CENTRAL EVERGLADES PLANNING PROJECT

Hydrological Screening for Restoring WCA3A

Presentation for Recreational Stakeholders

CEPP Ecosystem Subteam

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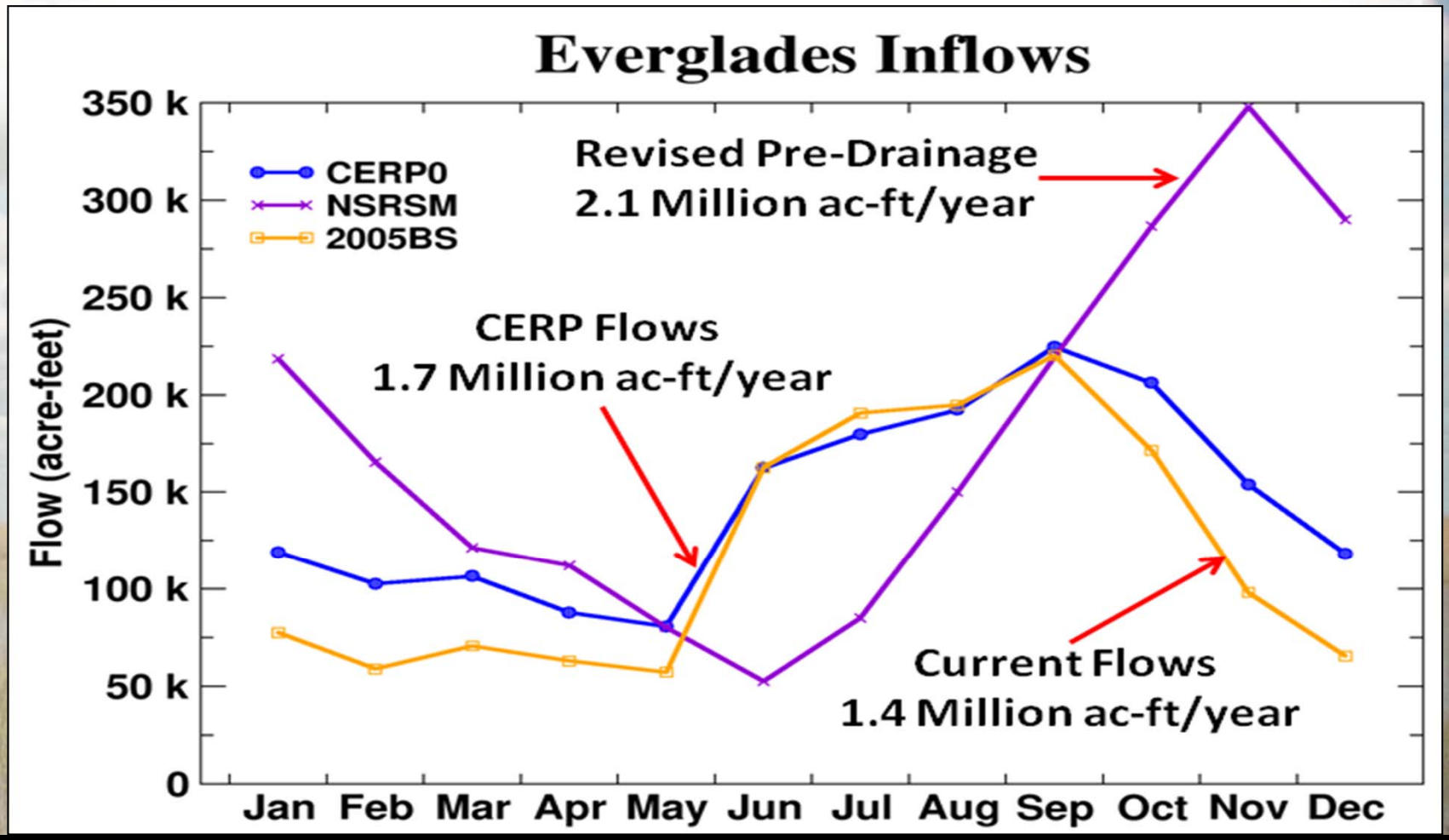
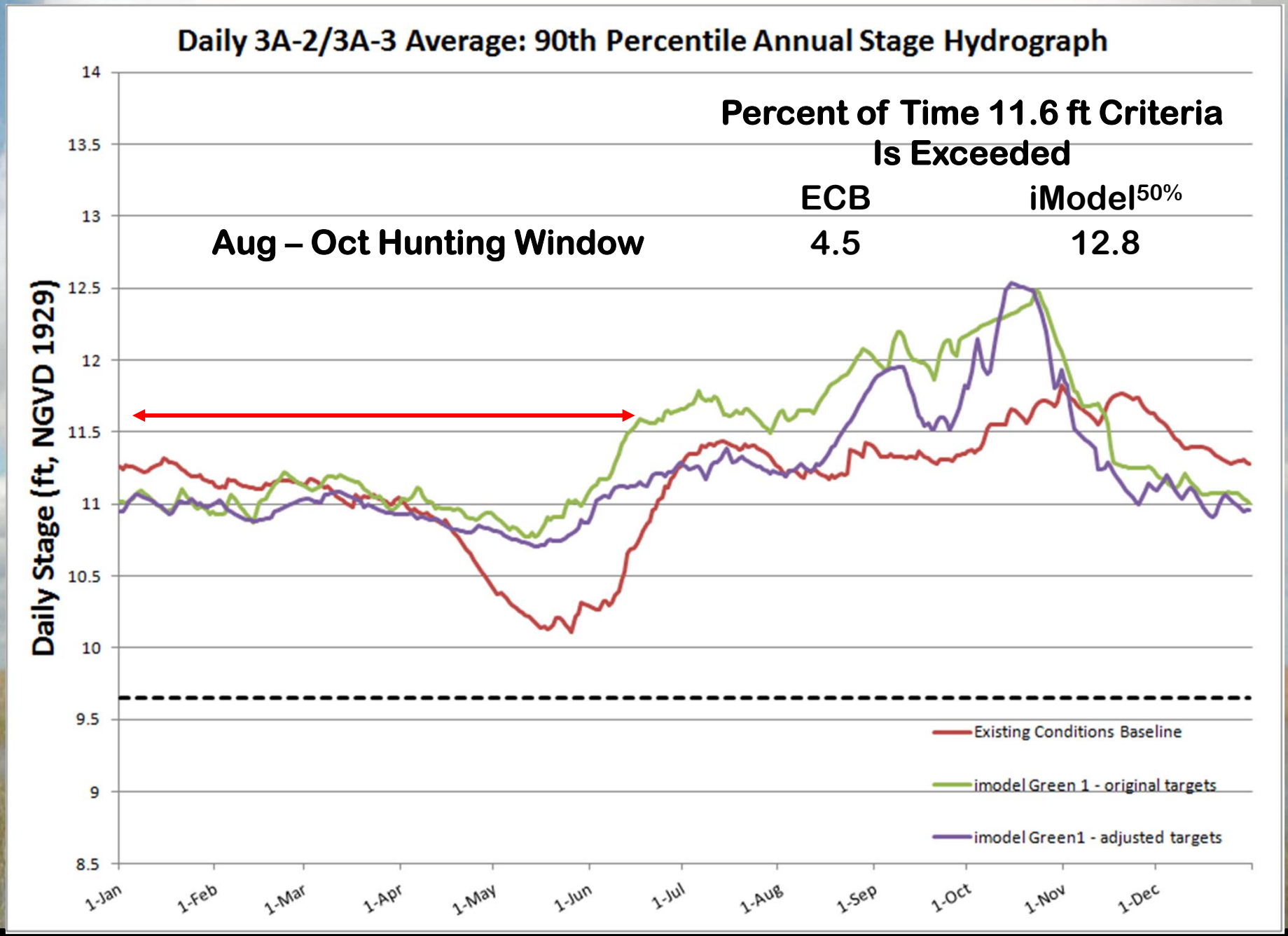
The Challenge: How do you preserve a healthy terrestrial community while restoring a healthy wetland community?

Level 1 Screening Criteria

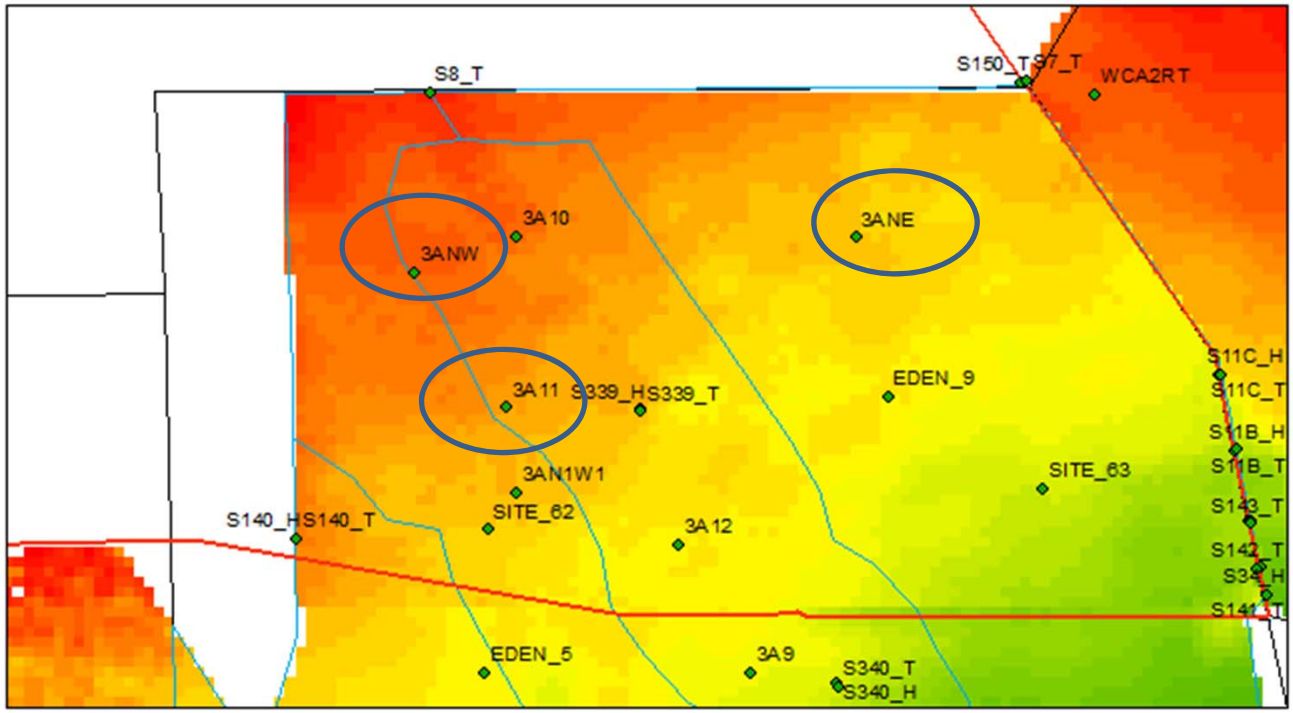
Everglades Dry Standard Score

Seasonality of Flows from STA's



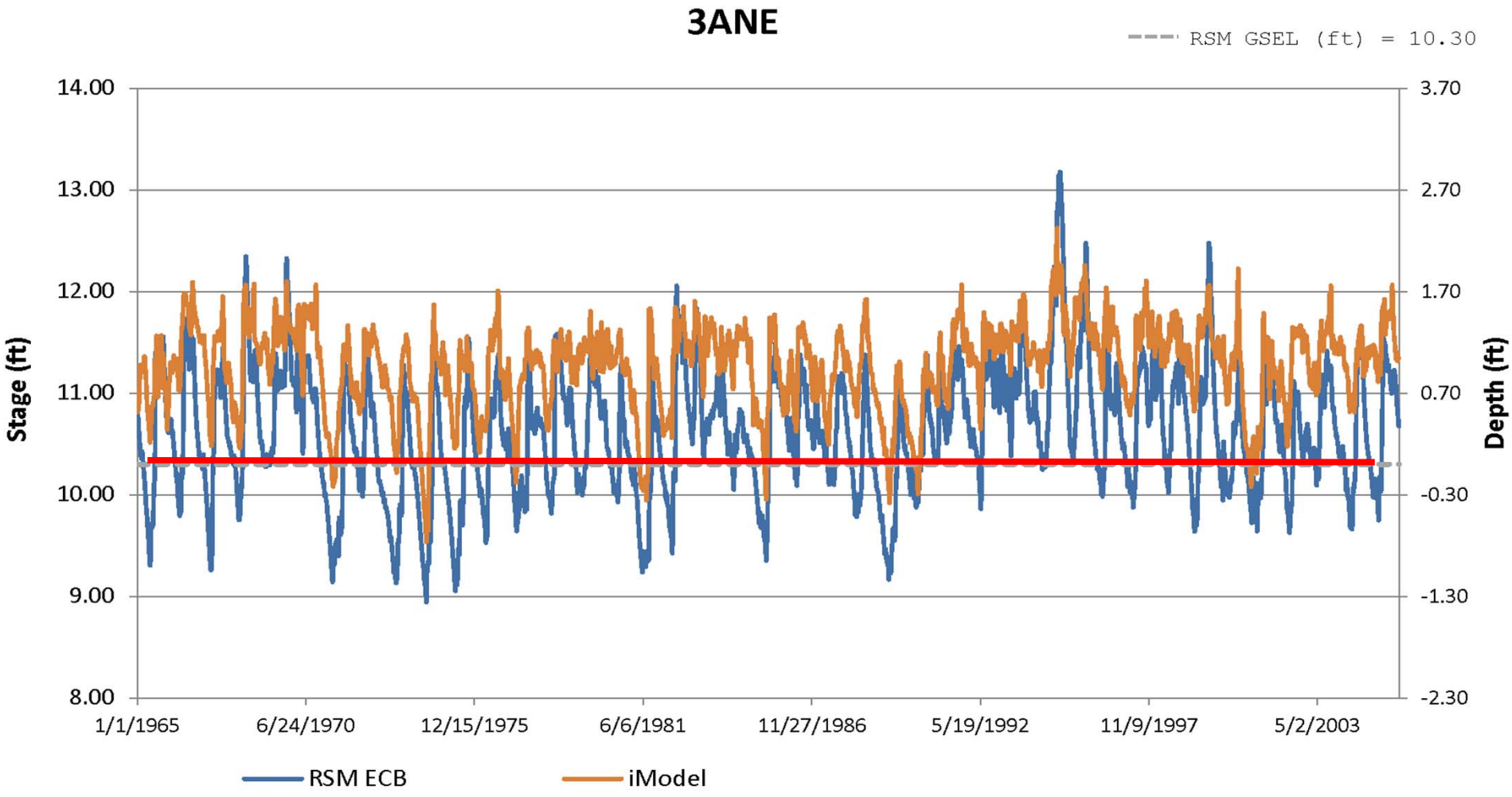

Daily 3A-2/3A-3 Average: 90th Percentile Annual Stage Hydrograph
Percent of Time 11.6 ft Criteria Is Exceeded
ECB
iModel50%
Aug – Oct Hunting Window
4.5
12.8
Daily Stage (ft, NGVD 1929)
14
13.5
13
12.5
12
11.5
11
10.5
10
9.5
9
8.5
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec
Existing Conditions Baseline
imodel Green 1 - original targets
imodel Green1 - adjusted targets

NAVD 88



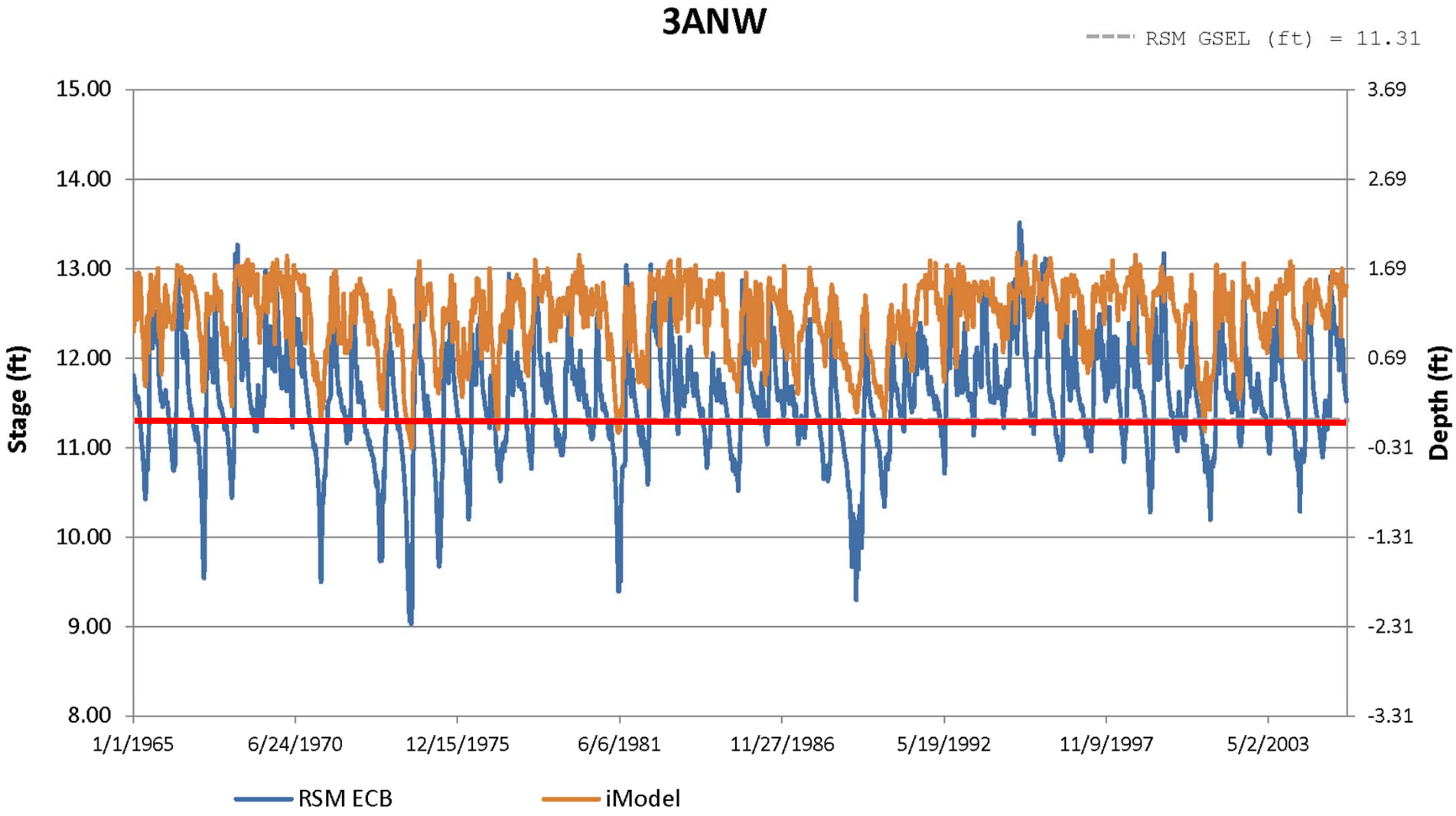
gages	169.01 - 175.33	226.01 - 232.33	283 - 289.33
intersectingRoads	175.34 - 181.67	232.34 - 238.66	289.34 - 295.66
cepp_zones	181.68 - 188	238.67 - 245	295.67 - 301.99
compartments	188.01 - 194.33	245.01 - 251.33	302 - 308.33
EDEN DEM	194.34 - 200.66	251.34 - 257.66	308.34 - 314.66
centimeters	200.67 - 207	257.67 - 263.99	314.67 - 320.99
150 - 156.33	207.01 - 213.33	264 - 270.33	321 - 327.33
156.34 - 162.67	213.34 - 219.66	270.34 - 276.66	327.34 - 333.66
162.68 - 169	219.67 - 226	276.67 - 282.99	333.67 - 339.99

Scenario: Green1 North3A



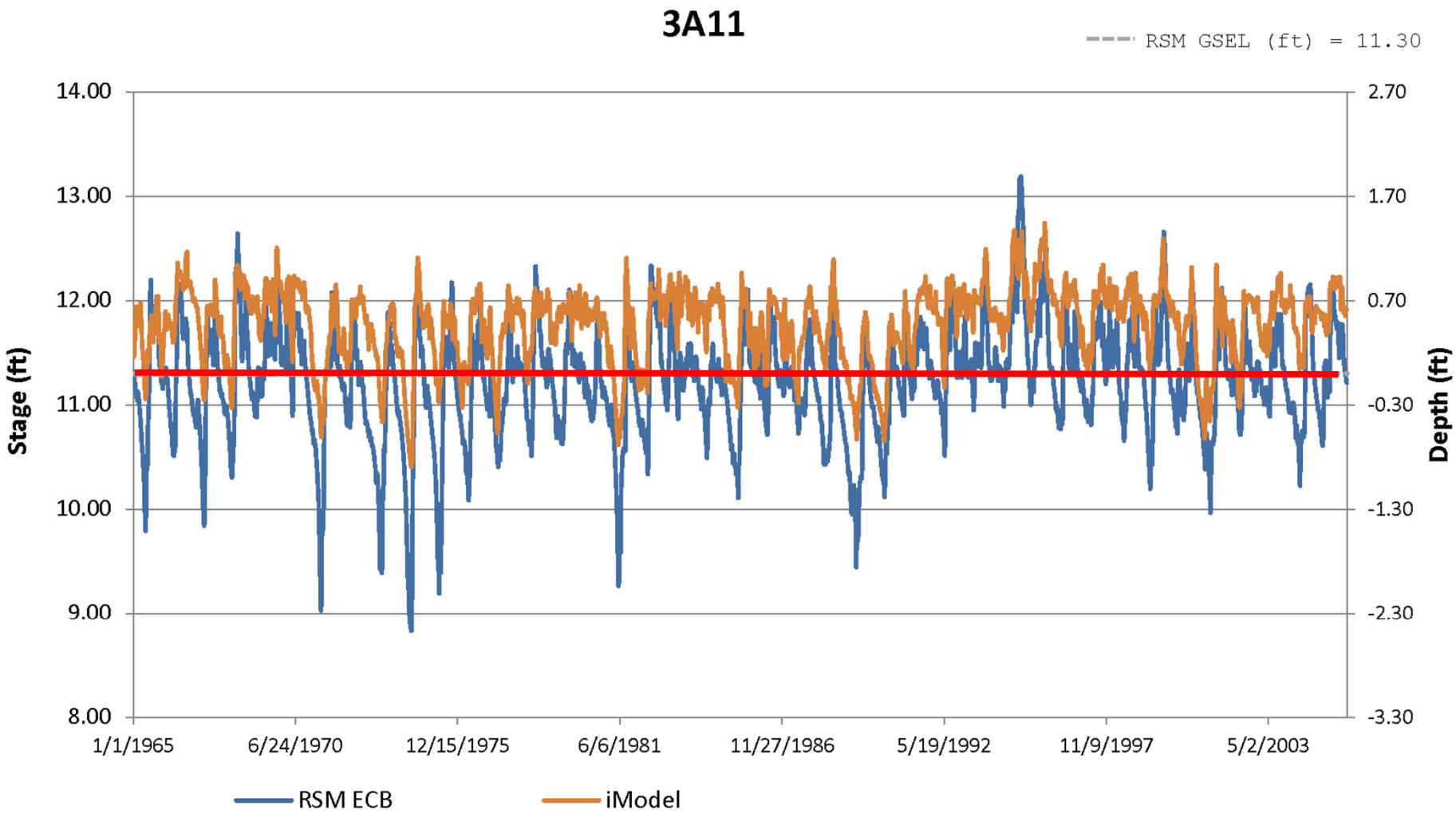
0.32	0.97	Avg. Ponding Depth (ft)
253	354	Average Hydroperiod (Days)

Scenario: Green1 North3A



0.25	1.16	Avg. Ponding Depth (ft)
249	362	Average Hydroperiod (Days)

Scenario: Green1 North3A

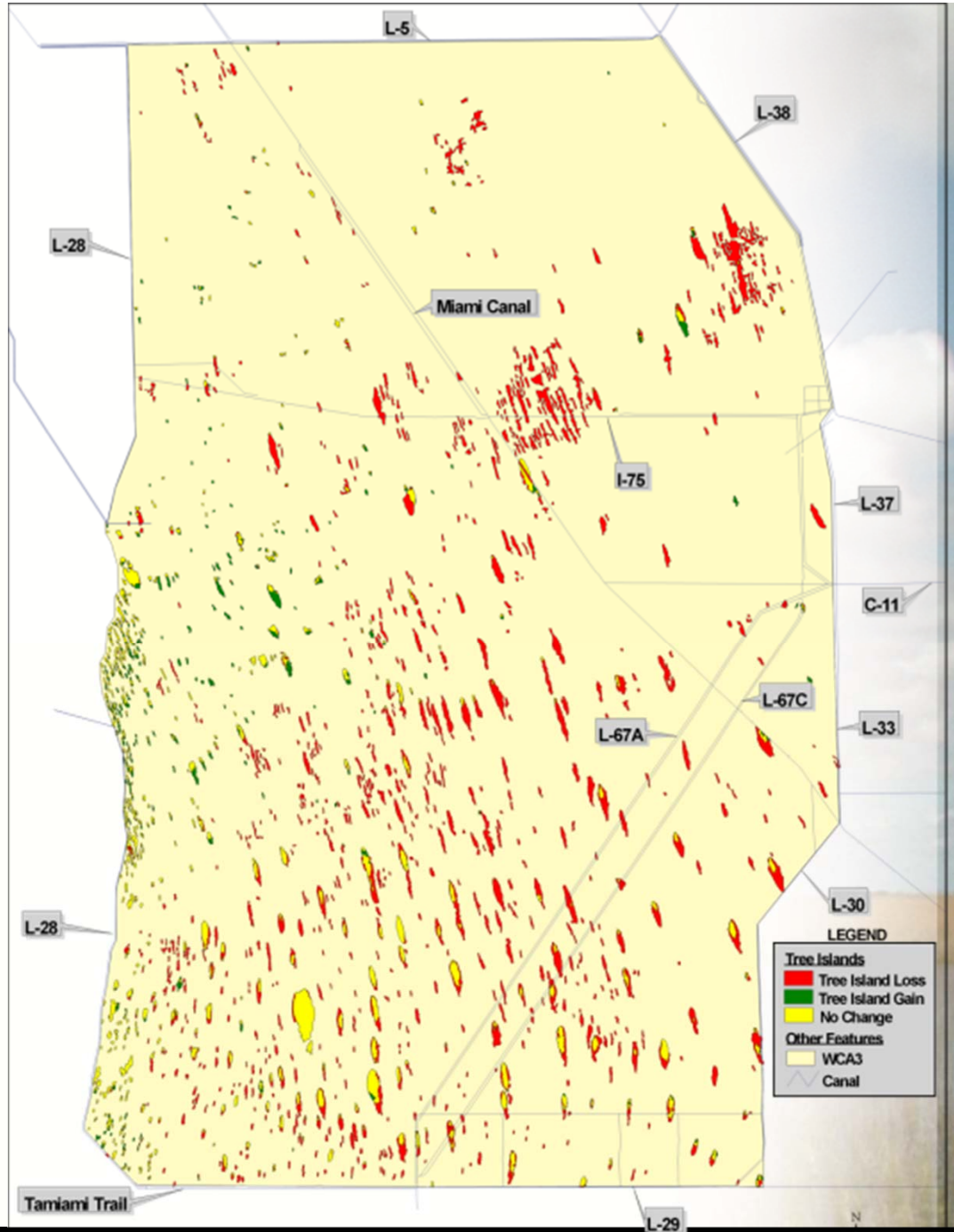


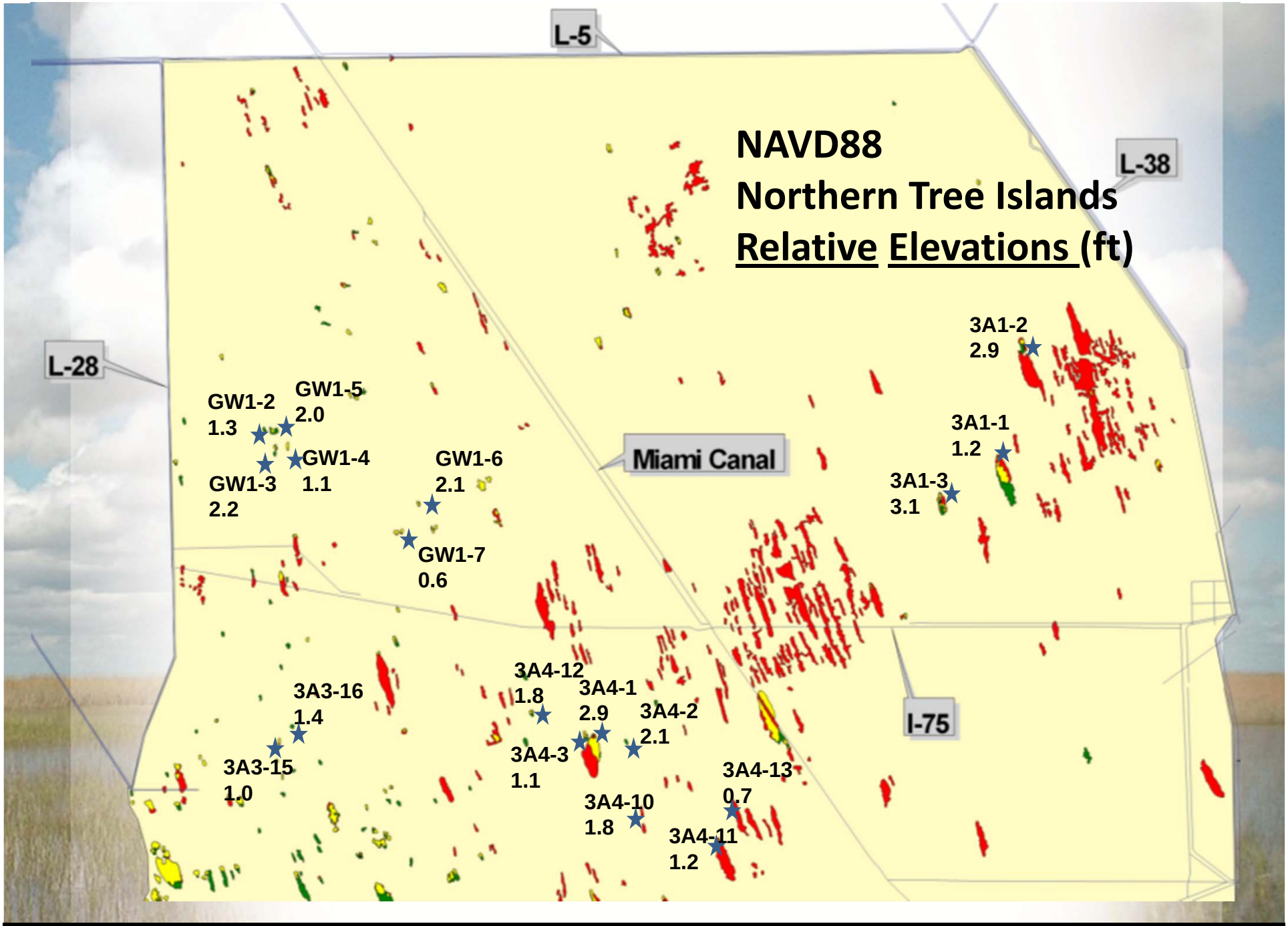
-0.08	0.47	Avg. Ponding Depth (ft)
173	322	Average Hydroperiod (Days)

	3A-NW Depth (ft)		3A-NE Depth (ft)	
	ECB	iModel$^{50\%}$	ECB	iModel$^{50\%}$
Wet Season	0.93	1.54	1.00	1.39
Avg Condition	0.25	1.25	0.31	1.04
Dry Season	-0.42	0.67	-0.37	0.48

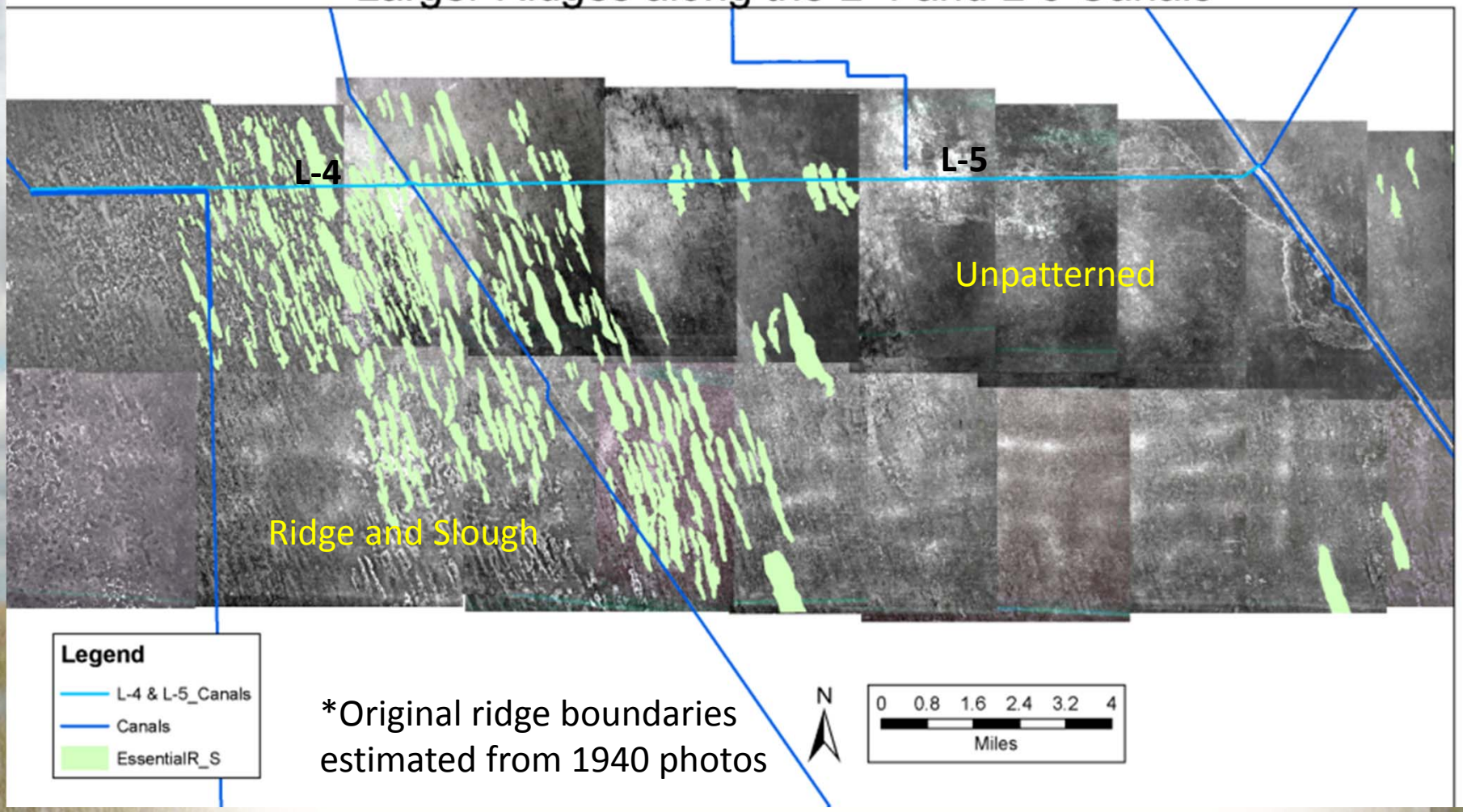
The Problem: Highlighted by Vegetation Changes and Peat Loss.

Cumulative Tree Island Changes in WCA3 from 1940 until 2004




NAVD88
Northern Tree Islands
Relative Elevations (ft)
L-5
L-38
L-28
Miami Canal
I-75
GW1-2
1.3
GW1-5
2.0
GW1-4
1.1
GW1-3
2.2
GW1-6
2.1
GW1-7
0.6
3A1-2
2.9
3A1-1
1.2
3A1-3
3.1
3A3-16
1.4
3A3-15
1.0
3A4-12
1.8
3A4-1
2.9
3A4-2
2.1
3A4-3
1.1
3A4-10
1.8
3A4-13
0.7
3A4-11
1.2

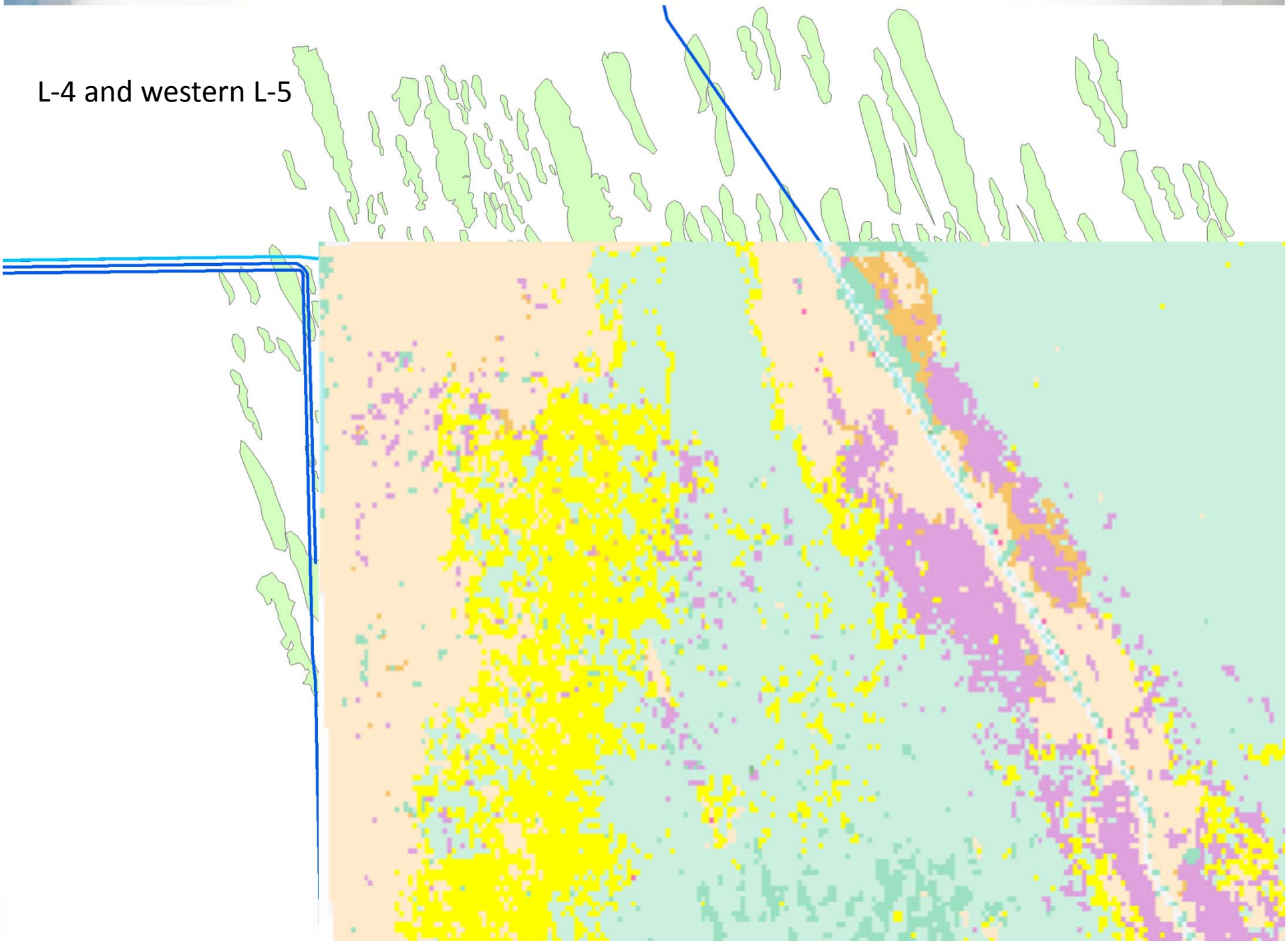
1940 USGS Aerial Photographs
Larger Ridges along the L-4 and L-5 Canals*



*Original ridge boundaries estimated from 1940 photos

DRAFT

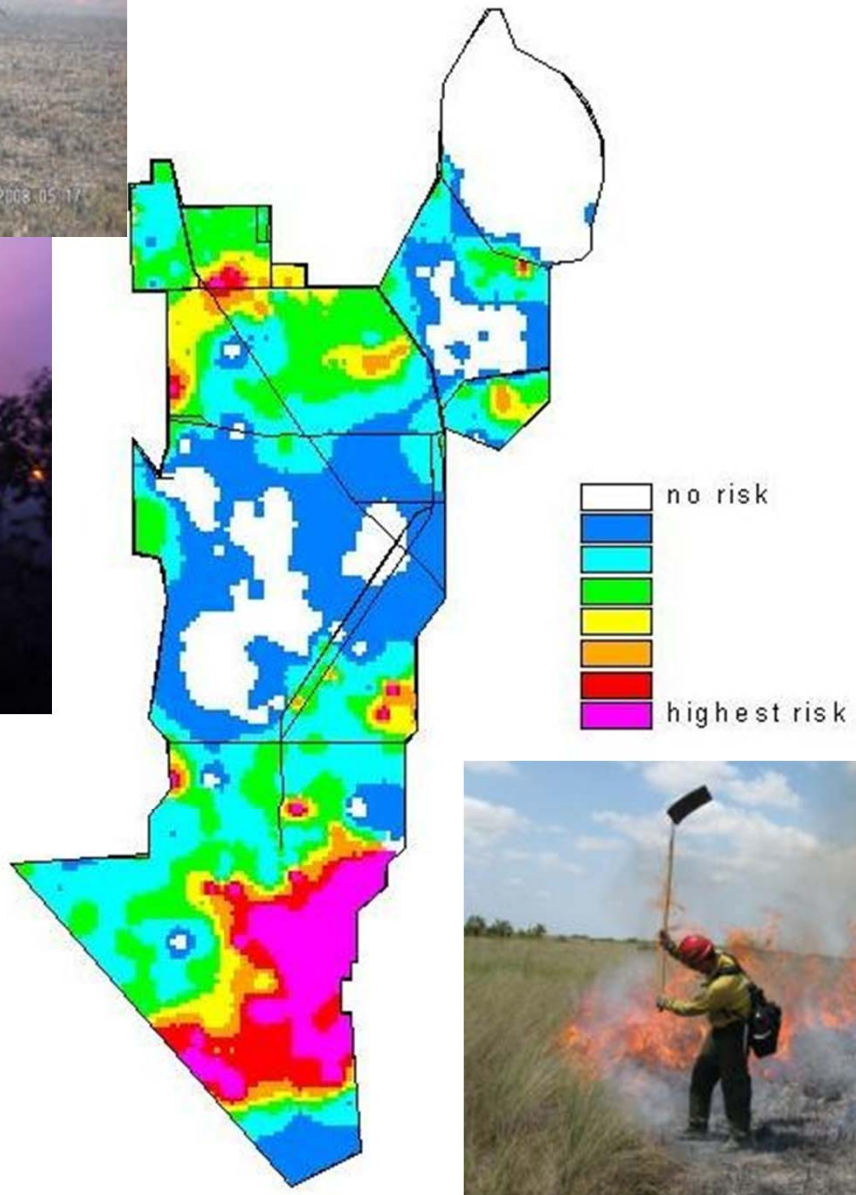
L-4 and western L-5



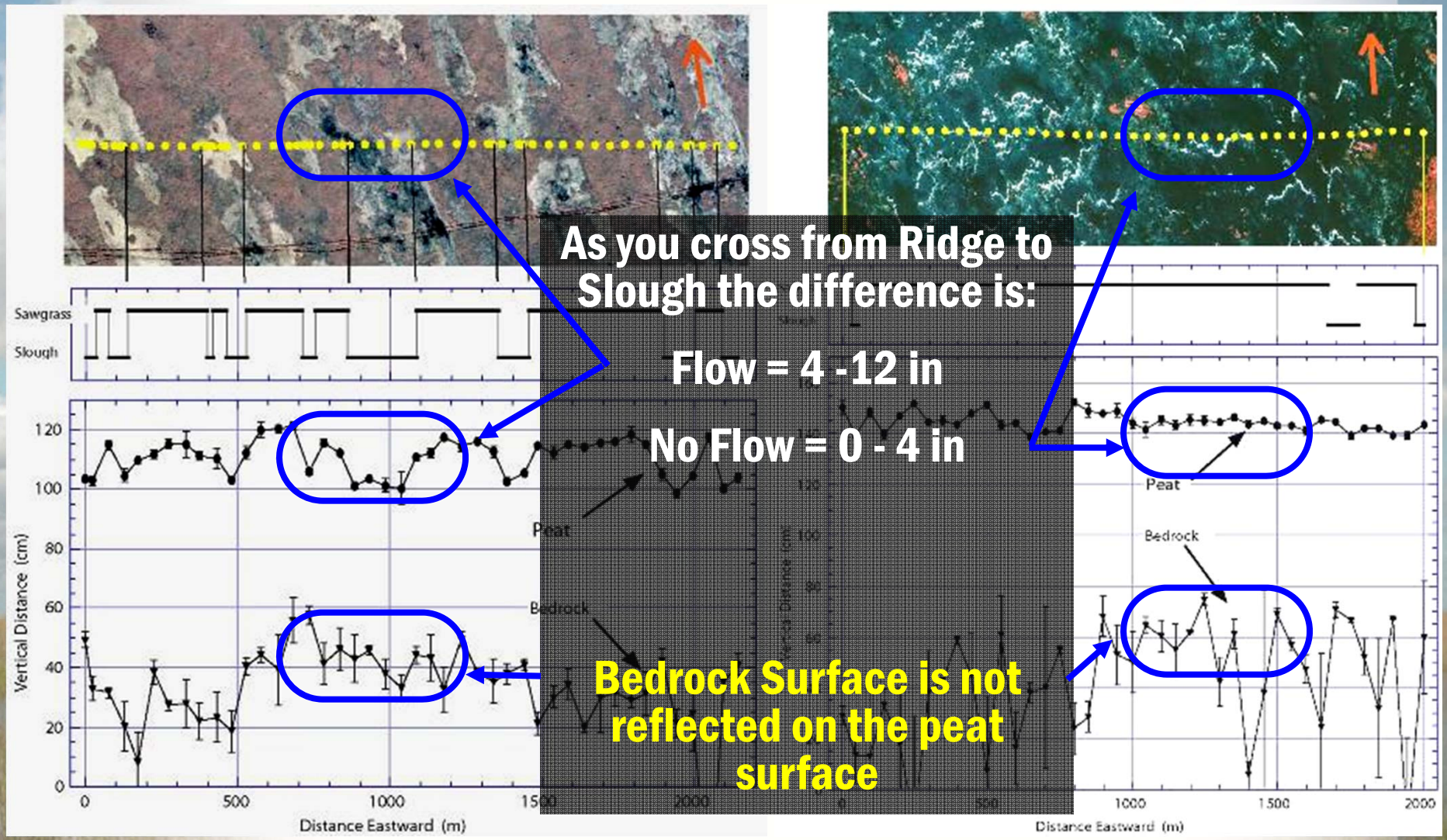
GETTING TO THE HEART OF THE EVERGLADES

CENTRAL EVERGLADES

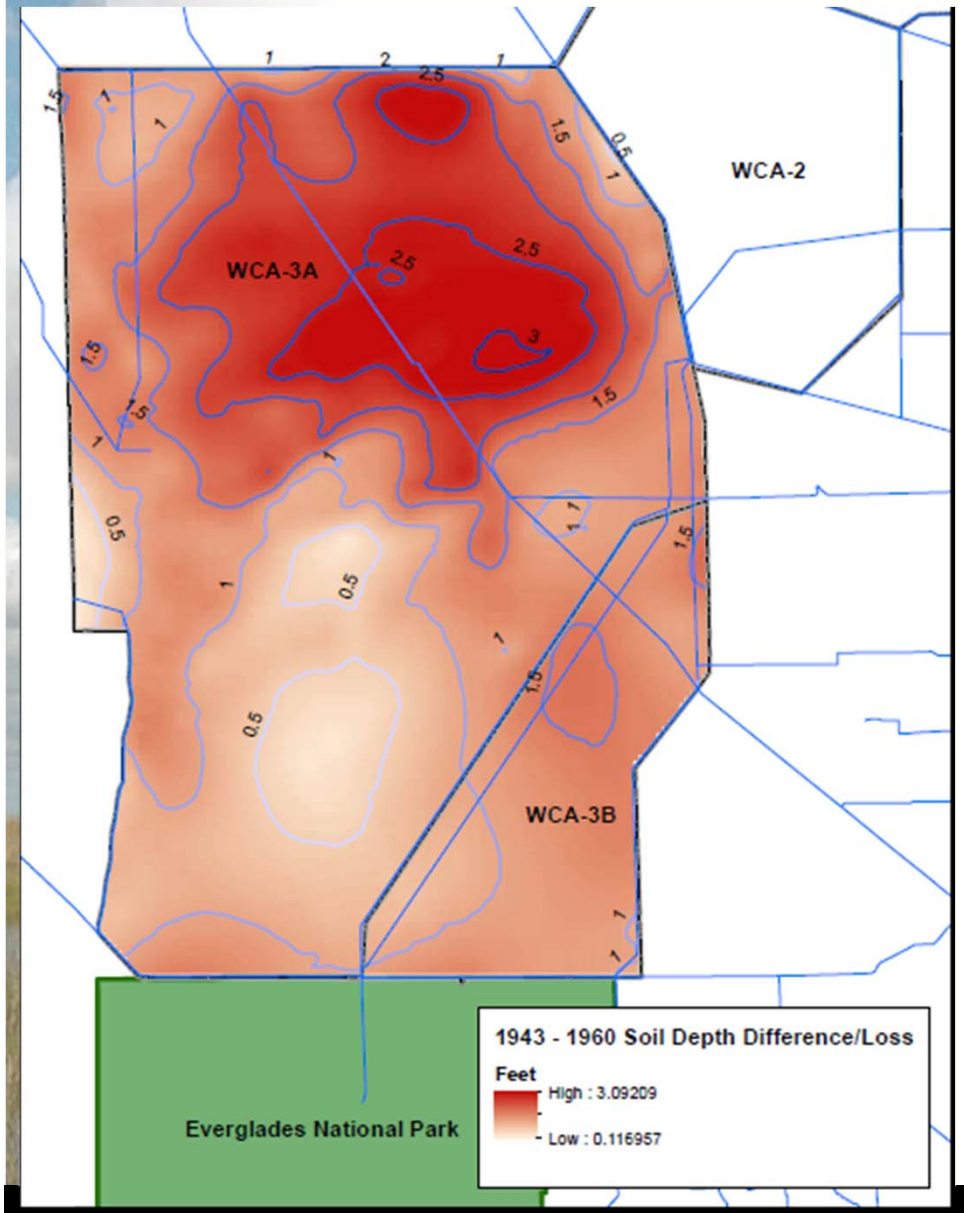
Muck Fire Risk

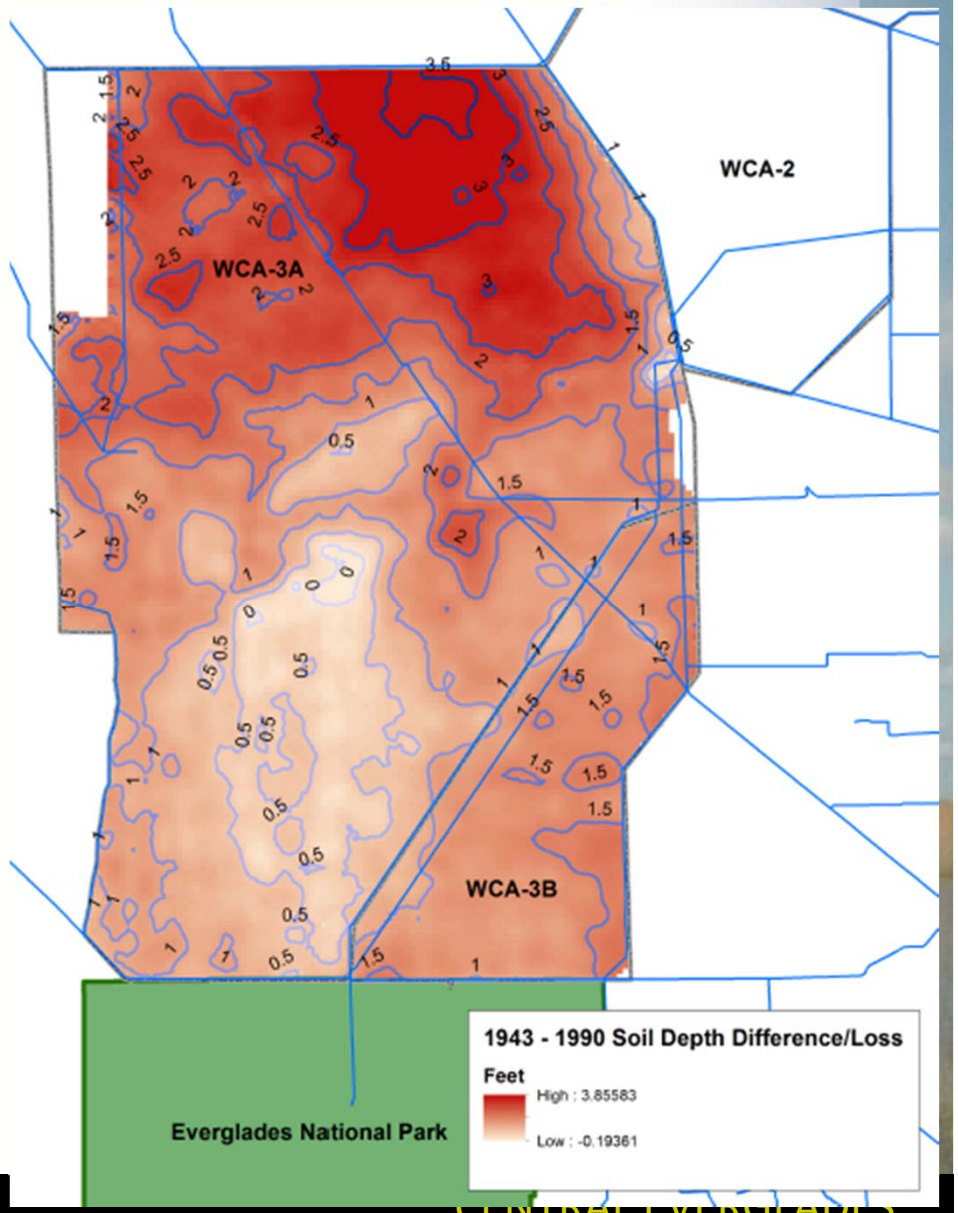


What happens when the Everglades doesn't get enough inflow of water?

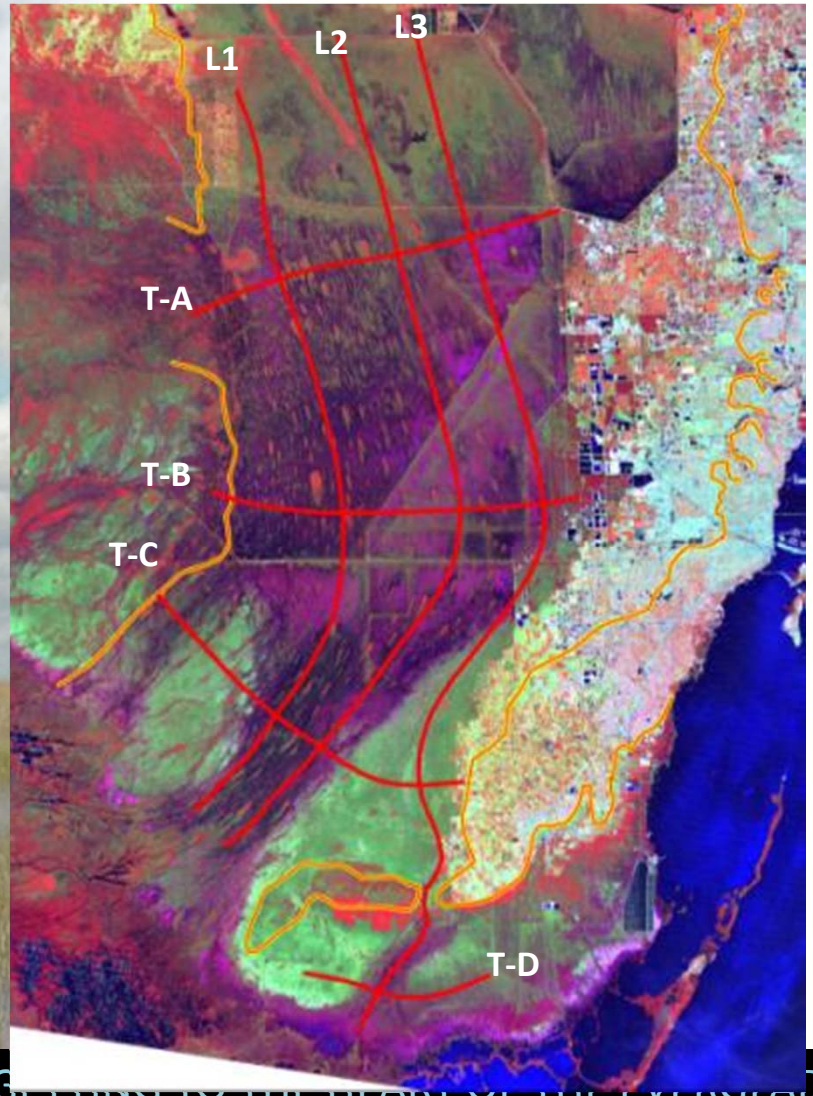


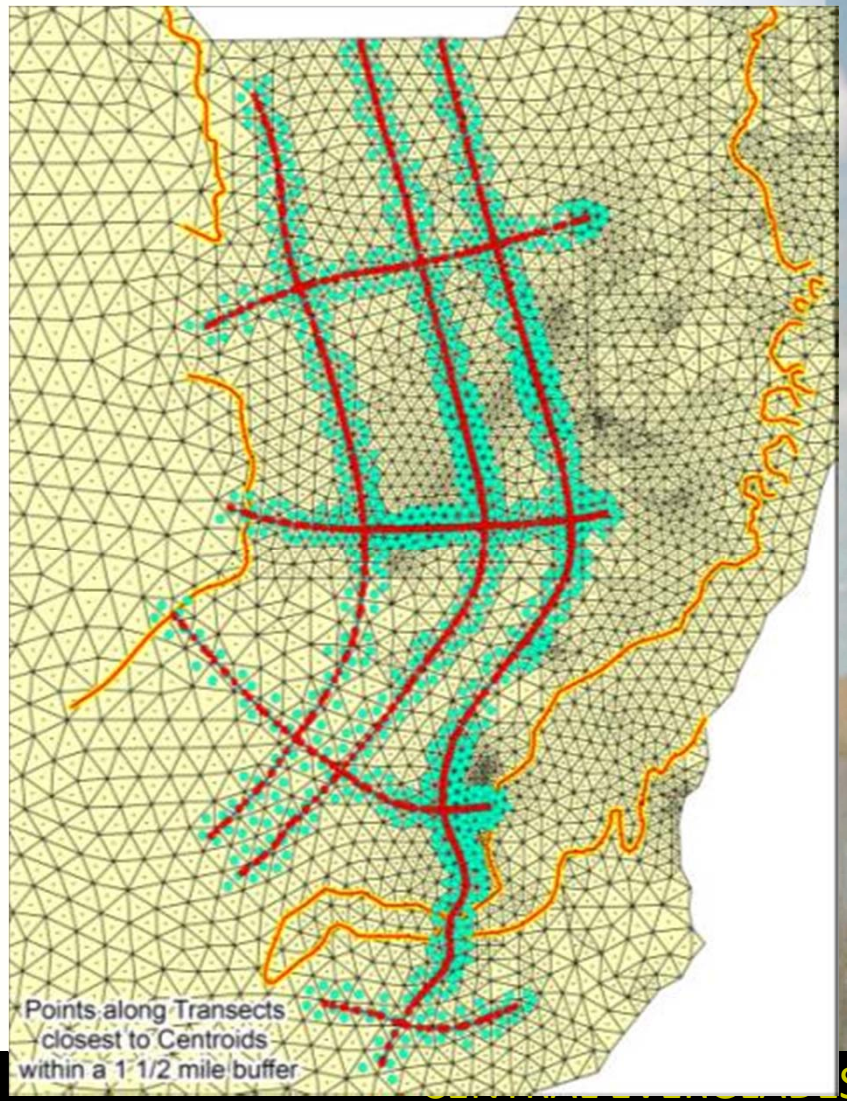
Soil Depth Changes in WA-3A/3B 1940's – 1990's



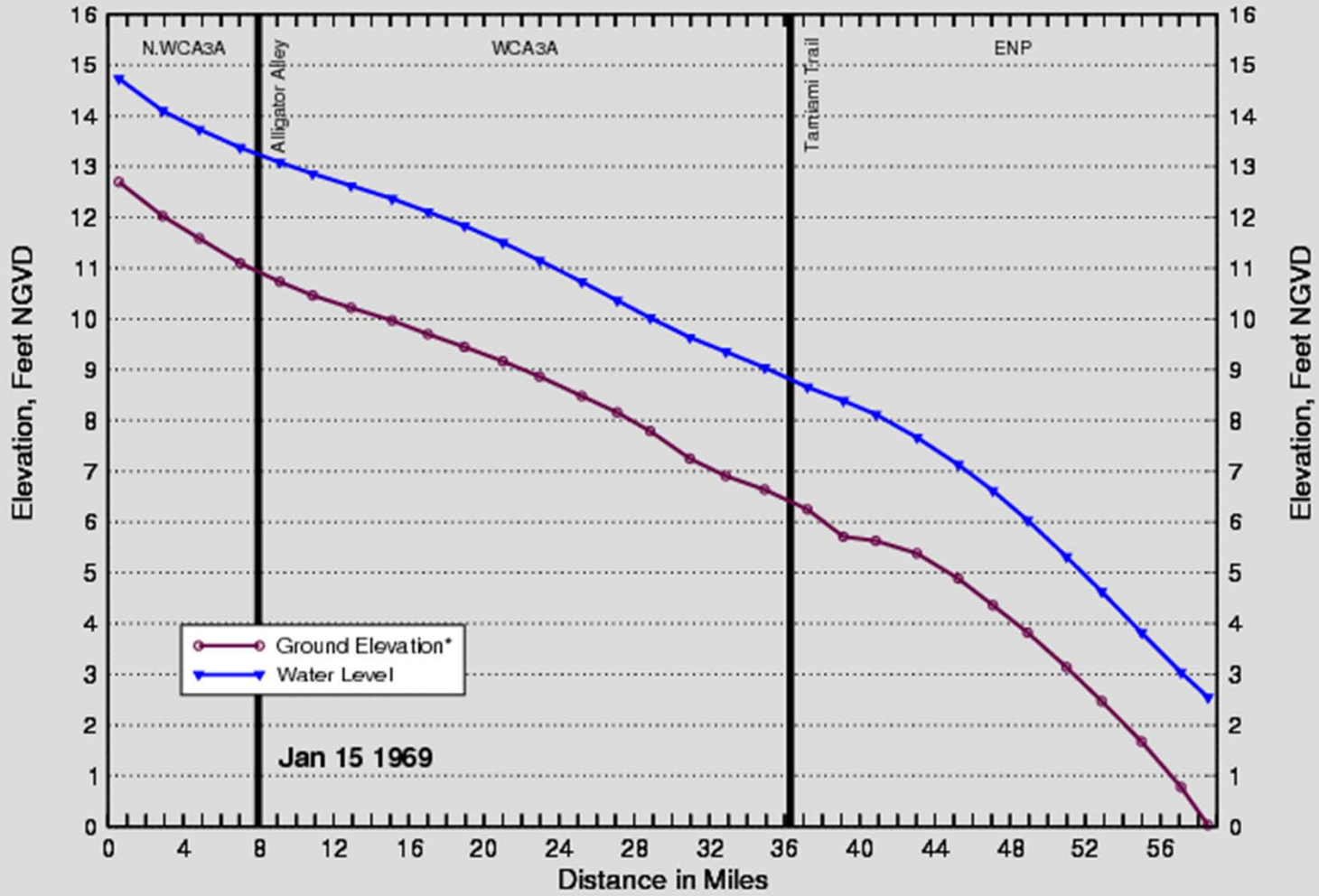


The *heart* of the Everglades has very poor circulation





NSRSM
L1 Transect



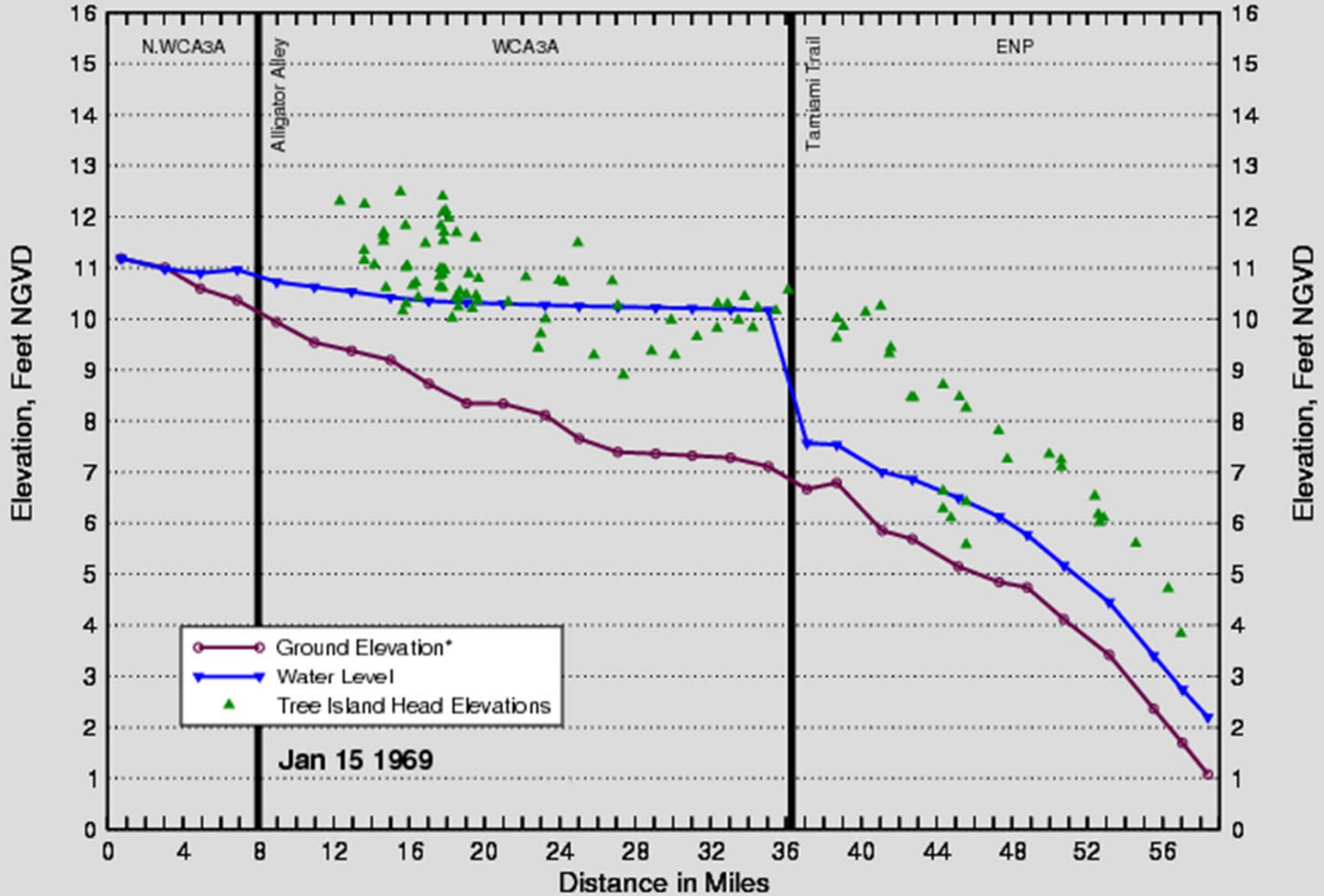
* Within the ridge & slough landscape, ground elevation = slough bottom.
For other landscapes, ground elevation = average model ground surface.

Script used: depth_transects.scr
Filename: depth_transects_L1_NSRSMv3.3_ANIM.agr

CURRENT
L1 Transect

Water Depth Viewing Window

Transect L1 for Scenario RSM_PCB1_GLD_rev_4848



* Within the ridge & slough landscape, ground elevation = slough bottom.
For other landscapes, ground elevation = average model ground surface.

Script used: depth_transects.scr
Filename: depth_transects_L1_RSM_PCB1_GLD_rev_4848.agr

Major features of the ridge and slough landscape in WCA-3A and WCA-3B

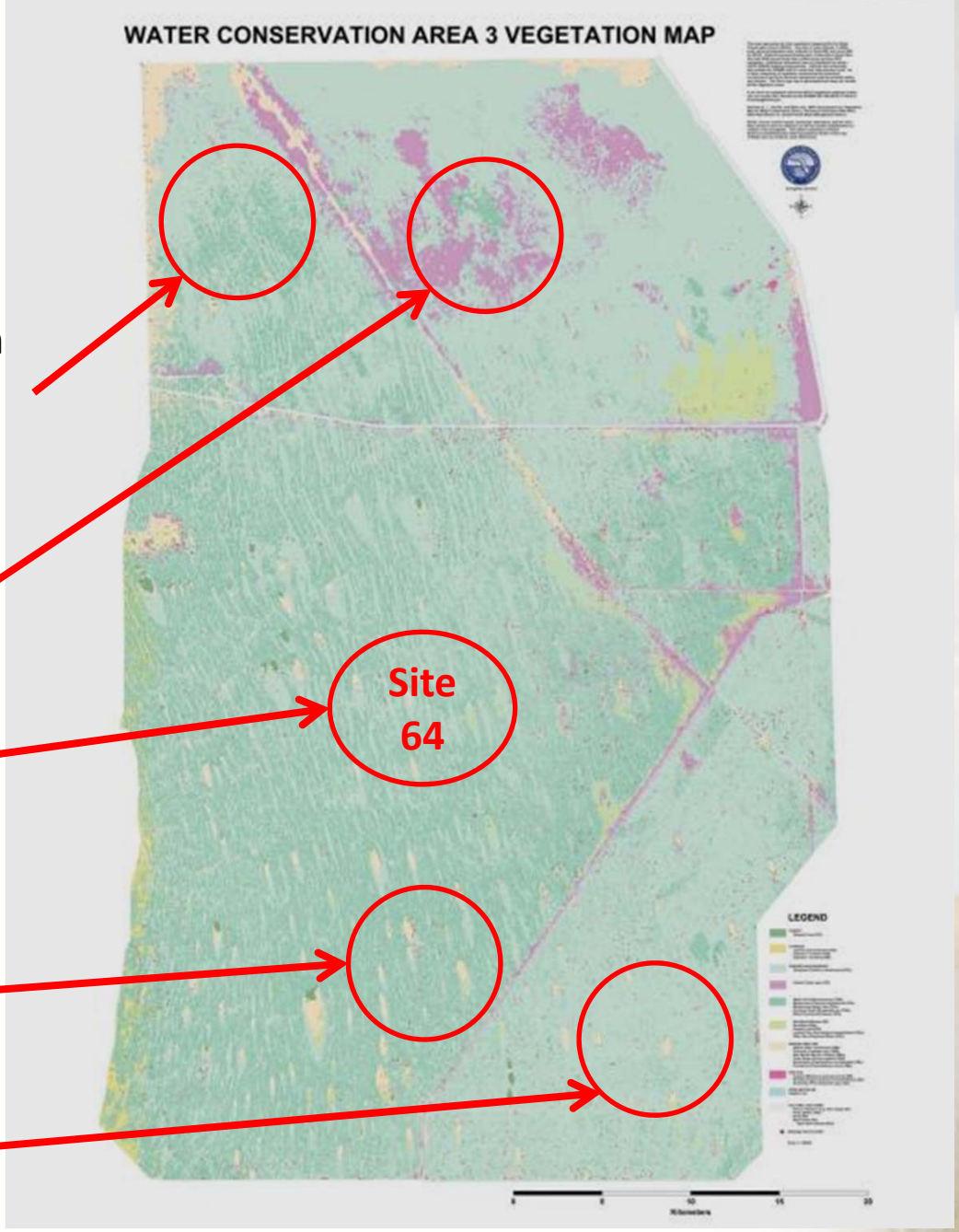
Too dry, remnant ridge & slough pattern, no slough vegetation, invasion of willow

Too dry, loss of peat, no ridge & slough pattern, invasion of cattail

Loss of microtopography, “healthy” ridge & slough pattern

Too wet, remnant ridge & slough pattern

Loss of peat, no ridge & slough pattern



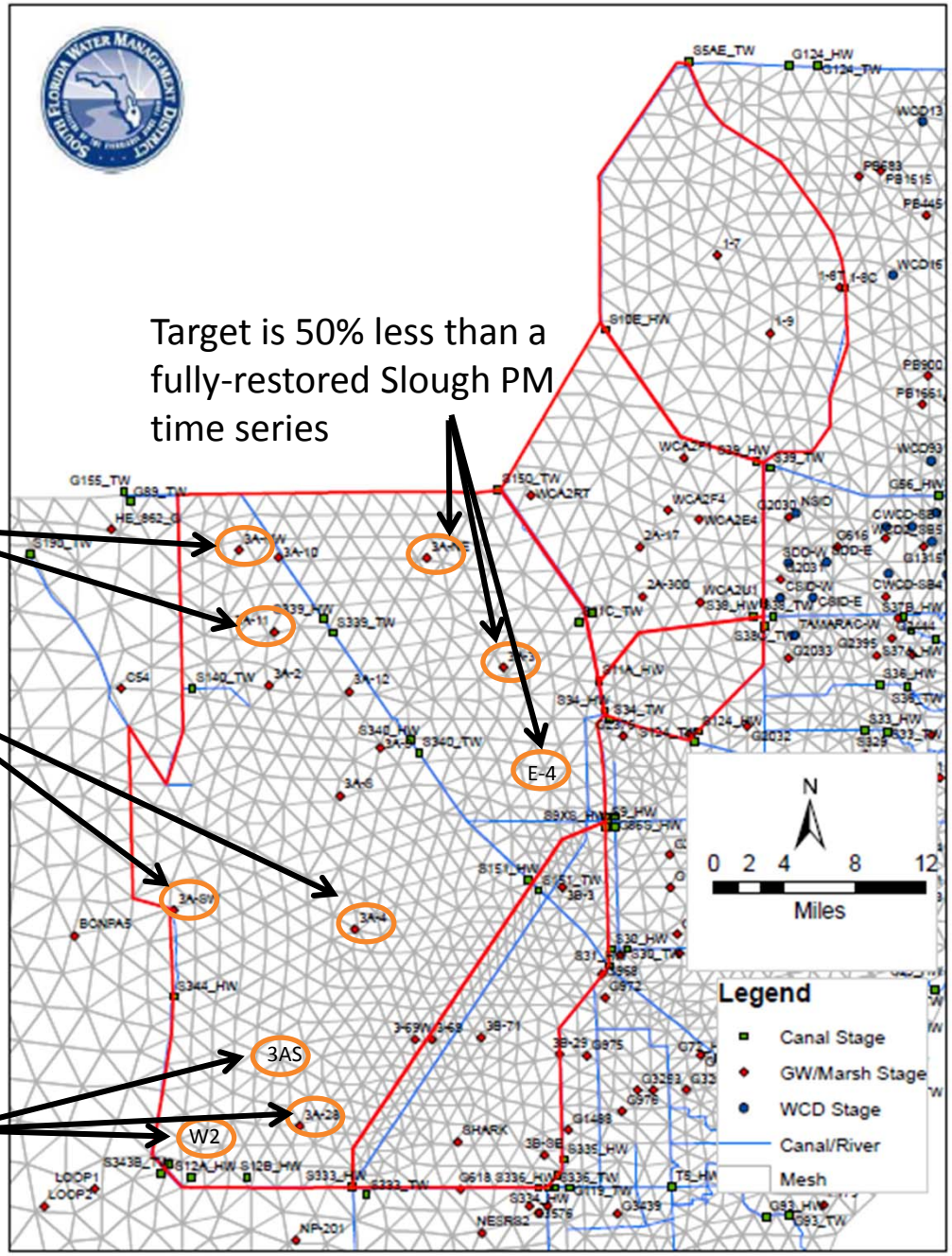
Location of Gages in WCA3 A&B and iModel Targets

Target is 50% less than a fully-restored Slough PM time series

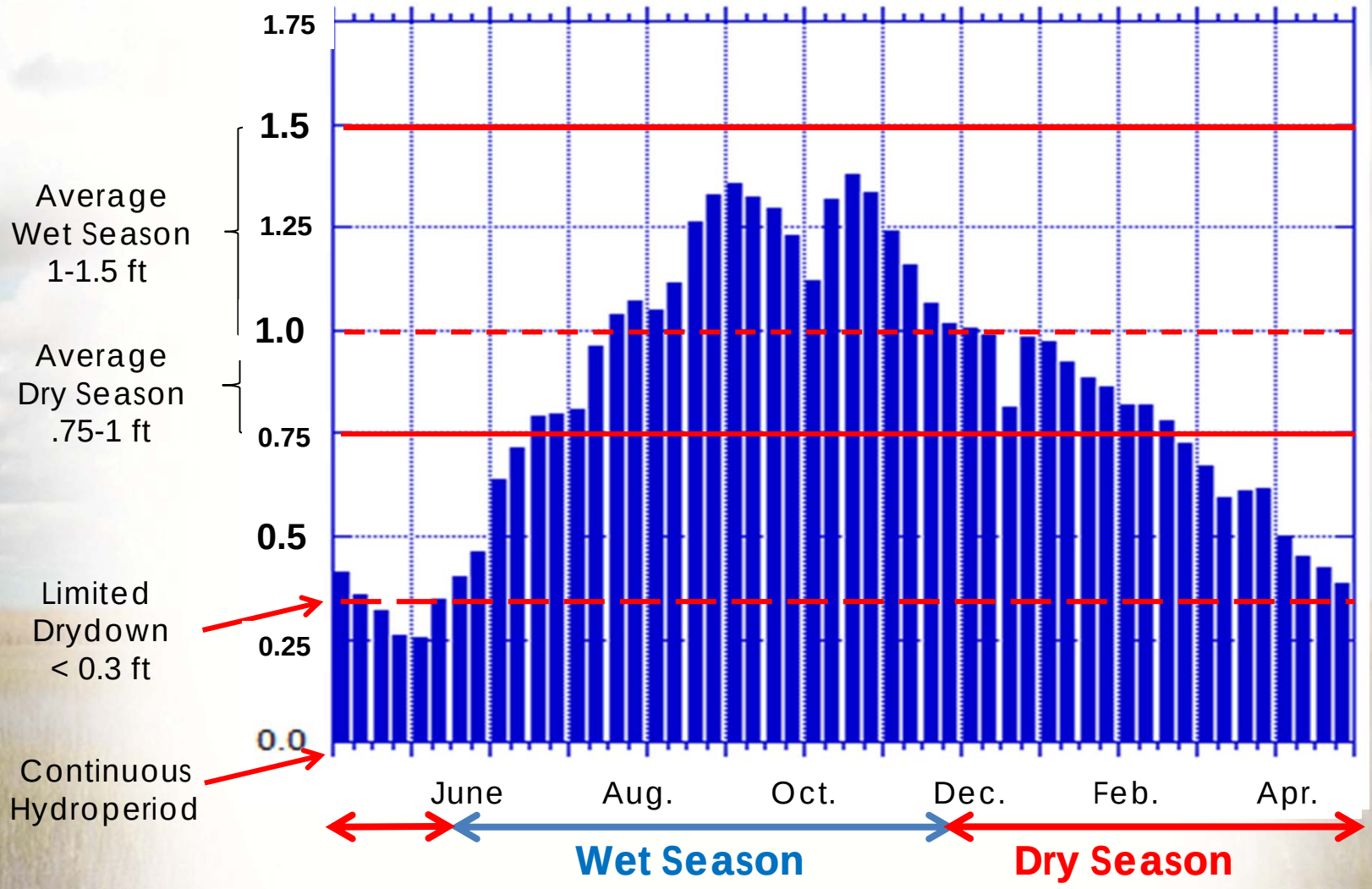
Target is a fully-restored (Site 64) Slough PM time series

Target is 50% less than a fully-restored Slough PM time series

Target is a fully-restored Slough PM time series

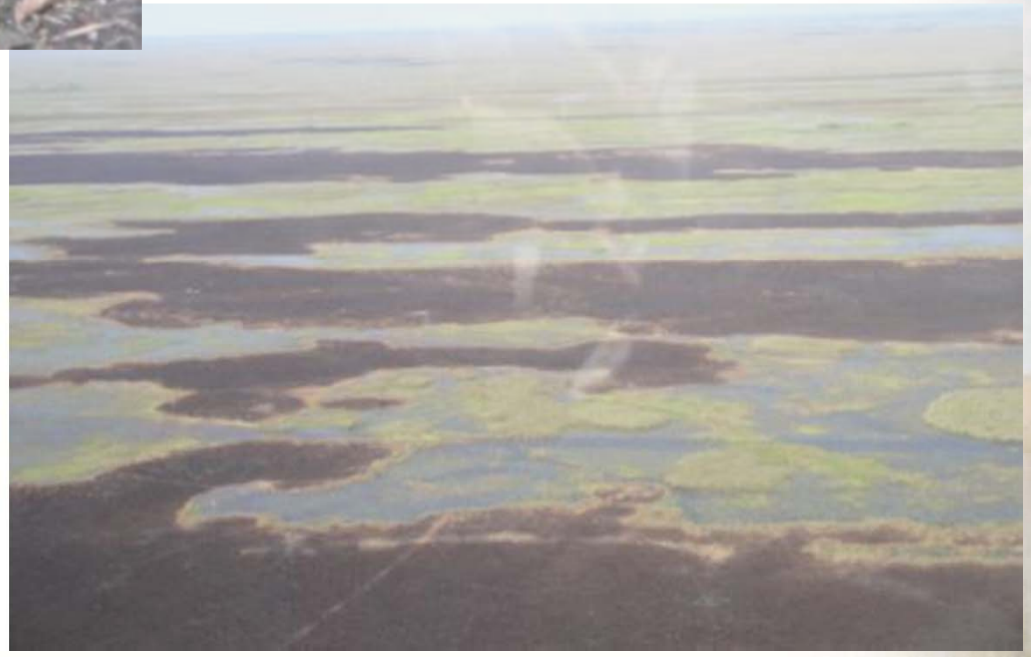


Weekly Average Water Depth (Site 64: 2000-2011) - Modified to Show a 50% Slough PM



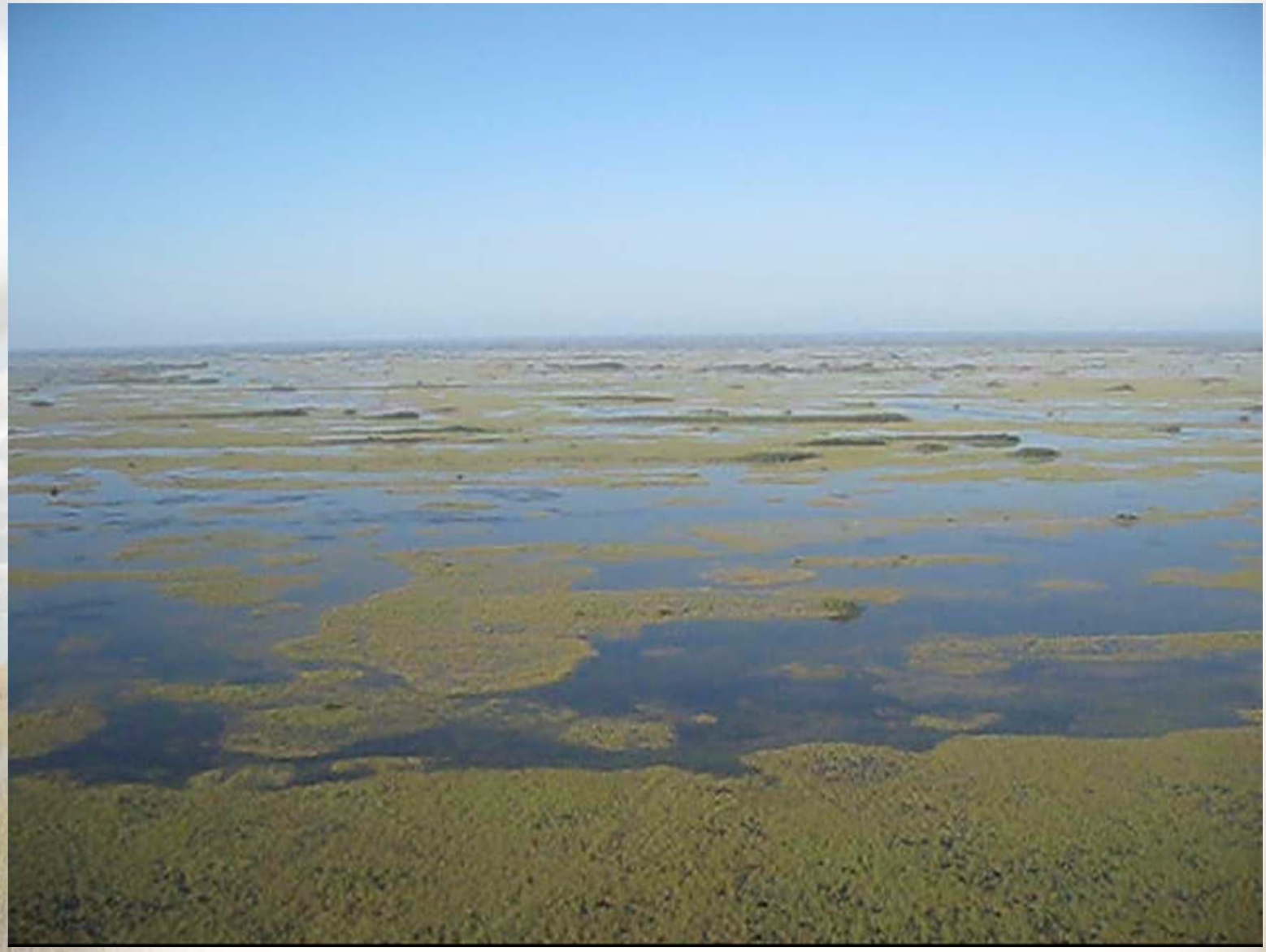
Final Question: What is a reasonable solution?

Florida Softshell Turtle



Healthy Ridge and Slough Fire Pattern

Restoring tree islands to the ridge & slough landscape creates needed terrestrial habitat within a wetland.



Thanks for your attention