.
- This disruption altered freshwater flow paths, flow volumes and timing, and seasonal (wet/dry season) hydroperiods.
- C&SF system changed hydrology, making many areas drier, promoting intense wildfires that damage peat and soils.
- Historic aquatic ecosystems in the study area that depended on low nutrient conditions are being lost due to elevated nutrients in the water.
- Tribal lands affected.



WERP STUDY OBJECTIVES

To re-establish ecological connectivity and resilience of the historic wetland/upland mosaic, restore:

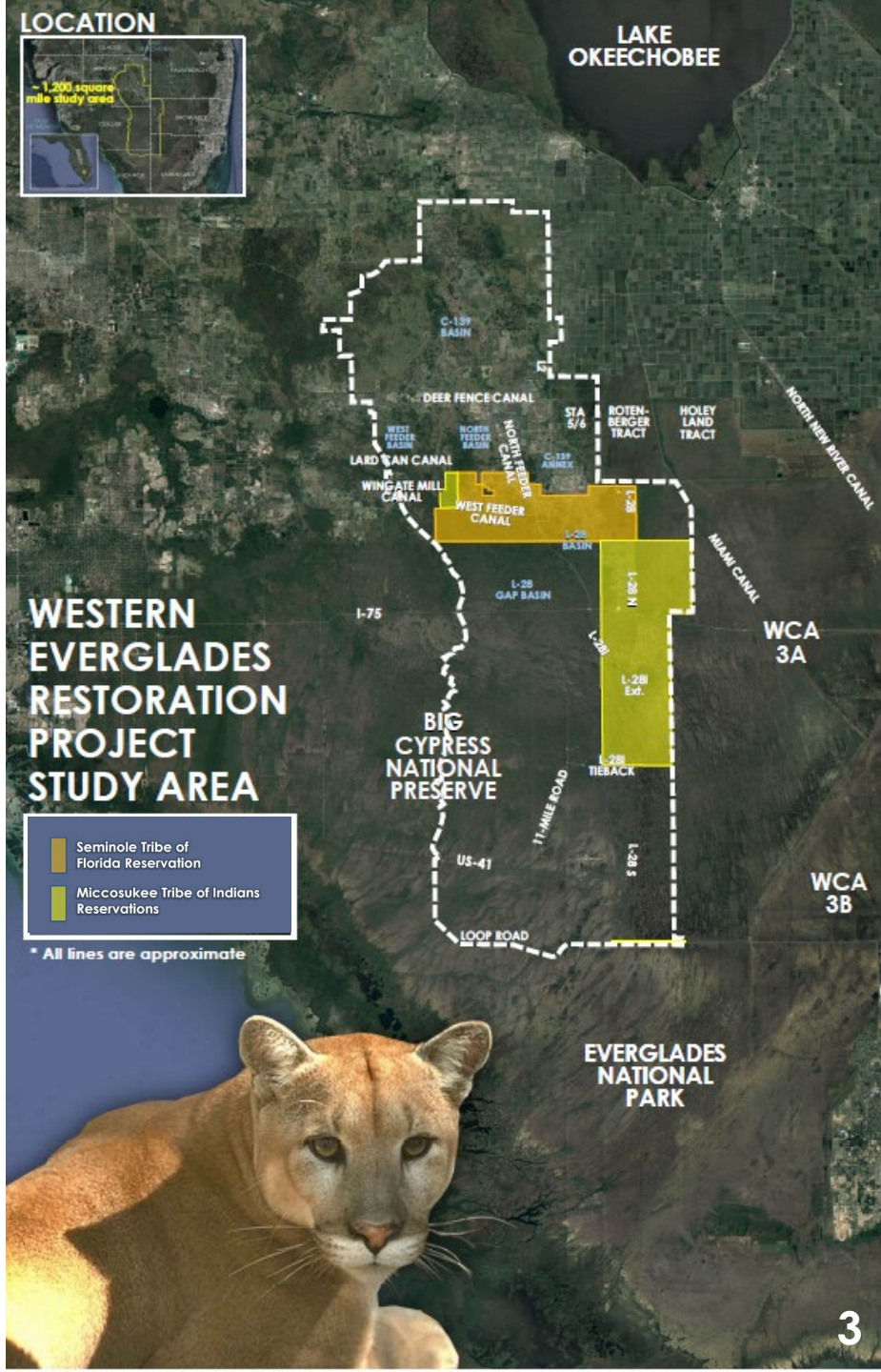
- Freshwater flow paths
- Flow volumes and timing
- Seasonal hydroperiods
- Historic distributions of sheetflow

To reduce intense wildfires associated with altered hydrology, restore:

- Water levels. Intense fires damage the underlying geomorphology and associated ecological conditions of the western Everglades

To establish and sustain native flora and fauna, restore:

- Aquatic low nutrient (oligotrophic) conditions



WERP PROJECT FEATURES

REGION 1

- Non-WERP North Feeder Stormwater Treatment Area
- New canals and a plug in the North Feeder Canal

REGION 2

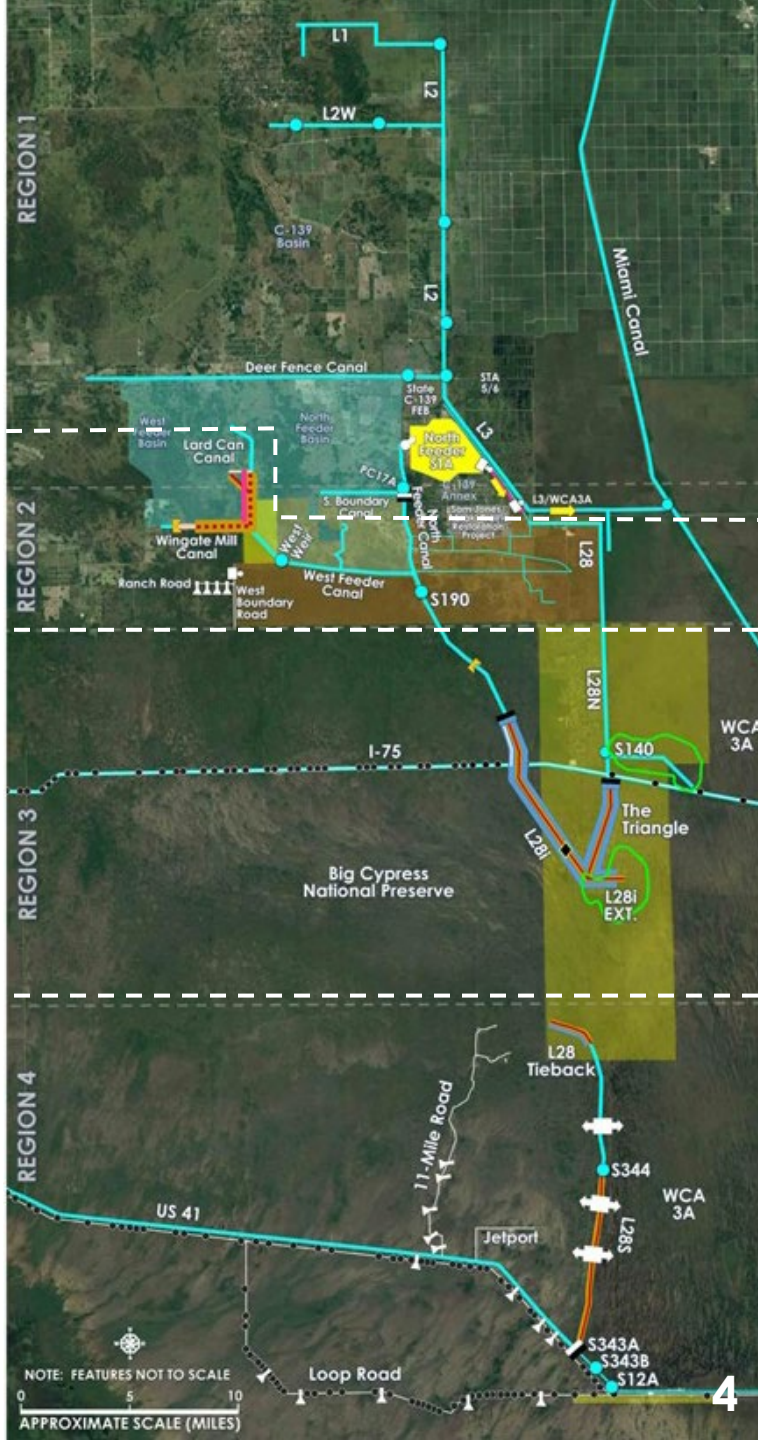
- Non-WERP source control actions in upstream areas
- Culverts in West Boundary Road and Ranch Road
- Modify Wingate Mill and Lard Can Canals

REGION 3

- Levee degrade and backfill: L-28N and L-28 Interceptor (The Triangle)
- Invasive plants removal

REGION 4

- L-28S levee: gated culverts, canal backfill, levee degrade
- Culverts / bridges under 11-Mile Road, Loop Road, and U.S. 41

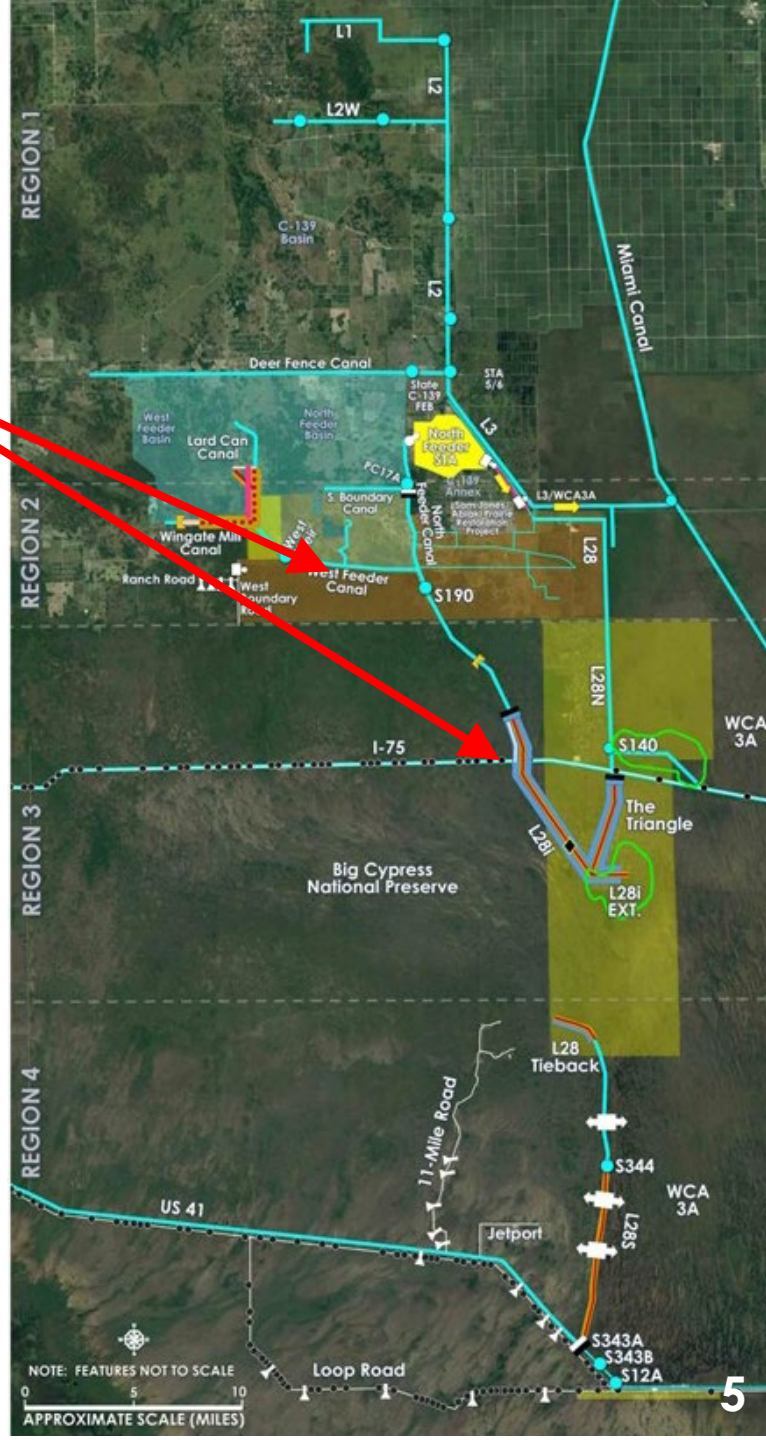


HOW THE FEATURES WORK AND MEET OBJECTIVES

✓ **Reduce the over-drainage caused by man-made canals**

Inline Weir

Canal Backfill/ Degrade Levee



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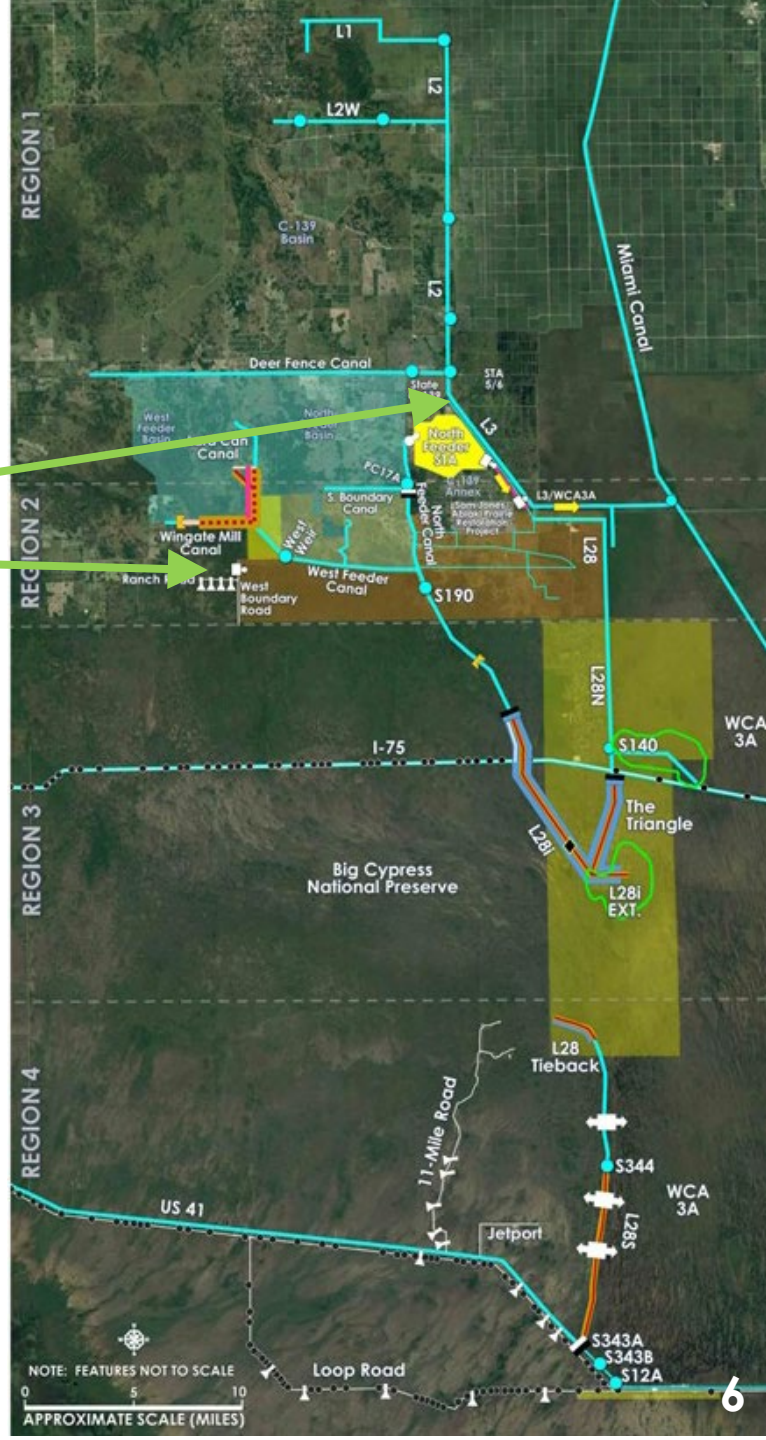
✓ **Redirecting water back to natural flow paths**

- New Canals
- Culvert
- Gated Culvert
- Canal Modification
- Spreader Canal



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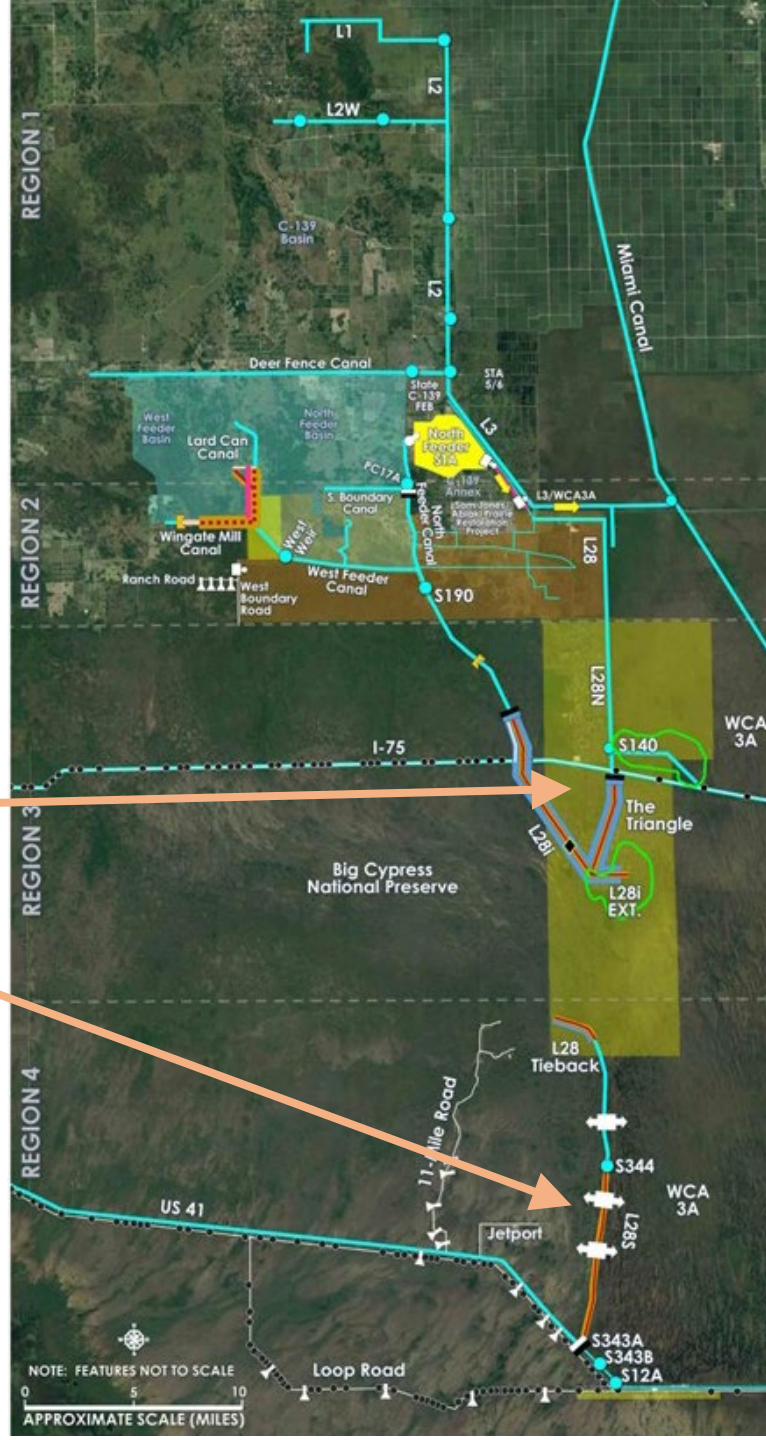
✓ **Removing levees that obstruct natural flow patterns (or adding structures across levees)**

- Canal Backfill/ Degrade Levee
- Canal Backfill
- Bi-Directional Control Structure
- Culvert
- Plug



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Canal Backfill/ Degrade Levee

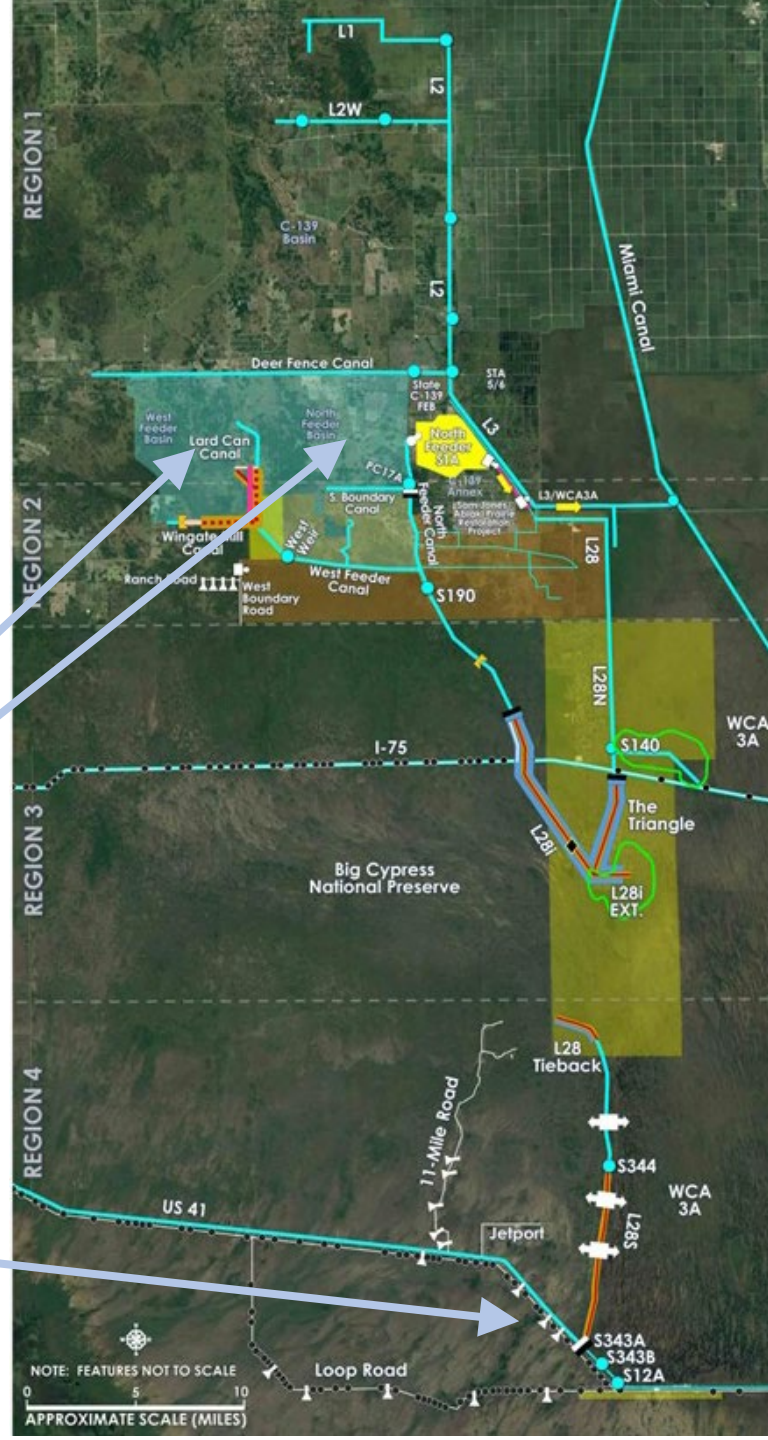
Canal Backfill

Bi-Directional Control Structure

Culvert

Plug

✓ **Maintaining flood water conveyance to avoid impacts to built infrastructure**



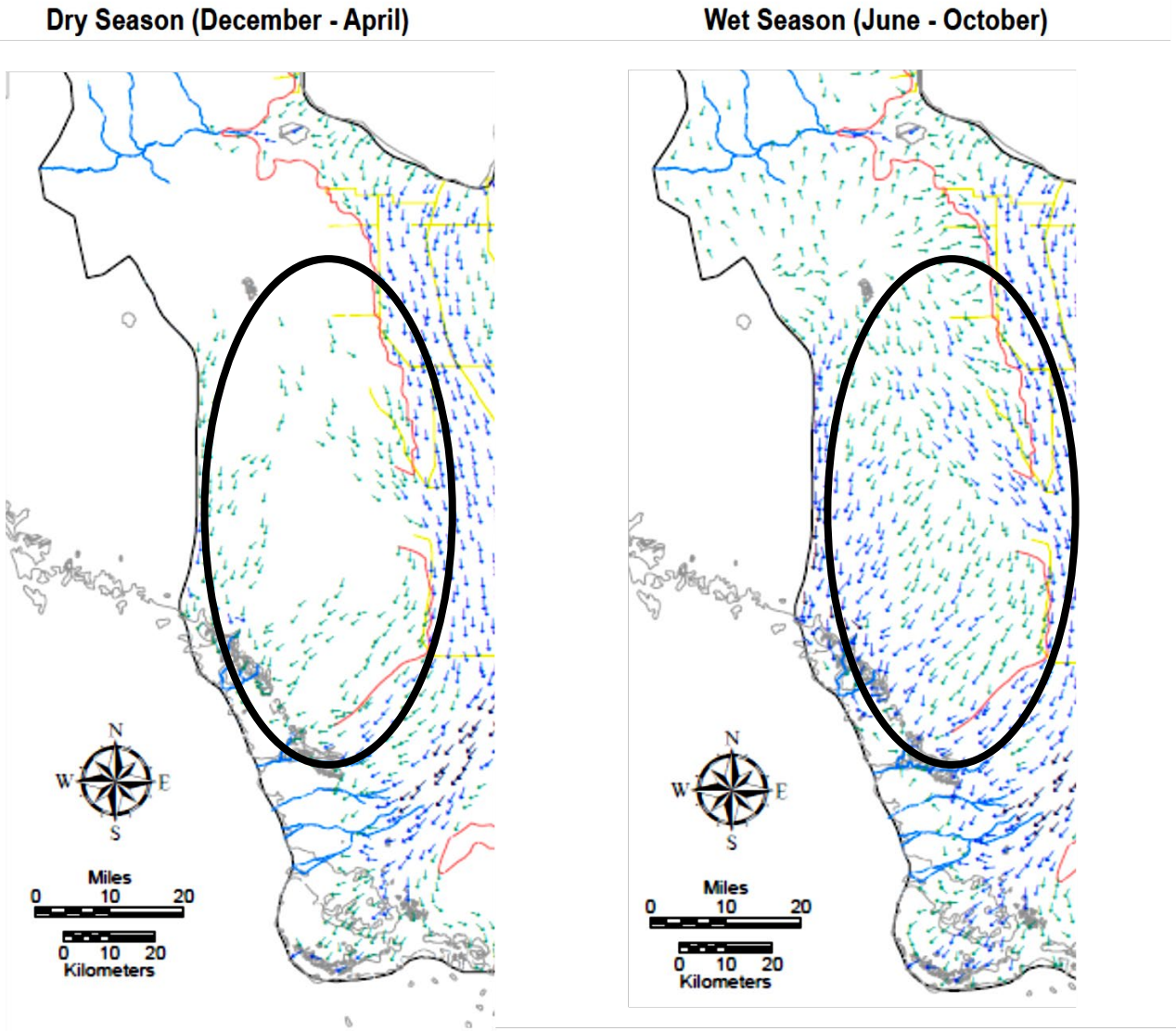
WERP Expected Changes in Hydrology

WHAT IS "NATURAL" FLOW IN THE WERP STUDY AREA?

Illustration of "Natural Flow"

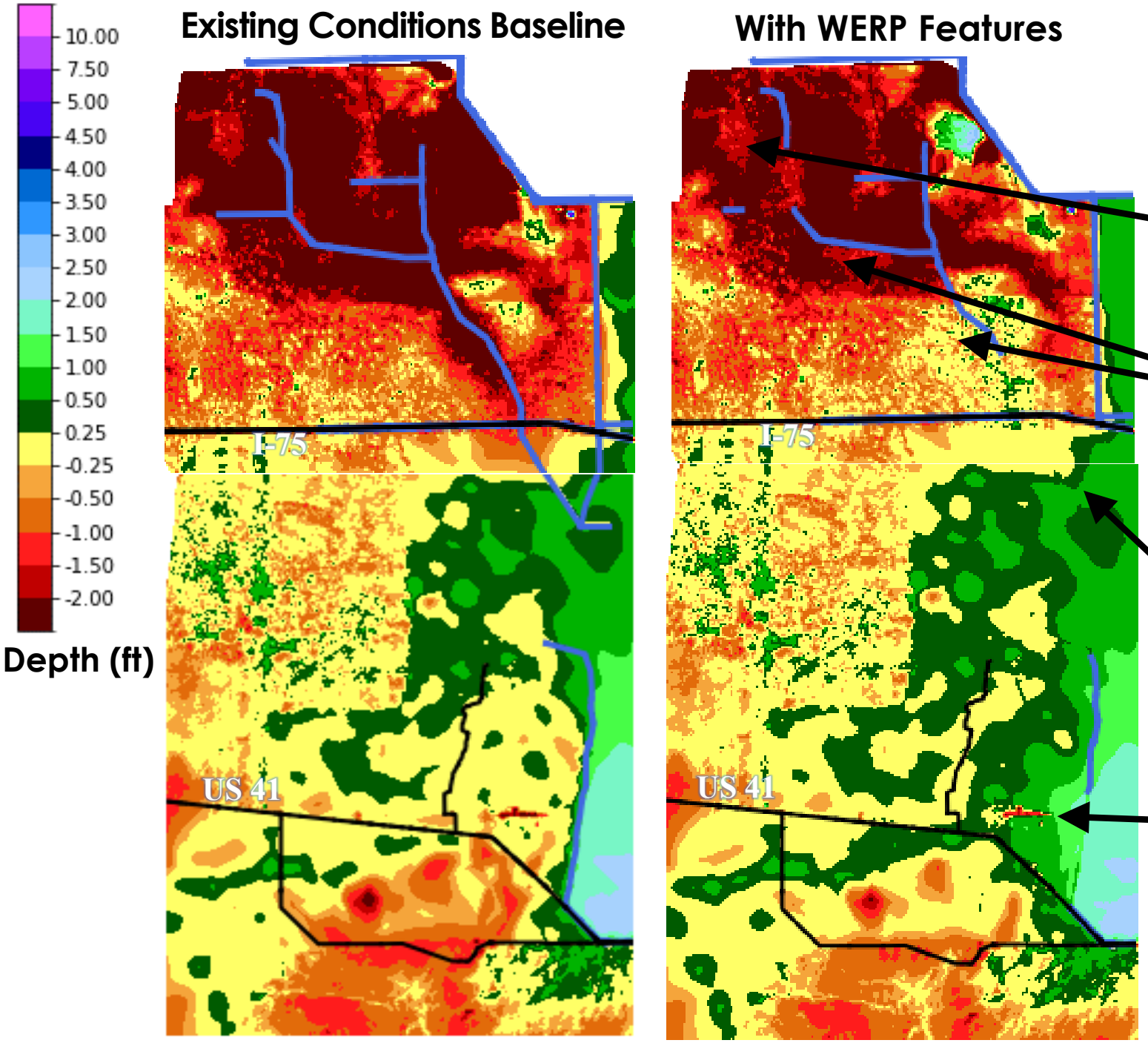
- The Natural System Regional Simulation Model (NSRSM) shows that for much of the WERP study area, there are little to no surface flows in the dry season and more frequent surface flows in the wet season.
- Flows in the NSRSM cross the current system canal and levee locations.

Note: The red line on the maps shows the historic edge of the Everglades and the light-yellow traces show some of the current system canals (added for reference but were not part of the simulation).



NSRSM v3.5.2 long-term (1966-2005) average monthly flow vectors for the dry and wet seasons.

Example Water Level Differences at the End of the Dry Season



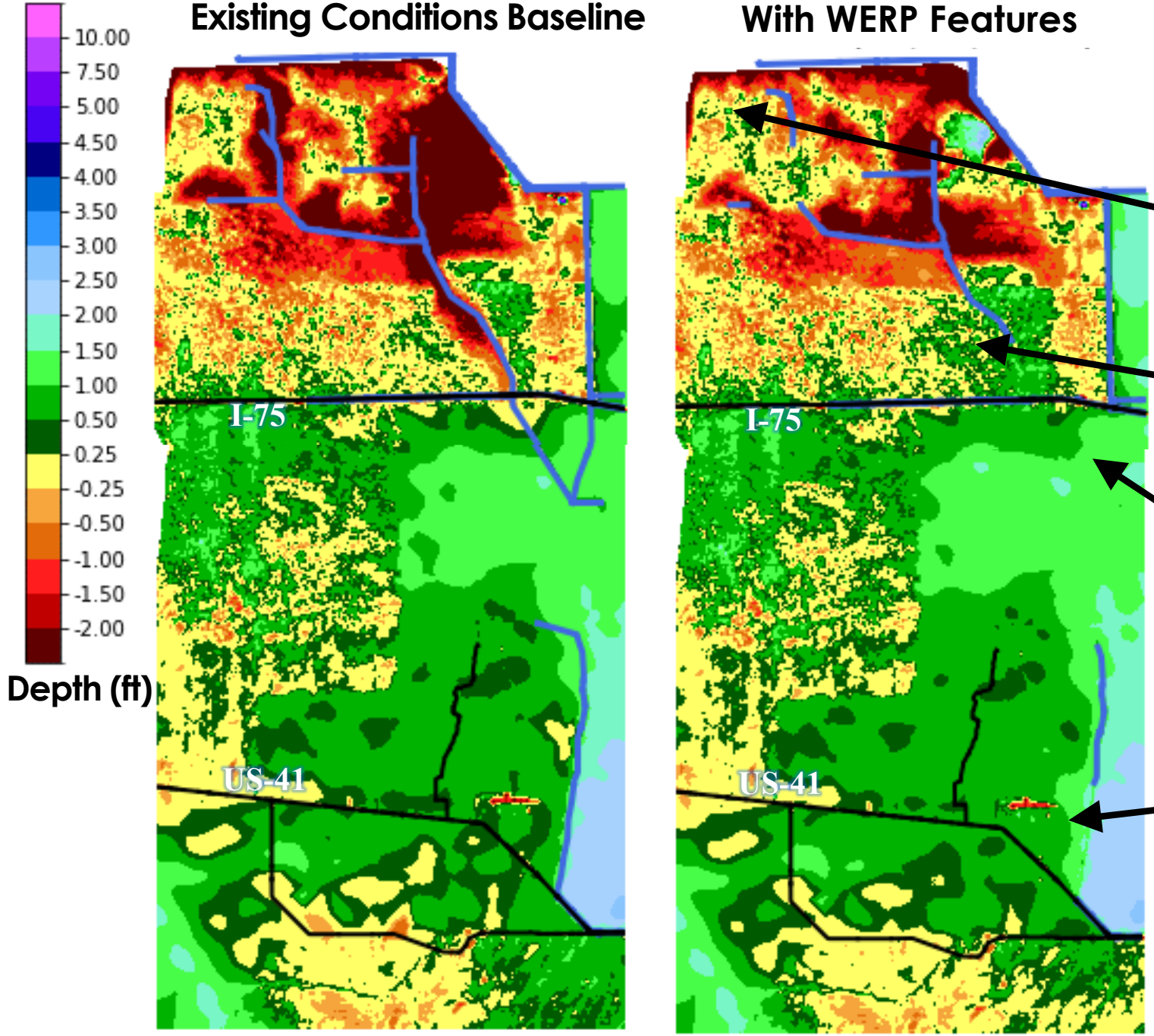
Feeder Basin Agriculture Does Not Have Higher Stages or Increased Flooding

Unnatural Over-Drainage Caused by Canals is Improved (less orange and red cells with WERP), Including in Seminole Tribe of Florida (STOF) Native Area and Northern BCNP

Miccosukee Tribe of Indians (MTI) "Triangle" Area Reconnected to Surrounding Natural System

Increased Connectivity and Water Movement in Southern BCNP (improved water gradient dark green to blue)

Example Water Level Differences at the End of the Wet Season



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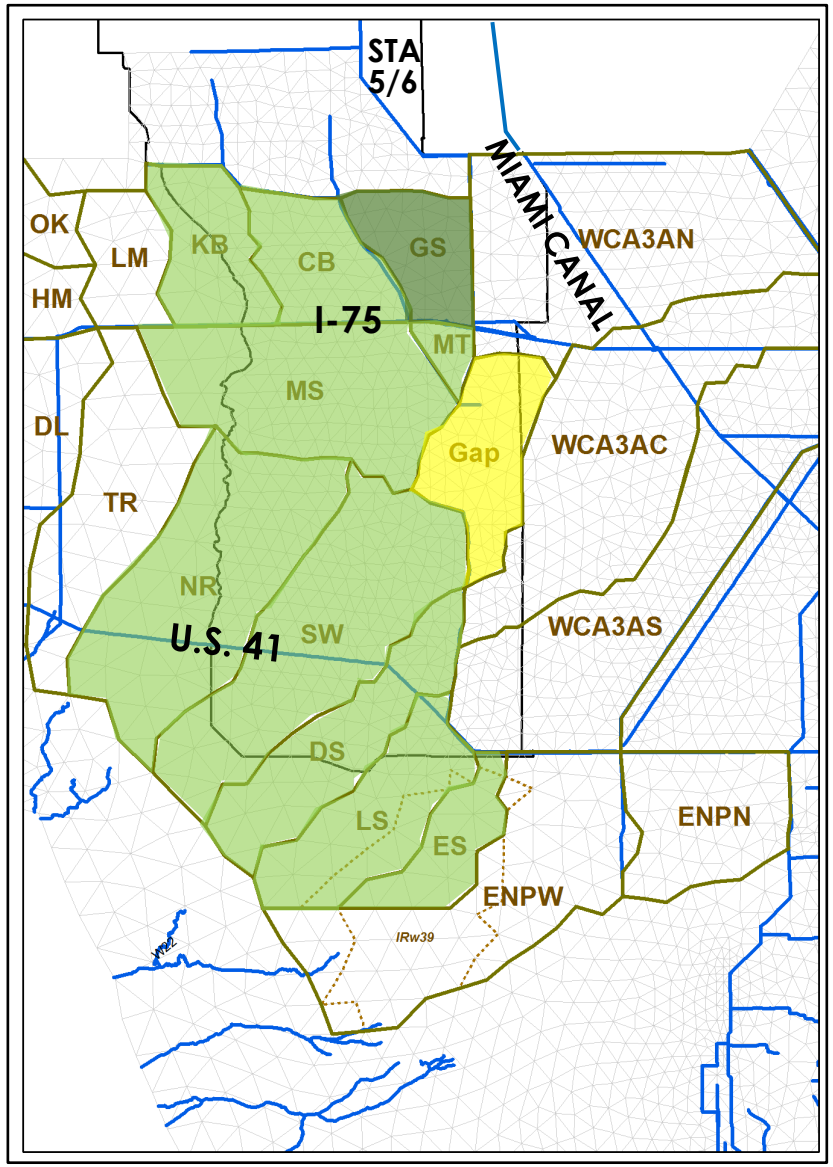
WERP Habitat Benefits

HABITAT IMPROVEMENTS



ECOSYSTEM BENEFITS: %TARGETS ACHIEVED BY ZONE

>75% 50-74% <50%

ZONE	W FWO R	ALT HNFR
Kissimmee Billy Strand (KB)	55	65
Cowbell Strand (CB)	35	61
Goddens Strand (GS)	45	76
Mullet Slough (MS)	54	67
L-28 Triangle (MT)	37	52
L-28 Gap (GAP)	33	34
New River (NR)	62	73
Sweetwater (SW)	61	71
Dayhoff Slough (DS)	51	72
Lostman's Slough (LS)	43	54
East Slough (ES)	33	64

644,394 acres

HABITATS

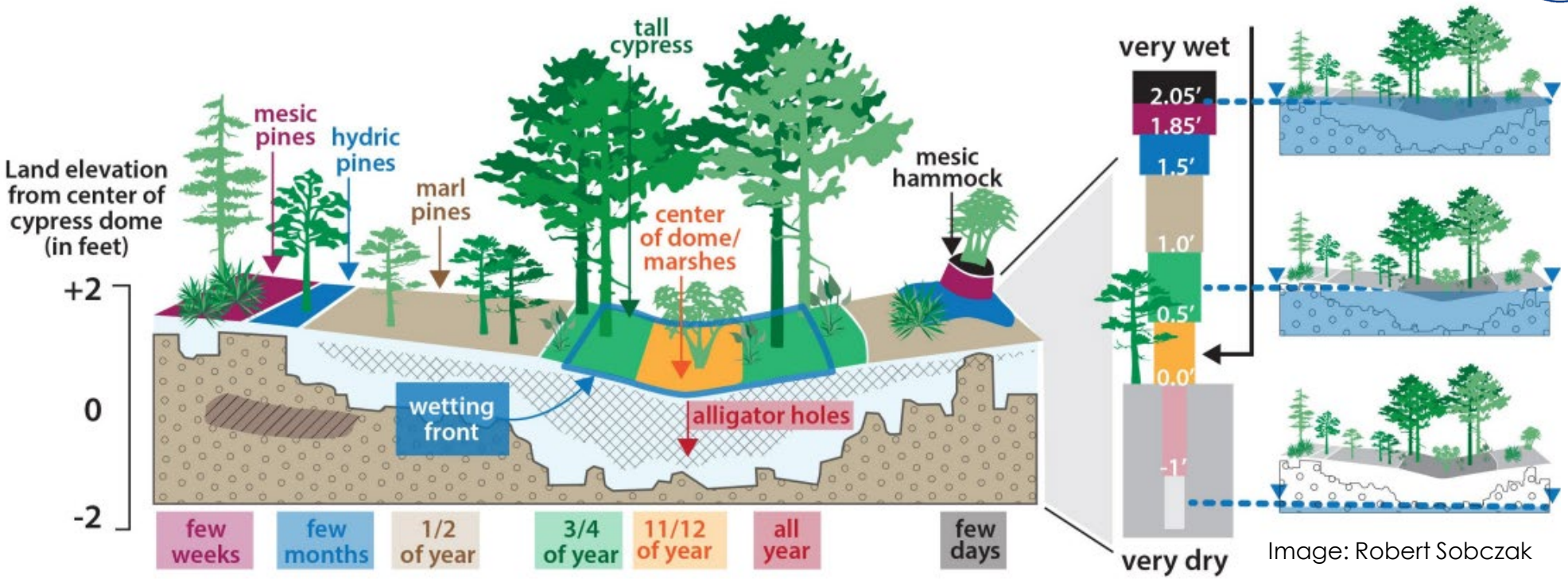


Image: Robert Sobczak

Tall Cypress


WOOD STORK


BARRED OWL


ROSEATE SPOONBILL

Marl Prairie


WHITE IBIS


EVERGLADES CRAYFISH


FLORIDA SANDHILL CRANE

Mesic Pine/Flatwood

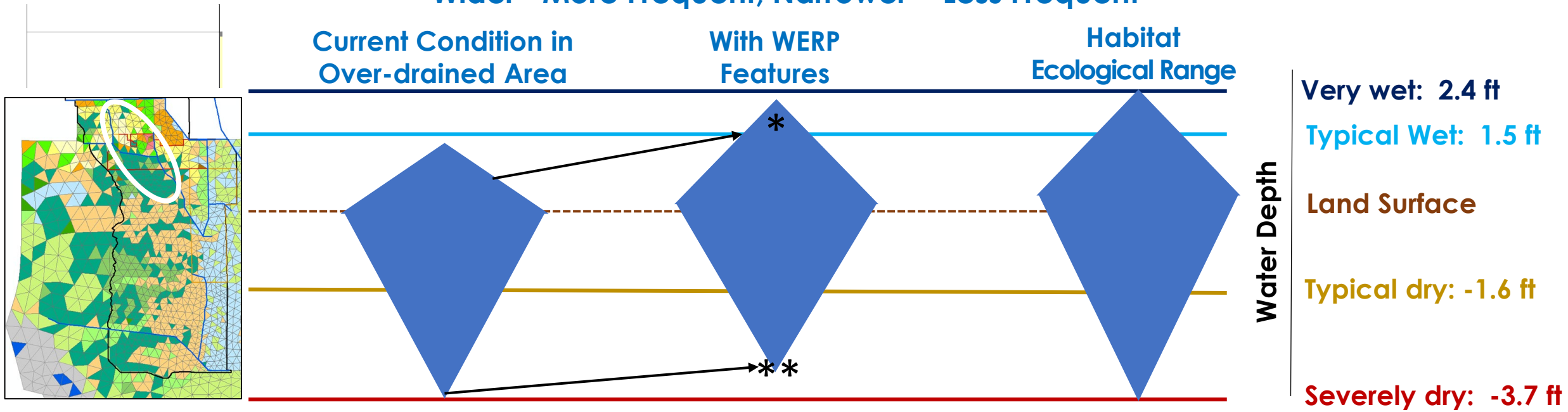

PINE WOODS TREEFROG


TRICOLORED HERON


WHITE-TAILED DEER

TALL CYPRESS HYDROLOGY - EXAMPLE

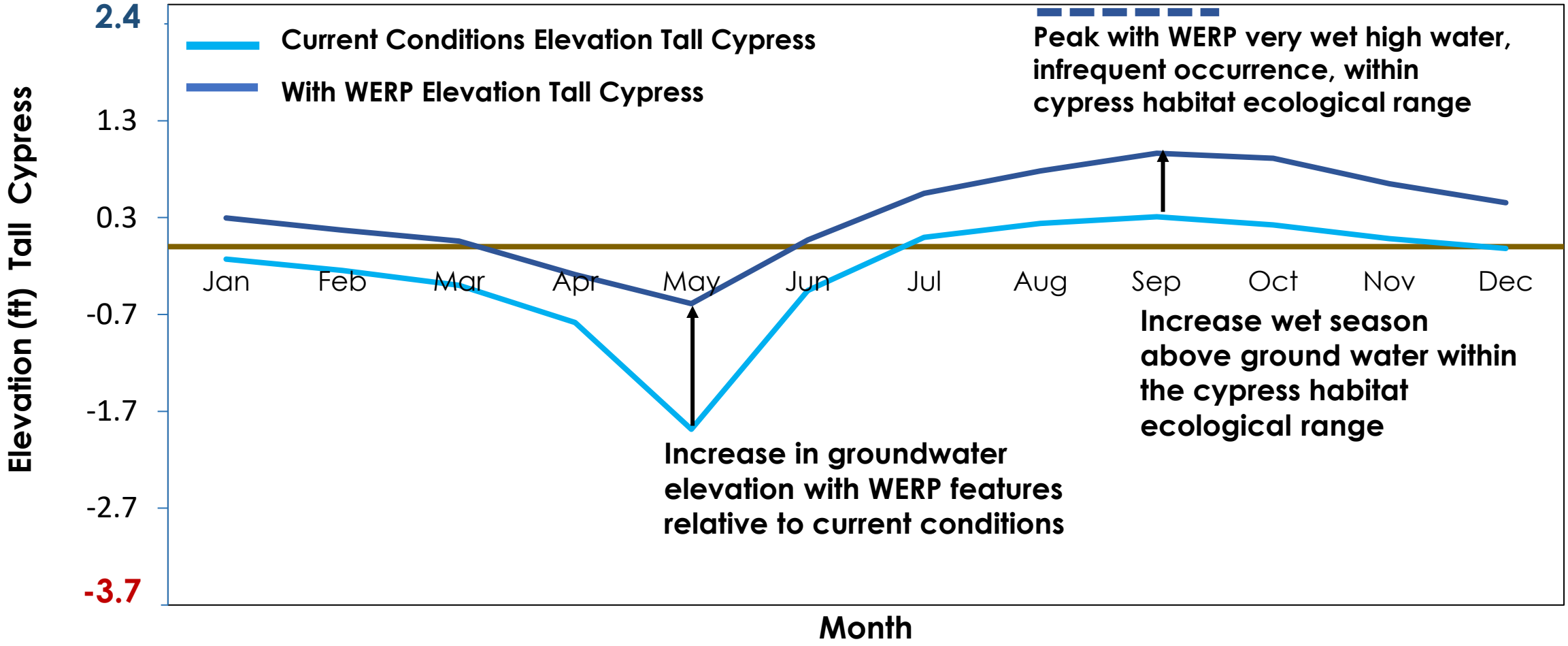
These represent hydrologic conditions within the tall cypress habitats, including the extreme wet and extreme dry.



Where tall cypress habitats that are currently slightly over- drained, the objective of restoration is to have healthier habitat:

- Rehydrate to allow high water conditions within ecologically beneficial range for cypress swamp habitat, very wet conditions within tree high-water conditions. *
- Raise the low water elevation during dry or drought conditions to manage fire risk from excessive dry out. **

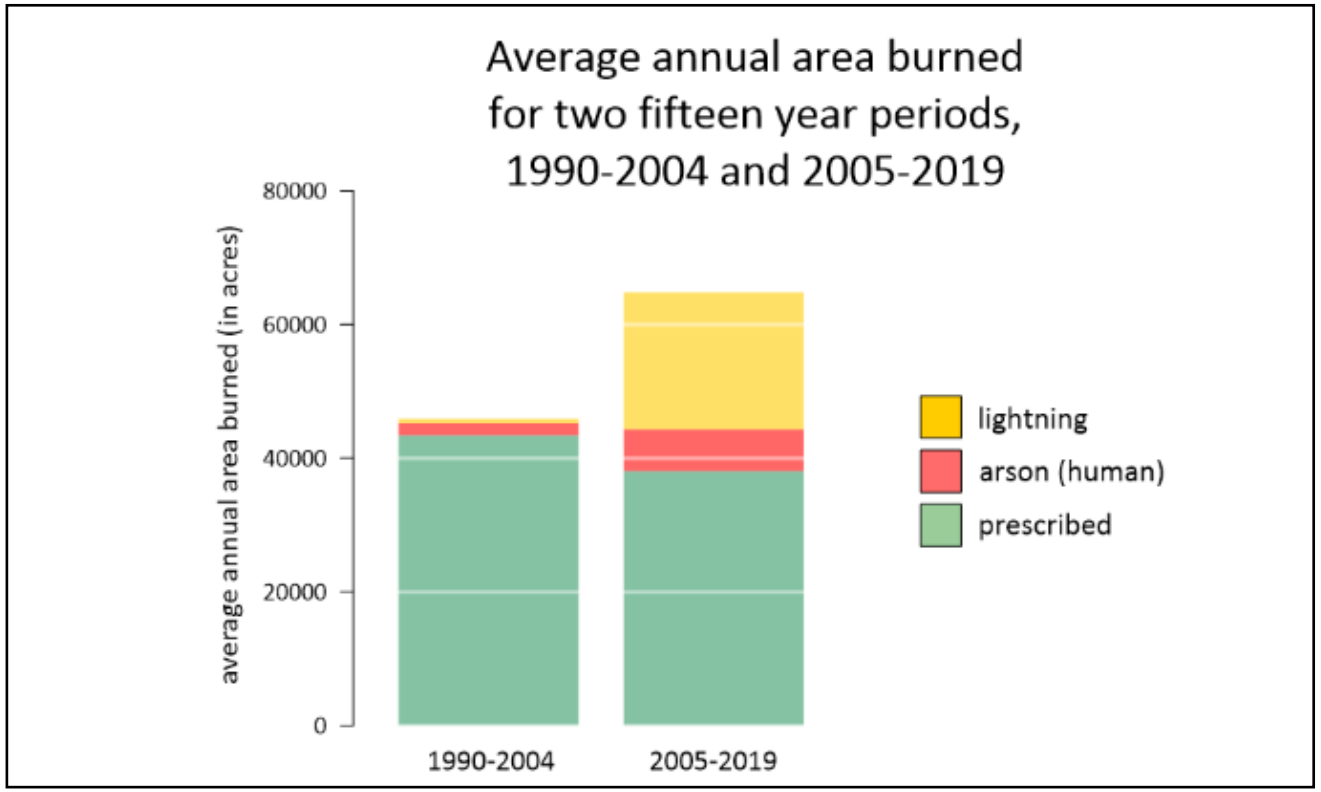
TALL CYPRESS AVERAGE SEASONAL PATTERN HYDROGRAPH - EXAMPLE



Note: For this plot, ground surface elevation is referenced at the ground surface in a tall cypress landscape, not average topography.

BENEFITS FROM WERP

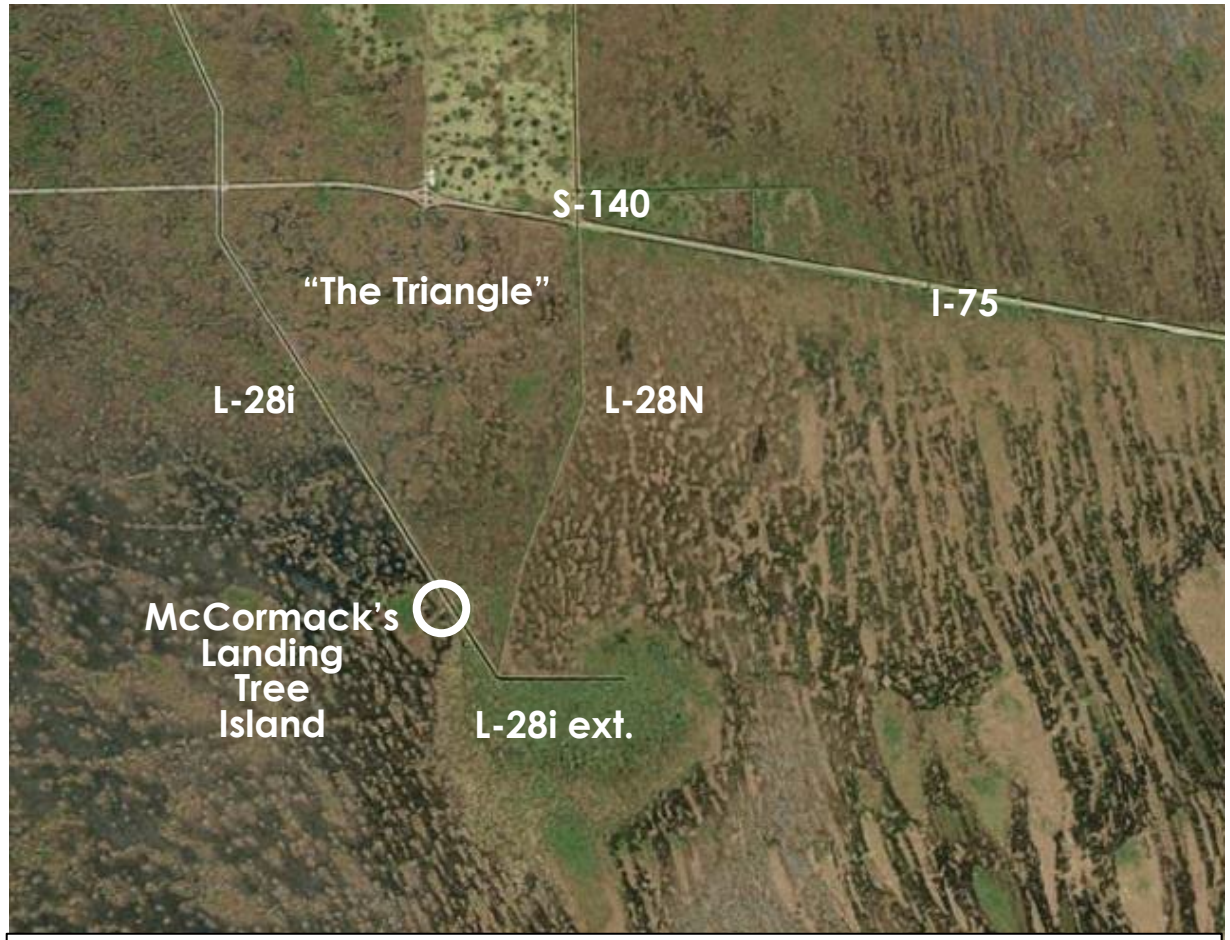
- ✓ Reduce the intensity and duration of damaging fires by improving surface water and groundwater elevations and hydroperiods in areas affected by over-drainage.



In Big Cypress National Preserve (BCNP) from 2005-2019, spring wildfires accounted for nearly 1/3 of totally burned area during the months of April-June when the water table is lowest and surface water is least present. This is a 31% increase and includes a 20,000 acre increase in burned area due to spring lightning-caused wildfire from the prior observation period from 1990-2004.

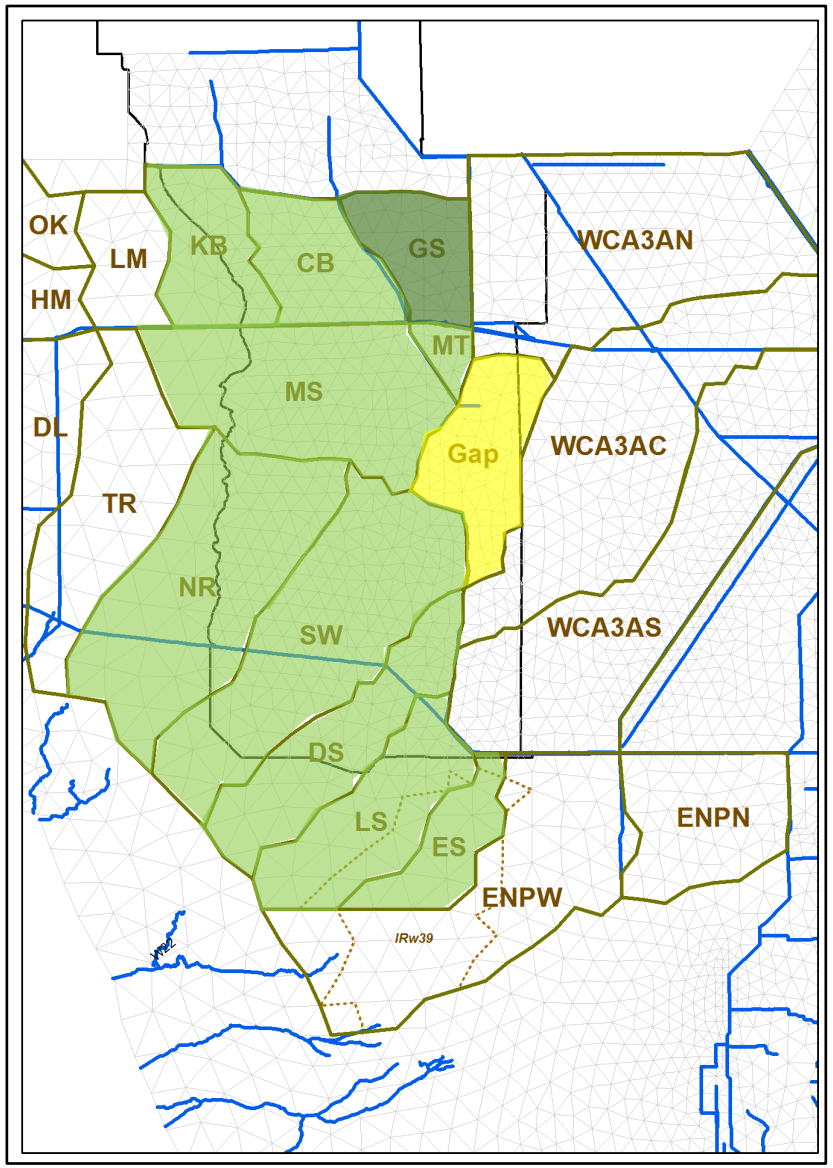
BENEFITS FROM WERP

- ✓ <u>Promote plant and animal diversity and foster conditions for native species</u> by treating approximately 7,500 acres of nuisance vegetation at the terminus of the L-28i extension and approximately 4,900 acres downstream of S-140.
- ✓ <u>Reconnect and rehydrate</u> approximately 7,850 acres of wetlands within "the triangle" by removal of manmade features associated with the L-28i, L-28i extension, and L-28N south of I-75.
- ✓ <u>Restore</u> McCormack's Landing Tree Island.



Current aerial of existing conditions in the Western Everglades. Shows extent of nuisance vegetation and compartmentalization in the triangle.

SUMMARY AND CLOSING



Improved the hydrology of 644,000+ acres of habitat across the project area (more than acreage in WCA 3A):

- Restored vegetation communities
- Reduction in the frequency of intense wildfires
- Delivering lower nutrient water/reducing invasive species
- Multiple agency collaboration